'*Dagucho* [*Podocarpus falcatus*] Is Abbo!' Wonsho Sacred Sites, Sidama, Ethiopia: Origins, Maintenance Motives, Consequences and Conservation Threats

A Thesis Submitted to the University of Kent in Fulfilment of the Requirements for the Degree of Doctor of Philosophy

In Biodiversity Management

By

Zerihun Doda Doffana

School of Anthropology and Conservation

University of Kent at Canterbury, the United Kingdom

December 2014

Abbreviations

AWSF:	Abbo Wonsho Sacred Forest
AV:	Audio-Visual
BD:	Biodiversity
BDC:	Biodiversity Conservation
BCD:	Biocultural Diversity
BIE:	Biodiversity Institute of Ethiopia
BoCT:	Bureau of Culture and Tourism
BoFED:	Bureau of Finance and Economic Development (SNNPRS)
CBD:	The Convention on Biodiversity
CRGE:	(Ethiopia's) Climate Resilient Green (Development) Strategy
CSA:	Central Statistical Agency (of Ethiopia)
EOTC:	Ethiopian Orthodox Tewahido Church
EPRDF:	Ethiopian Peoples' Revolutionary Democratic Front
FDRE:	Federal Democratic Republic of Ethiopia
ESA:	Ethiopian Statistical Authority
FGD:	Focus Group Discussion
FMCT:	Federal Ministry of Culture and Tourism
GBG:	Gulele Botanical Garden (Ethiopia)
ha:	Hectare
HH:	Household/s
HHS:	Household Survey
IBCR:	Institute of Biodiversity Conservation and Research
IUCN:	International Union for the Conservation of Nature
KI-AiO-RA:	Key Informant- all-in-one Research Assistant
MDG:	Millennium Development Goals
MoARD:	Ministry of Agriculture and Rural Development (Ethiopia)
NGOs:	Non-Governmental Organizations
PA:	Peasant Associations
PCC:	Population Commission Committee (Ethiopia)
PHCC:	Population and Housing Census Commission (Ethiopia)
SAR:	Sidama Ancestral Religion
SCRBO:	Sidama Community Radio Broadcasting Organization
SNNPRS:	Southern Nations, Nationalities and Peoples' Regional State (of Ethiopia)
SNS:	Sacred Natural Sites
SRV:	Southern Rift Valley (Ethiopia)
SZ-ANRD:	Sidama Zone Agriculture and Natural Resource Department
SZ-CTD:	Sidama Zone Culture and Tourism Department
TCF:	The Christensen Fund
WDA:	Wonsho District Administration
WDCTCO:	Wonsho District Culture and Tourism Office

Abstract

This thesis addresses six main objectives answering questions on the origin, nature and social organization of SNS and their custodians; motivations for, and BCD conservation consequences of, their maintenance; threats SNS and ancestral institutions face and existing governance and protection instruments, with focus on local perceptions among the Wonsho of Sidama, Ethiopia. The study employs anthropologically-oriented, but interdisciplinary, conceptual framework and mixed methods to collect and analyse data. A year of fieldwork (July 2012-June 2013) was carried out using six major data collection methods (including interviews, BD inventory and HHS). The data were analysed using NVivo 10 and SPSS 20/21. The results are presented and discussed in seven key thematic areas and six chapter headings. The main findings are summarized as follows:

1. Forty-eight SNS (whose sizes ranging from a site of a single tree to a 90.6 ha and ages from 28 to ca 375 years) were identified in seven PAs. Three criteria were used to identify a typology of Wonsho SNS: spatial-clan structure, function and protection status. SAR was identified as the core of the origin, social organization, governance and geography of SNS and other BCD protection areas. Twenty-two of SNS were protected by SAR practitioners and four by Protestant Christians. The rest were either lost or transformed.

2. Answers to the question of why SNS are maintained are interpreted as linked to ancestral conceptions of the natural world, knowledge about, and practice relating to, it. The people valued SNS and native trees as 'life', 'beauty', 'ancestor symbolizers', 'temples', 'wealth', 'shade', 'healing agents', 'food banks', 'place and name identifiers', and 'tribunal courts' among others. Certain salient norms and practices, supporting tree biodiversity, are identified and interpreted as the foundation of the motivation for the maintenance of SNS.

3. 154 floral and 33 faunal species were documented for their reported and observed past and present existence in 26 of the 48 SNS and other informal protection areas. A partial inventory identified about 133 flora and some fauna, including two locally endangered species, *Colobus guerezza* and *Tauraco ruspoli* in various SNSs. Twenty-two locally reported endangered native trees were found here, of which ten were reportedly found nowhere. Eighteen major woody species were identified as extractively conserved in various informal protection areas, notably agroforests.

4. Forty-three types of uses of trees were identified. Eighteen woody species were identified as playing crucial socio-economic role; seven of these being culturally important and *Podocarpus falcatus* was identified as a truly 'cultural keystone species'. The maintenance of SNS and native trees has important role through provisioning, regulating, supporting and cultural ecosystem services.

5. Maintenance of SNS and other botanic landscapes were found to contribute positively towards community health, herbal medicine and conservation of medicinal plants. SNS are perceived as key resources for health and wellbeing. Sixty-two percent of surveyed HHs accessed medicinal plants from SNS where 48% of the identified plants (including nine that were reported as locally endangered) were found.

6. The SNS and ancestral institutions faced threats. Fourteen SNS were lost, eight severely degraded through other land uses and the existing 26 also threatened in seven studied PAs. Twenty-two important native trees were reportedly threatened; ten of these exited only in the SNS. Twelve native woody species were reportedly lost. SAR is threatened (e.g. declined from 13.6% in 1994 to 2.7% in

2007). Eroding factors, especially external ones, have been intensifying since the 1890s, but momentum added over the past 50-60 years, salient drivers being introduction of cash economy, modern religions, modern education, misguided state policies, rapid population growth and resultant socio-economic pressures.

7. The SNS have for centuries been protected through 'spirit agency and policing' in a structure that gave supreme place to ancestors who influenced and guided governance. Some key principles of SNS management were identified, including 'spirit-policing', dreams and oracles in decision making, protecting entire habitat, protecting species, etc. In recent years, protection efforts have improved, with emerging collaborative governance, but these suffered from poor resourcing, coordination and fragmentation; and the future of SNS, native tree species and the SAR seemed uncertain despite some locals were optimistic.

The study concludes the SNS and associated institutions of Wonsho have resiliently existed as 'guardians of Sidama biocultural diversity' and are showcases for the mutual adaptations of tree biodiversity and ancestral traditions. The study discusses a set of implications and recommendations for further research and action.

The contribution of the study lies in the following areas which appear to be under-represented in the current literature: (a) qualitative analysis of the ontology, nature, structures, functions, geography and dynamisms of SNS and custodians, demonstrating that Wonsho SNS are not relics from static past but dynamic socio-ecological systems; (b) in-depth discussion of the role of SNS in conserving both biodiversity and cultural diversity; (c) a nuanced analysis of why and how the SNS are maintained, (d) local perceptions and parameters of the values and roles of, and threats facing, SNS and related local institutions; (e) our understanding of what constitutes 'biocultural diversity' and the indicators for cultural diversity when this concept is applied at a local scale; (e) interdisciplinary conceptual and analytical tools to understand the socio-ecological and biocultural systems embodied in sacred sites, combining concepts from a range of social and natural sciences, notably anthropology and conservation biology.

Acknowledgements

This dissertation has come to fruition through the inputs from different persons and institutions. First and foremost, it gives me such a pleasure to express my unfathomable gratitude to Dr. Rajindra K. Puri, my PhD Supervisor since April 2013. It has been a real school of learning for me through Dr. Puri's critical, kind and collegial supervision and mentoring. The depth and breadth of support and input I have received from him in the methodological, substantive and technical scientific writing areas were truly remarkable.

Professor Stuart R. Harrop, my former principal supervisor, has collegially and professionally guided me from 'day one' of my registration until he left University of Kent in April 2013. He has not only supervised my academic work but also kindly facilitated administrative and financial matters. Through his kind cooperation and facilitation, I was able to secure the financial scholarship. Dr. Anna Wildstein, my co-supervisor until December 2013, has truly been very helpful in seeing me through the tough tasks of familiarizing myself with the rich literature in medical ethnobotany. Even after the end of her co-supervisorial role, she kindly provided valuable comments for a chapter on sacred sites, health and medicinal plants. I am truly grateful.

This PhD study was generously funded by The Christensen Fund (TCF). The four year grant has enabled me to undertake the study and the overseas fieldwork over one year without any difficulty and hardship, except for some lapse in between the end of the three years and the extension year. I am honestly grateful to TCF.

The School of Anthropology & Conservation (SAC) of University of Kent has also provided some financial support for three years as part of it program of supporting research degree students of the School, which I acknowledge greatly. The SAC administrative staffs, particularly Mrs. Susan Simpson and Chris Williams, have been very supportive. Thank you very much for your kindness, patience, and professional support. "Chris, your office door was always wide open for me and you have shared my stresses and worries and often soothed me with kind advice!"

I am very much grateful to the kind people from the Beacon Church of Herne Bay who stood with me and my family during a brief time of financial hardship. The kindness and true friendship of Mr. David and Mrs. Margaret, Mr. Derek and Mrs. April, Mr. Fred and Mrs. Iris and Mrs. Beverley Cook are specially acknowledged. I thank the Church leaders Mr. Steve Dunn, Mr. John Way, Mr. Julian Barnard and all the Beacon Church family for their material, prayer and moral support.

In Ethiopia, thanks are due to Hawassa University, Sidama Zone and Wonsho District Administrations for kindly facilitating the administrative processes for the fieldwork. I am particularly indebted to Mr. Zewde Gebiba, Head of Wonsho District Administration and Mr. Azmach Assefa, head of the District Culture, Tourism and Government Communications Office for making my fieldwork a truly satisfying experience. My able and obedient 'All-in-One' research assistant, field-guide and key informant, Mr. Mulugeta Mumme, deserves a special

acknowledgement. I know without his role, the fieldwork would have been impossible. I thank all the other persons in the District Administration for making me feel at home during the eight months of fieldwork. My informants, from *Ganna* Ke'e, supreme ritual leader of the AWSF, to the cheerfully inquisitive and helpful children, are all acknowledged for taking time to answer my questions.

Last but not least, my wife, Mrs. Meskerem W. Haile, has truly been the bedrock of my strength. I lack words to admire her stamina in shouldering the tough responsibilities of managing our home and caring for our daughters Peniel (15) and Yediel (8). She and our daughters have endured endless days of my absence from home on fieldwork assignments and here throughout the arduous write-up periods. I love you my dear wife and daughters!

Finally I want to thank all the people whose names I might have forgotten to include here.

Zerihun D. Doffana

December 2014

Canterbury, the United Kingdom

Table of Contents

List of Tables

Table **Page**

List of Figures

Figure **Page**

Chapter 1. Introduction

This Chapter introduces the thesis and describes the theoretical, empirical and methodological framework of the study. The PhD project history is briefly introduced followed by outlines of the theoretical framework whereby literature situating the study problem in context is made (a full review of this literature is given in Chapter Two). In subsequent sections, core research objectives and significance of the study are presented. The last section presents methodological approaches whereby study sites are introduced, research strategy and design briefed, fieldwork processes and challenges presented and data collection, analysis and quality assurance steps described. The Chapter closes with a description of ethical matters and the way these were managed. A reflexive statement on this is attached (Annex VII).

1.1 Introducing the project

This PhD study investigated the nexus of sacred sites, ancestral rituals and biodiversity; explanations for why rituals were maintained; the instrumentality of forest and trees therein and how maintenance of these in turn conserved sites and trees. The study took a predominantly qualitative approach with themes spanning the disciplines of anthropology and conservation biology.

Origins of conceptual interest in the topic date back to May 2008 when I, as part of a team of researchers and administrators from the University of Hawassa, Ethiopia, had an opportunity to visit the School of Anthropology and Conservation, University of Kent, hosted by the Durrell Institute of Conservation and Ecology. Attending various talks by the School staff drew my attention to issues of biocultural diversity conservation people-plant relationship. Furthermore, a training and teaching background in social anthropology, prior research works on ethnohistories, identities, knowledge, livelihood and the environment in southwest Ethiopia, and the conceptual priorities of The Christensen Fund combined to create an interest in conservation and the biocultural diversity of sacred sites. A year and a half of reviews of literature in biocultural diversity conservation and the role of sacred sites, coupled with auditing key courses in the MSc Ethnobotany programme at Kent, helped me formulate a conceptual framework that informed the core research questions and the methodology of this project. As might be expected, the PhD project's conceptual and geographical focus has over the last three years evolved through some amendments. An initial focus on medicinal plants and their conservation in sacred sites has shifted to a broader focus whereby the nexus of sacred sites, trees and ancestral traditions take centre stage.

1.2 Problem statement

1.2.1 Theoretical context

Since the 1990s, interest in the spiritual and social dimension of sacred sites as community-managed conservation areas has been gaining recognition (Sponsel, 2008). A body of theoretical literature setting out the conceptual framework for the interface between biodiversity and cultural diversity has been growing from both the social science and conservation biology perspectives. An important framework emerging from this is a biocultural synthesis, referred to as Biocultural Diversity, a concept which sees an inextricable link between biological and cultural diversity, whereby the former (genes, species and habitats) co-adapt and is interdependent with the latter (knowledge, values, beliefs, practices and institutions) (Maffi & Woodley, 2010; Sponsel, 2012; Loh & Harmon, 2014). This synthesis incorporates related conceptual frameworks of historical ecology and cultural landscapes that explain the historical and cultural embeddedness of physical places (Balée, ed., 1998; Posey, 1999; Chouin, 2002; Heckenberger et al., 2007; Balée, 2006, 2013).

Some scholars, writing on people-plant relationships (*see Hsu, 2010*), criticize the Biocultural Synthesis model as a form of scientism which ultimately accounts for social action in a Darwinian framework. They propose an alternative model of Social Constructionism for understanding such relationships, arguing an element of biodiversity, such as a tree, becomes a social-cultural artifact as people construct social significance and attach situational meaning to it.

Biocultural diversity conservation as a concept and approach to conservation emerges from this context, and it contends that conserving biodiversity without giving attention to people and cultural diversity is a disservice to the millennia of faithful, inextricable co-evolution between the two (Sponsel, 2008, 2013; Loh and Harmon, 2005, 2014).

On the other hand, debates continue on various approaches to biocultural diversity conservation, the relevance of local knowledge and contribution of local communities therein, whether local communities engage in any intentional conservation measures, why they maintain sacred sites and ancestral rituals, how these contribute to conservation of sites and trees, and how they have been resilient amidst multiple eroding factors.

While these and related questions are reviewed in Chapter Two in detail, brief mention should be made here. Conflicting views exist regarding the relevance of local knowledge and contribution of local communities in conservation. Some have taken a romanticizing view that

local people have been stewards of biodiversity for millennia; they promote a pristine ecological balance maintained in traditional societies (e.g. Durning, 1995; Bodley, 1996; Nelson, 1998). Others argue traditional knowledge systems are not grossly biodiversity-friendly, often entail inimical elements and some traditional practices actually encourage species loss (see, for example, Cunningham, 2001). However, as Balée (1998, 2006) argues, no human group has an innate, inherent propensity to decrease biotic and landscape diversity or to increase it.

Concerning the debate on whether traditional communities undertake conscious conservation of species, some argue traditional conceptions of nature, species and livelihood engagements have instrumental conservation consequences as they require biodiversity for the continuity of their cultural-spiritual institutions (Nabhan et al, 2002). Others argue apparently conscious conservation practices exist in traditional societies (*See, for example,* Alcron, 1995; Brush, 2000; Estabrook, 2000; Ford, 2000*).* However, the current general consensus is that traditional knowledge is indispensable in biodiversity conservation and such knowledge often dictates a reciprocal exchange and an ethical relationship with environment, which turns out to be the basis for sustainable use and management of natural resources. Traditional biodiversity management is now regarded as a legitimate alternative (Ford, 2001; Harrop, 2004).

Reviews of literature on frameworks supporting conservation of biocultural diversity, local institutions and traditional knowledge show the importance of protecting traditional resource rights. Conservation of biocultural diversity with a rights-based approach, also entails protecting rights to cultural, ethnogenetic, territorial, and socio-political identity, as well as rights to resource access, ownership, use, etc. It also upholds the Diversity Principle, that biodiversity and cultural diversity are interdependent and that the concerns of biodiversity conservation and human rights are linked (Posey & Dutfield, 1996; Harrop, 2004; Maffi & Woodley, 2010; Sponsel, 2013).

1.2.2 Rationale of the study

Sacred sites are socially constructed places (Schaffer, 2003), centering on natural and other man-made objects as epicenters of local ecology, community life, livelihood and belief (Sponsel, 2008). In some cases, local people consider them as the ‘navels’ of the earth (Schultes & Raffauf, 1992). They occupy a key place in the biocultural diversity conservation debate and are increasingly recognized as showcases for the conservation of biocultural diversity, because their strong cultural importance derives from, and requires maintenance of, biodiversity (Posey, 1999; Maffi & Woodley, 2010; Sponsel, 2013). Eighty percent of the world’s high biodiversity

areas are reported to overlap with sacred ancestral lands, claimed or managed by indigenous peoples and local communities (Sobrevila, 2008; Toledo, 2013a).

However, sacred sites, custodian communities, their environments and livelihoods are increasingly endangered (Cunningham, 2001; Igoe, 2004; Johnston, 2006; Verschuuren, *et al*, 2010; Maffi & Woodley, 2010; Sponsel, 2013). In Ethiopia too, biocultural diversity erosion exists; sacred sites, trees and useful ancestral traditions supporting these are endangered due to multiple factors, including deforestation (resulting from rapid population growth and agricultural intensification), processes of cultural homogenization, religious innovation, socio-economic modernization, urbanization, resettlement and modern formal education (Yntiso, 2004; Kebede, 2004; Tadelle, 2004; Getu, 2004; Berisso, 2004; Lemeneh, 2008). Ethiopia has become the second most populous country in Africa, with increasing socio-demographic pressures on the environment and biodiversity. The country's status as a centre of diversity (with between 6500 and 7000 plant species), a home to a number of endemic animal and plant species (IBCR, 2009; Negash, 2010; Tadesse, 2012), and one of the most culturally diverse nations of the world (about 80 ethnic groups speaking close to 154 dialects) is under threat (Vaughan, 2003; Kibrework, 2011; Anon, 2014b). These same pressures also operate in the study site, Wonsho-Sidama (Hamer, 2002, 2007; Tekle, et al, 2012; Hameso, 2014).

On the other hand, there is a dearth of scientific information on, and documentation of, the biocultural profile, dynamics and conservation challenges of sacred sites of Ethiopia and Wonsho-Sidama. Furthermore, how and why sacred sites are maintained in the face of increasing economic, cultural and environmental changes is not well understood. Existing piecemeal studies have approached the sacred sites or biodiversity in Ethiopia either from a purely biodiversity aspect or from an overly qualitative social science angle. There was an urgent need for a study that employs mixed methods and incorporates concepts from anthropology and conservation biology to better understand and document the existing bio-cultural diversity profile of sacred sites, the nature and scope of endangerment risks and management approaches in place to conserve diversity.

1.2.3 Why Wonsho-Sidama?

Research interest in ancestral sacred sites of Wonsho community of Sidama was spurred by a number of factors including: an earlier exploratory study of Abbo Wonsho sacred forest; studies on ancestral traditions, ethnohistories, livelihoods and environments of various ethnic groups of southwest Ethiopia (commissioned by SNNPRS, Council of Nationalities); and an initial conviction that there was a lack of systematic, anthropologically-oriented conservation research

on the sacred sites of Sidama. In particular, I recognized an urgent need to improve our understanding of how Wonsho, Sidama sacred groves and ancestral traditions are resilient in the face of existing and imminent threats from rapid processes of social change and erosion of ancestral values.

In sum, this research, therefore, examined characteristics of sacred forest sites and ethnobotanical traditions; consequences of their maintenance for local biodiversity, culture, livelihood, wellbeing and environment; and their conservation state in ancestral sacred sites of Wonsho, Sidama, Ethiopia. The core questions the research addressed are:

a. What do the origins, social organization and present geography of Wonsho SNS look like?
b. Why are Wonsho SNS maintained and their maintenance so important?
c. What is the BCD conservation consequence of their maintenance?
d. Do community health, herbal medicine and medicinal plants fare well because of maintenance of SNS in Wonsho Sidama?
e. What is the current state of sacred forests and ancestral traditions?
f. How have the latter been or are being governed and what current conservation actions exist?

1.3 Research objectives and study significance

1.3.1 Research objectives

Within the broader framework described above, the study entailed the following core objectives:

a. Understand the origins, extent, distribution and types of sacred sites, and the social organization of custodian communities;
b. Examine the nature and characteristics of traditional biodiversity supporting beliefs, knowledge and institutions of sacred site communities;
c. Describe the role of sacred forest sites in conserving biodiversity, supporting livelihood and socio-cultural systems and providing ecosystem services;
d. Investigate whether and how community health, herbal medicine and medicinal plants fare well due to the maintenance of sacred sites;
e. Identify the phenomena, processes and drivers of biocultural diversity erosion in general and endangerment of sacred sites and trees in particular; and
f. Document current sacred sites and tree governance frameworks and conservation actions at various scales aimed at addressing the threats.

1.3.2 Significance of the study

The significance of the study lies in the following areas which appear to be under-represented in the current literature: (a) qualitative analysis of the ontology, nature, structures, functions, geography and dynamisms of SNS and custodians; (b) in-depth discussion of the role of SNS in conserving both biodiversity and cultural diversity; (c) a nuanced analysis of why and how the SNS are maintained, (d) local perceptions and parameters of the values and roles of, and threats facing, SNS and related local institutions; (e) our understanding of what constitutes 'biocultural diversity' and the indicators for cultural diversity when this concept is applied at a local scale. (e) interdisciplinary conceptual and analytical tools to understand the socio-ecological and biocultural systems embodied in sacred sites, combining concepts from a range of social and natural sciences, notably anthropology and conservation biology.

1.4 Methodology

1.4.1 Research design

Research design for this study reflects a broadly qualitative, interpretive and emic approach; the main methodological goal is in-depth understanding and description of multiple realities of the research problem from the perspectives of local people (Bernard, 2005; Newing, 2010). The design maintained a flexible, iterative style, congruent with its qualitative strategy, while data generation employed a Mixed Methods approach, perhaps better described as a 'QUAL-quant Model' wherein a dominantly qualitative approach is supplemented by quantitative methods (Padgett, 1998; Niglas, 2004; Creswell, 2013).

The study combined broadly qualitative methods with supplemental household questionnaire survey. The design had three phases, the local (grassroots), zonal-regional (mid-scale) and national (macro-scale), which was to generate information at several spatial levels and obtain a broadly local but also a sufficiently regional and national view and scale of the problem under investigation. The research design required fieldwork of one year (July 2012—June 2013). Over 80 per cent of fieldwork time was spent on phase one, at the local community scale; the remainder was divided between phase two (2 months) and phase three (5 weeks). A final element of the design concerns the 'materials' or 'instruments' of data generation and validation. I, the researcher, aided by local assistants, was the main 'instrument' of data generation. Research assistants of varying roles were recruited to support data collection aspects of the fieldwork; audio-visual equipment was employed for documentation of data and the fieldwork process. Reflexive diaries and field notes helped to further supplement and monitor the fieldwork process and products.

A brief note on my 'All-in-One-Research-Assistant' may be in order here. I employed this local Sidama civil servant from Wonsho District Administration as primarily interpreter and coordinator of the administrative affairs of the grassroots scale of fieldwork. As I do not speak Sidama language, I needed an interpreter. He was recruited, based on my set criteria, by the Administration. He served me as a liaison between the local community and the Administration. Since he was also a well-rounded person, I used him as my main key informant. I saw no reason why I should not use him so. There was no conflict between his other roles and his being my key informant. He would in fact serve me a standby 'teacher' on many of the dynamics of local life. Besides being a key informant, he would also serve me as a tool for information crosschecking, validating and gap-filling.

1.4.2 The study area and communities

Chapter Three provides detailed description of the study areas and communities. A simple introduction of the areas may suffice here. The Sidama are a Cushitic speaking people of southwest Ethiopia in northeast Africa (Braukámper, 1978; Hoteso, 1990; Hamer, 2002, 2007; Kumo, 2009; Tekile et al., 2012; Hameso, 2014), most populous of the Southern Nations Nationalities and Peoples' Regional State (SNNPRS)'s 56 ethnic groups, with various sources estimating their population size between 3 and 4.5 million (Hameso, 1998; Kumo, 2009a; CSA, 2013; Anon, 2014), making them the sixth most populous in Ethiopia (CSA, 2007). Their land is located some 275 km southwest of Addis Ababa, the national capital.

The bulk of the fieldwork (phase one, about eight months) was conducted in seven of the nineteen *qebeles* (Peasant/Urban Associations, PAs) of Wonsho District, which in turn is one of 22 such districts in the Sidama Zone, and located 45 km southeast of Hawassa City, the zonal and regional capital. Of the seven *qebeles*, four were specially selected as samples for household survey on purposive grounds (including proximity to a major sacred site and the district center of Bokaso where our local fieldwork project was headquartered). Three of the *qebeles* were included for informal inventories and surveys of sacred groves, a salient criterion of their inclusion being the presence of exemplary sacred groves that required an observation and inventory.

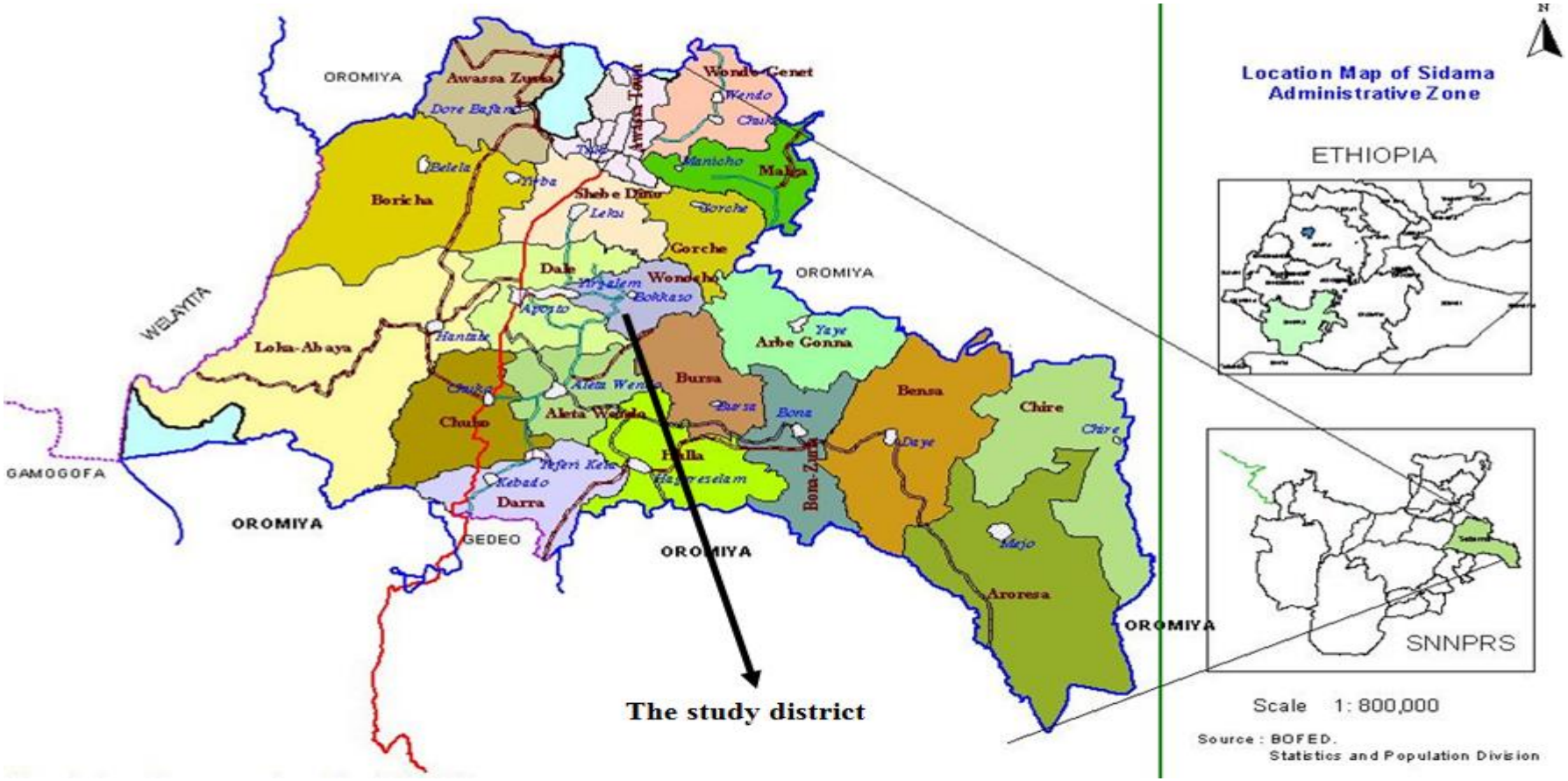


Figure 1-1 Location and administrative map of Sidama Zone
(Source: SNNPRS Bureau of Finance & Economic Development (BoFED), Hawassa, Ethiopia)

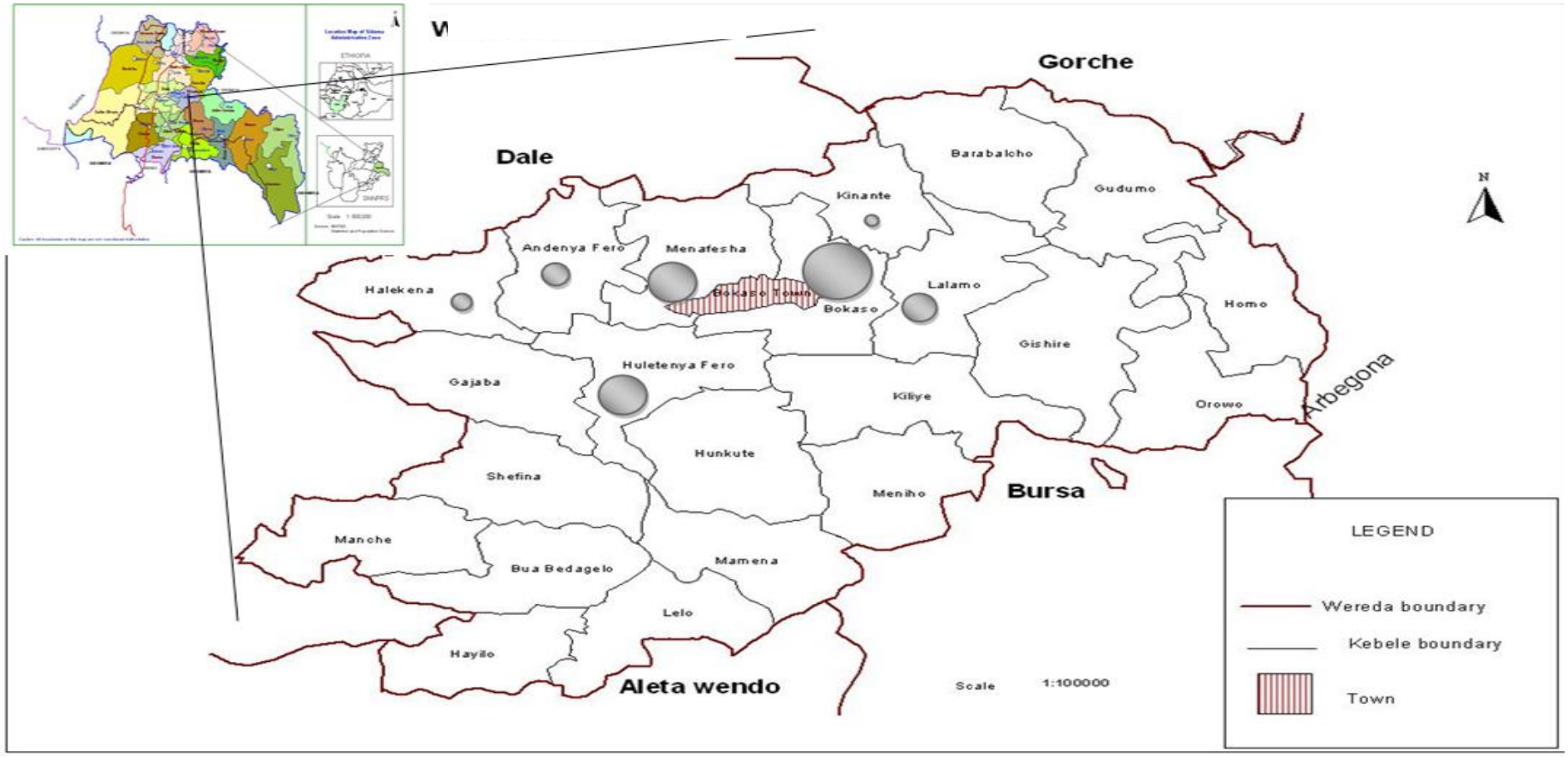


Figure 1-2 Administrative map of Wonsho District showing PA division & study localities
(Source: BoFED Note: Size of the circle shapes signify a rough estimate of focus on the study localities, the bigger the circle, the higher the focus)

1.4.3 Methods of data collection

1.4.3.1 The fieldwork

A brief description of the fieldwork phase is presented here. As mentioned above, the fieldwork took one year (July 2012 to June 2013) and was divided into three phases: Phase one, local (July 2012- February 2013); phase two, zonal-regional (March–April 2013); and phase three (May–June 7, 2013), national. This division was based on convenience and a practical need to work from bottom up as well as to tackle head-on the challenging grassroots level fieldwork first, whence the bulk of the field data came. While phase one fieldwork was geared towards generating grassroots level information, phases two and three generated information on a meso-macro scale of the problem through a combination of interviews and document reviews.

Table 1-1 Temporal–spatial scales of the fieldwork, July 2012 to June 2013, Ethiopia

Phases	Spatial scales	Time period	Time taken	Works accomplished	Research project headquarter
Pre-fieldwork preparations	--	June 20-July 14, 2012	25 days	Break, intermission launching and ground work preparations	Addis Ababa-Hawassa
One	Local	July 15, '12- Feb 28, 2013	About 8 months	Over 80% of fieldwork and data volume; all local and grassroots scale interviews, surveys, observations, AV documentations and document reviews	Bokaso-Yirgalem
Two	Zonal-regional	March-April 2013	Two months	Interviews with officers, experts & representatives of various organizational bodies; document reviews; market surveys; urban botanical environment surveys; etc.	Hawassa
Three	National	May to week 1 of June 2013	Five weeks	Interviews with national organizational representatives; reviews of documents; visits of heritage centres; etc.	Addis Ababa
Post-fieldwork	National	June 8-23, 2013	Two weeks	Final data evaluations; preparations to return & report to UKC	Hawassa/ Addis Ababa /Kent

1.4.3.2 Samples, sampling procedures and sampling size

Selection of study sites, localities, households and informants was generally purposive though there was a limited element of randomness in recruiting households for questionnaire survey. The overall sampling procedure and size of samples may be visualized as seen in Figure 1.3

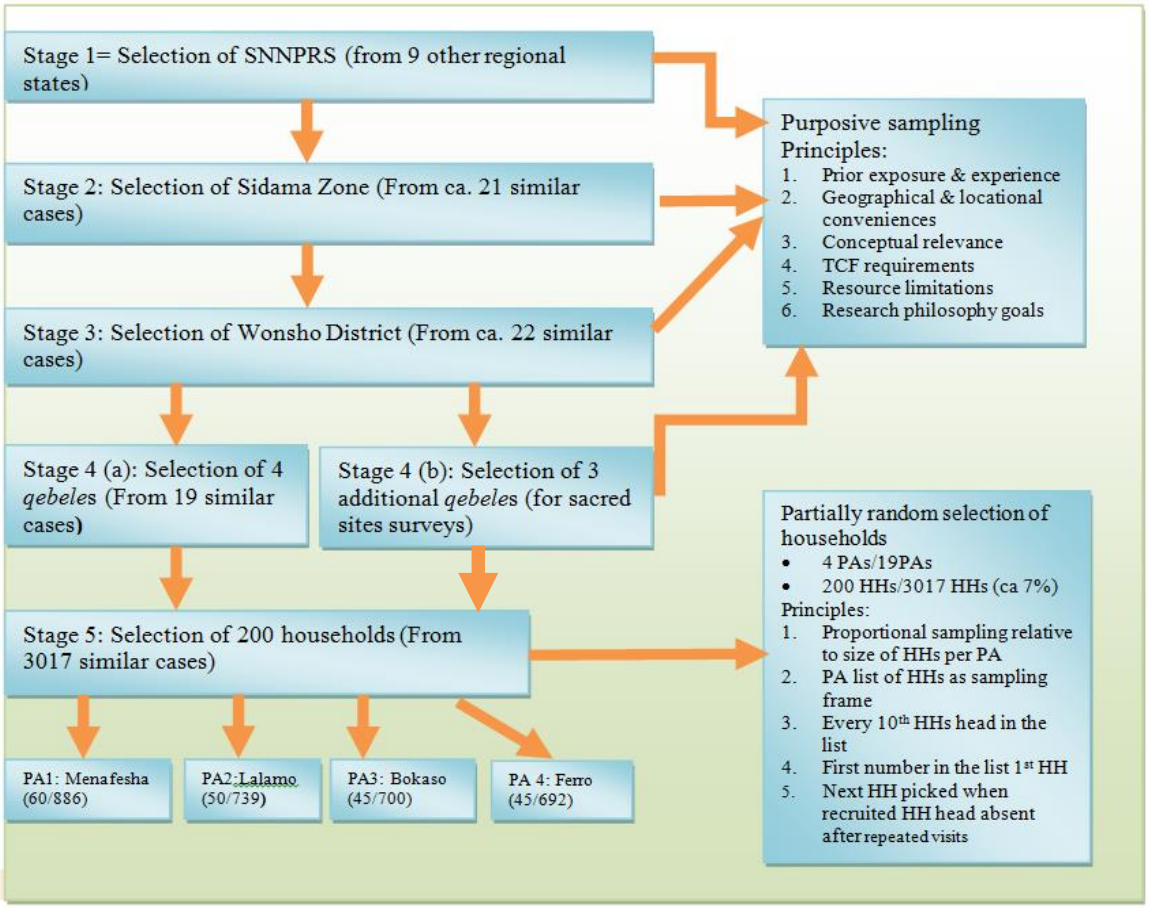


Figure 1-3 Schema for sampling process and sample size

Selection of informants at all three spatial scales for qualitative interviewing (individual as well as focus groups) falls within this schema. Local informants representing various socio-demographic categories as well as interviewees representing organizational bodies across the spatial scales were recruited on such pre-decided criterion of their relevance and proximity to the conceptual issue being investigated and their exemplary or typical identification with relevant conservation actions. Referral or snowball sampling was employed to identify and interview informants (particularly at local scale) who commanded important influence and were reported as holders of valuable information but were hard to easily identify. Table 1.2 summarizes size and number of cases/ informants identified and interviewed at the three spatial scales.

1.4.3.3 Types of data collection episodes

As noted above, data were collected using mixed method approach comprising an assortment of tools and materials, summarized as:

- ✓ Questionnaire survey of households for assessing patterns of attitudes, awareness and practices relating to sacred groves, trees, ancestral traditions and their utilization;

- ✓ Inventories of sacred sites and trees to construct typology of sacred sites, and determine extent, composition, and impact status of local extraction activities;
- ✓ Interviews with informants and focus groups, from various backgrounds, to examine their understanding, views and practices relating to the values and roles of sacred sites and trees; threats the latter face and explanations for their conservation;
- ✓ Observations of how people manage and use sacred sites and trees;
- ✓ Audio-visual documentation of practices associated with sacred sites, trees and botanical environment as a whole; and interview sessions, scenes, places and people; and
- ✓ Reviews of documents showing historical uses, abuses and current threats to sacred sites.

A detailed description of these methods is in order below.

a. Household survey

A survey questionnaire containing 73 items was designed on a range of themes to measure respondents' attitudes, awareness, practices and utilization of sacred sites and treees. The instrument aimed at determining presence or absence of desired variables in interviewed households by presenting to the informants simple statements expecting "Yes/No" responses in Part One, and their agreement or disagreement in Part Two. The measurement scales were nominal (Part One) and ordinal (Part Two) requiring simple statistical summaries and tests for analysis. Ten data collectors and two research assistants, after receiving two hour training and a half-day pilot survey exercise were deployed under my overall supervision to collect data. The survey took place between August 24 and September 7, 2012.

Figure 1-4 Nine of data collectors & myself, September 2012, Bokaso, Ethiopia

b. Focus Groups

A total of nine focus groups of male and female community members from a range of backgrounds were conducted. These discussions have produced otherwise hard-to-generate information on a range of themes such as extent of lost and extinct sacred groves, trees, aspects of material culture, etc; and divergent views respecting certain dimensions of study problem. They also served as as a means of linking, or referrals to, other episodes. These FGDs enabled generation of rich data within a shorter time span. The number of participants per group ranged from 6 to 11, with group specific as well as common thematic issues presented as discussion points. The duration of sessions ranged from about 25 minutes with a children's group to about 2 hours with a youth group. All sessions were moderated by myself, while my all-in-one research assistant did translation and note-taking. Below is tabular summary of the sessions.

Table 1-2 Focus groups, November 2012- January 2013, Bokaso, Ethiopia

Group category	No. of sessions	No. of Participants	Duration (in minutes)	Venue of session
Children's group	1	11	25	AWFS
Male youths' group	2	18	174.54	AWFS & Bokaso Admin office
Female youths' group	1	11	68.38	AWFS
Mother's group	2	14	86.37	Bokaso Full Gospel Churchyard & Bokaso Millennium Park
Father's group	2	15	150.89	AWFS & Bokaso Full Gospel Church yard
Local intellectuals' group	1	4	71.26	Yirgalem Community radio-station
Total	9	73	575.96	

About 575.96 minutes' (ca. 9.6 hours) worth of data were generated on a range of issues centring on participants' perceptions, views, knowledge and experiences. Where possible, episodes were recorded using digital voice recorder to ensure full coverage of data. Selection of episode venues was meant where possible to reflect and create a sense of closer relationship with the botanical world and a good natural setting for elicitation and generating ideas.

Figure 1-5 A young women's focus group, November 2012, AWFS, Sidama, Ethiopia

Individual interviews

Much of data collection task was undertaken through individual interviewing, whether it was planned or casual, ethnographic conversation. As Table 1.3 shows, over 110 documented informants, and several undocumented ones, were interviewed; in many instances, repeat interview sessions were undertaken so the number of interview episodes surpasses that of informants. For example, a series of about 45 interview episodes were conducted with my all-in-one research assistant, who was also my key informant. This helped as an important tool in gap-filling, cross-checking, verifying and supplementing information obtained from other informants and sources.

The majority of such sessions were undertaken in natural settings where informants lived, such as homes, front yards, backyards, churchyards, road sides, sacred groves, market places, agroforests, etc.; while a minority were conducted at offices. Some of these sessions involved more than one individual when circumstances required, quite congruent with the often unpredictable, messy nature of qualitative fieldwork. Managing a neat, controlled one-to one interview session was not always possible. While face-to-face interviews were the norm, in rare cases telephone and email interviews were used.

Figure 1-6 An inventory scene, Hasana Haqa sacred forest, SNN survey & interview, December 2012, Wonsho, Ethiopia

Inventories and surveys

Individual or group interview episodes in many instances were accompanied with inventories of sacred sites and (tree) biodiversity. These were either formal (of tree and animal wildlife) or informal (which were usually unplanned and less structured), and while most were conducted with local informants, in a few instances I conducted inventories by myself or with my research assistant. The AWSF and a number of other sites (some of which appear as exemplar cases in the following chapters) had my particular attention. I had conducted two major transect walks at AWSF, for instance, whereby the first such inventory yielded a count of 86 tree and some 20 wild animal species, while about 46 more trees were identified during a second survey (of which some were confirmation of those identified earlier). The first of these informal transect walks involved 3 folk herbalists (Figure 1.7) and took about 2 hours' work.

Figure 1-7 Inventory at AWSF, with 3 herbalists (right) and my assistant, October 2012, Wonsho, Ethiopia

All in all, approximately 90 episodes of survey and inventory were carried in a range of local botanical environments including household front-yards, ancestral grave yards, clan-based sacred forest, community-wide sacred forests, agroforests, road sides, local markets[1], and tree-seedling farms. These enabled, among other things, understanding and identification of the extent and types of extant, extinct and transformed sacred sites. A total of 154 tree species were identified (See Annex III), and information collected on their conservation status, threats, local tree care and protection practices, and patterns of extraction of sacred site resources. Of particular interest, the inventories demonstrated the increasing roles in livelihoods and dominance in sacred sites of exotic tree species.

Where inventories were supplemented by informal interviewing, they helped to assess the patterns of botanical awareness and knowledge among local communities. These surveys spanned seven selected *qebeles* (PAs) in Wonsho district as well as botanical environments in urban neighborhoods of Yirgalem and Hawassa. These were supplemented with photographic documentation

[1]Survey of open markets at Bokaso Town was conducted to make an inventory and informal interviews about various cultural artefacts displayed for sale in the market, focusing on wood/ tree products and to identify if and why forest-products (e.g. timber, concoctions from medicinal plants, charcoal, firewood, etc.) were being sold in the markets.

Figure 1-8 Young men participating in tree identification exercise at AWSF, January 2013, Bokaso, Ethiopia

c. Elicitation technique

Elicitation technique, a tool to aid informants elicit their memories by showing them pictures, drawings or other audio-visual clues, was found very helpful during assessment of botanical knowledge of local community members, especially children, and further determination of names of trees. Elicitation technique involving photograph or picture cues is used as important research tool in ethnographic research (Harper, 2002; Alexander, 2013). A book on trees of Ethiopia with colour photos of trees was employed for this purpose. The method proved to be very helpful especially when I made two or more people debate about the identity of a tree by looking at its picture and then whether it existed in the locality.

d. Review of secondary data sources

Review of documents that pertain to the Ethiopian context, including reports by various organizational entities, policy documents, research reports, books and newspapers was an important source of data. It aimed at understanding historical trends and current states of biocultural diversity and conservation issues.

Table 1-3 Summary of methods of data collection July 2012-June 2013, Ethiopia

Method of data generation	Temporal phase	Spatial scale	Unit of analysis represented	Type of organizational body	Number of cases/
HH survey	P 1(Jul' 15-Sep 7'12)	L	Household	Households/LC	212 (including pilot cases)
Focus groups	P 1 (Nov' 12-Jan' 13)	L	Local people	LC	75 (9 groups)
II/IC	P 1 (Jul' 12-Feb' 13)	L	Local people; gov't officers	LC; LG; RO	85 (documented cases)
Interviews with officers	P 1-3	L- Z -R-N	Organizations	L- Z– R -N; PO; NGOs	25
Key informant interviews	P 1	L	Local people	LC	2
	Qualitative interviewing				187
Sub total	Household questionnaire survey				212
	Overall total interviewed				393

Keys: P: phase; L local; LC: Local Community; LG: local government; Z: Zonal; R: Regional; N: National; R; PO: Private Organizations; II/IC: Individual interviews/Informal conversations

These numbers show cases for episodes whereby the names and other socio-demographic details of informants were documented; there were, however, several undocumented cases involving informal conversations, generating important ethnographic information.

1.4.3.4 Units of analysis and categories of informants

Table 1.3 shows units of analysis for the study covering people, places and organizations. Of particular significance were places as units of analysis at the local scale, where observation, inventory and surveys of sacred groves, agro-forests and other biocultural environments were carried out. Selections of such places were driven by, among other things, the analytical needs of understanding typologies of sacred groves in the study localities. Extant, extinct and transformed sacred groves at the time of fieldwork were identified and sampled by observation and inventory. Organizations as units of analysis similarly were recruited across spatial scales, with more stress on examining organizations at the local level. A key analytical purpose in this case was to understand these institutions as key loci for informal protection of areas of biocultural diversity. Local schools, churches, eco-tourism lodges and other community-based organizations were exemplars. A selection of typical places and organizations are discussed in subsequent chapters.

People, as units of analysis, in general, were the most important components of the study, since the main goal of the study was to understand local, insiders' views and knowledge. The rich mix of ideas, knowledge, attitudes, and behavioural patterns of these wide ranging community

representatives are important and key to the analytical goals of the study. Table 1.4 presents a brief description of these categories.

Table 1-4 Categories of informants interviewed, June 2012-June 2013, Ethiopia

Informant category	Description	II	FG sessions & participants	HHS	Total	Remark
Children	Children were key stakeholders in the information generation process	9	1/11	--	20	Many unrecorded cases
Women (mothers & youth)	Women were active participants adding feminine, gender dimensions	10	3/(26	15 hh heads	51	Some unrecorded cases
Men (youth, adults & older men)	The bulk of data come from this category	91	5/41	185 hh heads	317	
Folk expert group	Herbal medicine practitioners, ritual leaders, priests and leaders from various local faith groups, etc. were part of such group					Numbers included above
Owners of sacred sites	A number of stewards of sacred groves were part of this process.					Numbers included above
Technical expert group	Officers and experts from various organizational entities across spatial scales representing local schools, universities, botanical gardens, museums, eco-tourism lodges, etc.					Numbers included above
Casual passers-by	Undocumented community members interviewed via chance encounters proving to be valuable in the data generation and in some cases serving as bridges to other key informants					Names undocumented

Keys: II: Individual interviews; HH: Household; HHS: Household survey; FG: Focus groups

1.4.4 Monitoring data collection process and data quality

The quality and reliability of data in qualitative research may be, among other things, ensured through careful recruitment, training and supervision of research assistants; data and method triangulation; constant self-auditing and diaries of fieldwork contexts, events and processes; debriefing, member check and prolonged engagement (Padgett, 1998; Bryman, 2012). Such action steps were important and were carefully considered in the process of data collection. Research assistants in various capacities were employed on tentative and permanent basis to contribute toward ensuring data quality management and were, as noted above, provided appropriate training. They were recruited on the basis of meeting certain minimum qualifications such as being proficient in Sidama culture and language, having a good understanding of Amharic (the national language), at least a high-school degree, a strong sense of responsibility and a willingness to work under difficult situations. Their recruitment through collaborative work with Wonsho District Administration provided strong cultural and social capital to the work as well as good trust. The pool of energies, experiences and expertise derived from this assisting team helped create a smooth linguistic and cultural rapport with local community, ensured timely completion of data collection and controlled data quality.

Data and method triangulation, the use of multiple and mixed methods, as described above, ensures crosschecking of facts. When inconsistencies were observed, or interview-generated facts arose, these were carefully checked through persistent discussion with key informant and other sources. Consideration of 'negative cases' was also used when informants seemed to be biased towards conveying only positive or 'the good' picture about existing realities. Furthermore, self–reflective diaries were kept of the fieldwork process, events and methodological challenges; this was supplemented by audio-visual recording. Reports on fieldwork progress and output were sent to supervisors on regular basis, which was another instrument in guarding against gaps and flaws in the technical and ethical standards of the work.

Finally, it was further important to ensure flows and logical links across fieldwork phases, methods and other components. About one month of reconnaissance, rapport building and preparatory works preceded the kicking off of the formal data collection work. Although the various phases and methods of data collection need not necessarily follow a linear progression, there was a general pattern to the process.

The local scale data collection kicked off with a household survey, after which other methods were undertaken concurrently as well as sequentially depending on emergent circumstances in the field. The rationale for starting with the household survey was pragmatic and conceptual. Pragmatically, it was assumed that this would help set the tone and tempo for the fieldwork. Conceptually, the survey tool, apart from its primary goal of generating important information, was hoped to serve as a means of getting acquainted with the nuances of community life, the local environment, social milieus. The method was also taken as an aid for exploring and generating important ideas that would further be investigated in the ensuing qualitative techniques. It helped to find important individuals, scenes and environmental facts that were documented audio-visually and also serve as case study materials. Further, it served also as a good referral for identifying knowledgeable informants for further interviews.

There were a range of fieldwork challenges such as difficulty in identifying a plant's name in scientific terms, suspicion of certain category of local informants (e.g. local healers) and a sense of unwillingness among some local people to cooperate unless some form of payment was made, bureaucratic red-tapes and difficult topography and weather conditions. However, these were managed well and their impacts on fieldwork process and data quality were minimal.

Figure 1-9 Scenes from fieldwork settings in Lalamo, Sidama, September 2012, Ethiopia,

1.4.5 Data analysis

Data were managed and analyzed using NVivo 10 and SPSS 20; the former was employed for the qualitative data. Data recorded on digital voice recorders were first transcribed using a simple transcription utility known as Express SCRIBE, available as a freeware. The transcribed data were edited and cleaned for consistency and completeness and then were entered into NVivo 10. The data were organized into individual interviews, focus groups, household surveys, observation and field notes, inventory and surveys, secondary and picture sources.

NVivo analysis of qualitative data involved thematic analysis through coding. The data were coded using the NVivo tool of Nodes to gather all data evidences under coding categories. The categories were structured within the framework of core research objectives. Core categories grew from emerging themes, and these further were developed into data chapters through memo writing. Unifying, integrative themes evolved from careful scrutiny, amalgamation and synthesis of the thematic categories. Equally important was adopting the analytical approach of looking for dominant patterns, classification-worthy typologies, comparison of cases, the interplay of factors and more subtle explanation for challenging existing views (Richards, 2009). This helped to find out, for instance, emically and etically-based typologies of sacred landscapes; dominant views and assumptions with regards to, for example, ancestral religion, sacred forests or the impact of modern religions; and how these stand the test of facts buried within a complex interplay of factors. Salient coding categories emerged from meta-analysis of NVivo 'Nodes' centering around three major themes, constituting eight sub themes: (A) biophysical characteristics of sacred forest sites and ethnobotanical traditions (geographic profile, ethnohistorical and anthropological foundations); (b) consequences of maintenance of sacred forests for local biodiversity, culture, livelihood, wellbeing and environment; and (c)

conservation state, threats and governance frameworks. Screenshots of NVivo 'Node' categories are given below (Figure 1.10 & Figure 1.11).

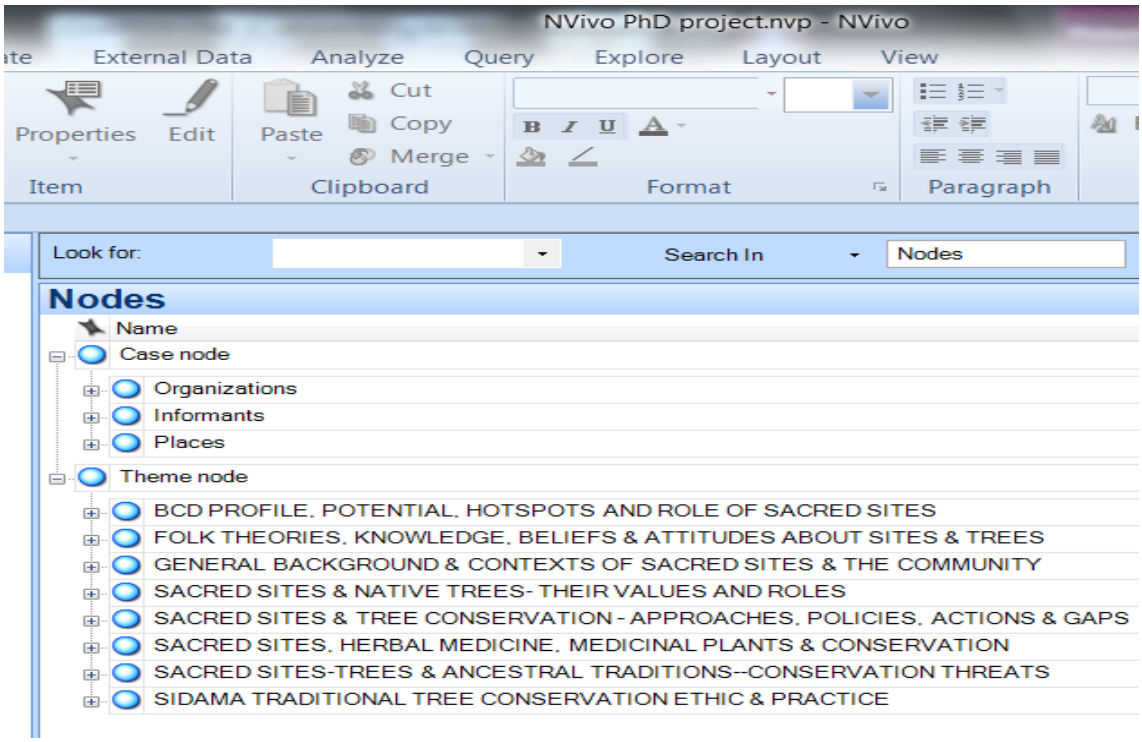


Figure 1-10 Screenshot of NVivo 10 coding structure for thematic categories

As noted, SPSS version 20/21 was used to analyze household survey. Non-parametric analysis tools were used to produce simple summary statistic, frequency counts, charts and cross-tabulations. This helped to find out, for example, socio-demographic characteristics of households with respect to maintenance of sacred groves, extent and distribution of household-based sacred groves, types and extent of tree species in household use, patterns of views and current practices vis-à-vis ancestral rituals, household access to and utilization of resources from sacred forests such as AWSF, etc. Findings from the household survey were integrated as corroborative information for qualitative analysis.

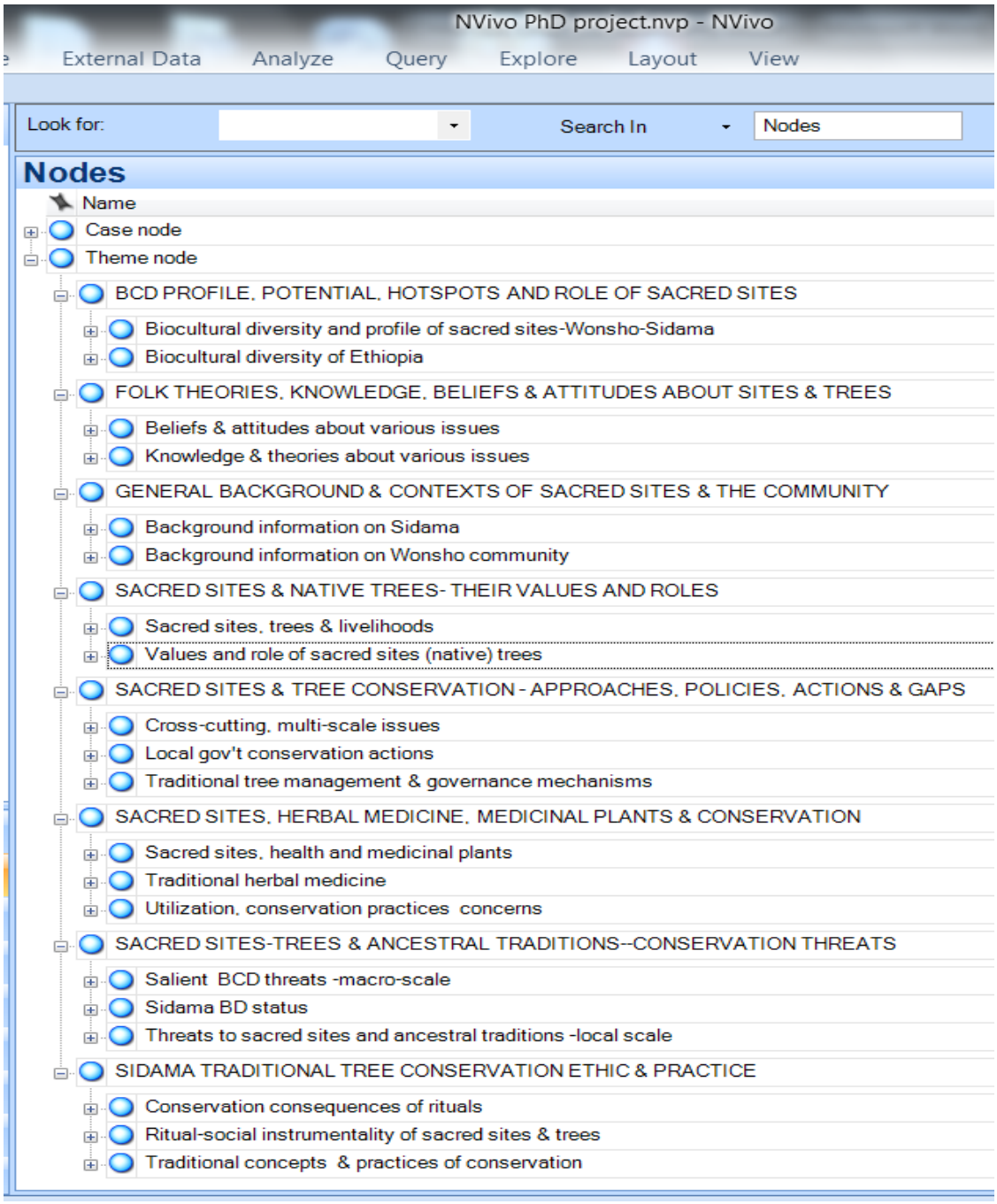


Figure 1-11 Screenshot of detail view of NVivo 10 coding for thematic categories (Nodes/codes are arranged in alphabetical order)

1.4.6 Reflections on ethical matters

The main research ethics involved issues of recognizing and respecting norms of the Abboic Community while gaining access to sacred sites, and also protecting the privacy of individual research participants. Relevant ethical rules of prior and informed consent, respect of cultural traditions and so on were used as guidelines (International Society of Ethnobiology, 2006; Association of Social Anthropologists of the UK & and the Commonwealth (ASA), 2011). A critical self-appraisal diary and report was produced to serve as a monitoring mechanism for

how I handled issues of respect for ancestral rituals and values encountered during the fieldwork (See Annex VII).

Informed consent was obtained based on the official letters of recognition, identification and support from the relevant entities (University of Kent, Hawassa University, Sidama Zone Administration and Wonsho District Administration). The key level was at the local *qebele* (Peasant Association) where the PA representatives, the AWSF leaders and other community members were contacted and informed of the research. As is customarily understood and done in a rural, Third World society, a written informed consent form was not often involved; instead, an oral explanation sufficed. However, as an extra matter of care, a written informed consent form was prepared and read out to the research participants (especially during household surveys). Consent was asked whenever interviews (individual or group) were made as well as when securing entry to sacred sites and making observational tours and audiovisual documentation of scenes, plants, animals, buildings, people, artifacts and the general local environment in general. Appropriate care was particularly made to see to it that interviews with local healers were handled sensitively, after they were assured of their rights to maintaining secrecy of their plant knowledge, and assuring them that the knowledge so gained would be utilized only for the research aim.

In summary, the research used an assortment of methods and materials within the overall framework of qualitative anthropology over a year of fieldwork to understand the characteristics of sacred forest sites and ethnobotanical traditions; consequences of their maintenance for local biodiversity, culture, livelihood, wellbeing and environment; and their conservation status, threats and governance in Wonsho-Sidama of southwest Ethiopia. Managing the fieldwork entailed a range of challenges in methodological, physical and socio-cultural dimensions and these challenges were appropriately dealt with. The process proved a very useful leaning front that added value and insight to the overall research experience.

The findings are presented in empirical chapters (Chapters 4-9) and discussed along six themes. Theoretical-empirical literature is reviewed in the following chapter, which is followed by Chapter 3 which introduces study areas and provides background information on location, history, biocultural diversity and socio-economic profile. The data chapters discuss the geographic profile, ethnohistorical origins and anthropological foundations of sacred forest sites of Wonsho-Sidama (Chapters 4 and 5); the roles sacred forests play in conserving biodiversity, medicinal plants and supporting local socio-economy, culture, wellbeing and environment

(chapters six-eight); and conservation status, threats and governance actions in place (Chapter 9). Chapter 10 provides a summary, conclusions and recommendations for future research.

Perhaps, it is better to present a tabular summary of the links among research questions, objectives and empirical chapters as well as how the latter relate to each other. A major objective answering to a set of core questions forms the basis for the empirical chapters whose conceptual structure forms a storyline of defining the historical, social and geographical profile of the SNS and custodians (Objective 1, Chapter 4); accounting for the motivations of their maintenance (Objective 2, Chapter 5); documenting evidences of positive consequences of their maintenance for BCD and wellbeing (Objectives 3 and 4; Chapters 6-8); and describing threats the SNS and ancestral institutions are facing and what is being done to address them (Objectives 5 and 6, Chapter 9).

Table 1-5 Objective, research question and empirical chapters linkage

Research questions	Research objectives	Data required	Empirical chapters
What/who are the sacred sites and custodians? What historical geography do they have? What does their social structure and organization look like? What is the current geography of sacred sites?	Describe the geographical, historical, social organizational and demographic characteristics of Wonsho sacred sites and their custodian communities	BCD of Ethiopia, Ethnohistory, origins, social organization, distribution, types, extent of sacred sites, socio-demographics of custodians, etc.	Chapter 4
Why do sacred sites exist? Why are they maintained?	Understand the belief, knowledge and practice system pertaining to biodiversity and conservation, to answer why Wonsho Sidama sacred sites are maintained	Local perceptions, views, models, experiences, behaviours, practices, attitudes, etc. on natural world, biodiversity, conservation, sacred sites, trees; beliefs about origins of sacred sites, connection between ancestors and scared sites; etc.	Chapter 5
So what? What is the consequence of such maintenance for biocultural diversity, local health and wellbeing?	Document the evidences of positive consequences of the maintenance of sacred sites for local biodiversity, culture and livelihood, to answer the question of what role sacred sites play in bio cultural diversity conservation in Wonsho Sidama	What biodiversities are conserved? Types and extent; biodiversity conserving contexts; local models of the role of sacred sites in BCD conservation; livelihood and ecosystem services of sacred sites; etc.	Chapter 6 & 8
	Describe the evidences of positive outcomes of sacred sites on local health, wellbeing, herbal medicine and medicinal plants	Background characteristics of Wonsho community's health context and herbal medicine, the state of herbal medicine and the distribution of its knowledge and use; Wonsho sacred forests' broader health benefits; conservation of medicinal plants and sacred forest sites' roles; etc.	Chapter 7
What is happening to sacred sites/natives	Identify the drivers and processes of threats facing	The facts, processes and drivers of BCD endangerment; local perceptions and	

trees and ancestral traditions? What is their current state and future hope?	Wonsho sacred sites, trees and associated values	models of endangerment; views on the future of sacred sites and ancestral traditions.	
What do the governance context and management action look like?	Examine the existing sacred sites governance frameworks and conservation actions	BCD policy contexts; local views of on the relationship between central government and sacred sites; organizational structures, characteristics and principles of traditional sacred sites governance; relationships with formal institutions; current BCD conservation and management actions; gaps	Chapter 9
What does the study conclude? What are the implications & contributions?	Objectives 1-6	Summary of main findings, conclusions, implications and contributions of the study	Chapter 10

Chapter 2. Literature Review

This Chapter summarizes literature on salient concepts that situate the research problem and data for this study. I begin by reviewing the meaning of key concepts and theoretical approaches in biocultural diversity conservation. Different approaches to conservation are also reviewed, with a particular focus on the characteristics, dynamics and role of traditional knowledge and institutions relating to the botanical world and biodiversity conservation. The nature, role and status of sacred sites are also reviewed. Furthermore, debates on the nature and dynamics of local resource ownership and management norms and their interaction with formal institutional frameworks and the implications of this for conservation are reviewed. The Chapter culminates in presenting various positions that surface in the literature regarding the need for supportive policy instruments for local communities, institutions, livelihoods and knowledge systems relating to biocultural diversity.

2.1 Key concepts and theoretical approaches in biocultural diversity

2.1.1 Key concepts in biocultural diversity

There are debates on the idea of diversity, the nature of the diversity of life and culture, the dangers of increasing homogenization (Redford & Brosius, 2006), the fact and scope of their loss and the need for and approaches to conserve them. Some have attempted to define diversity but an agreed meaning and ways of measuring it are lacking (Nabhan et al, 2000). Some provide philosophical underpinnings of diversity, arguing for the Diversity Principle, which forms the basis for diversity in life and culture and is essential in defining human consciousness itself (Shiva 1998; Harmon, 2001; Sponsel, 2013). Also known as 'deep diversity,' the Diversity Principle stresses the moral imperative to preserve the diversity of culture and nature (Harmon, 2001; Eric, 2001; Maffi, 2005).

The definition of the term 'biodiversity' stresses the varieties of life forms on the Planet (Naranjo, 1995; Dobson, 1996; Loh & Harmon, 2005). The Convention on Biological Diversity's (1992) definition of biodiversity, emphasizing diversities in genes, species and ecosystems, is generally accepted and commonly employed. The sheer diversity in nature is astounding, composed of its immense material, cultural, aesthetic and spiritual diversities (Harrop & Pritchard, 2011). Beyond the easily visible and material, the deeper meaning and

moral aspect of diversity is also well appreciated (Harmon, 2001; Eric, 2001; Maffi and Woodley, 2010; Sponsel 2013).

With respect to cultural diversity the literature seems to lack a specific definition. However, many important works on biocultural diversity provide key dimensions that make up culture or its diversity, often emphasizing the ideational meaning of culture (see, for example, UNESCO, 2001; Maffi, 2005; Pretty, et al, 2009; Loh & Harmon, 2014). From these readings, it seems safe to suggest that cultural diversity, in general, entails differences in ways of lives, languages, livelihoods, social institutions, beliefs and knowledge systems across time and space.

Biocultural diversity is a concept signaling connection between biological and cultural diversity (Brosieus & Redford, 2006). Loh & Harmon (2005:231) defined it as

> …the sum total of the world's differences, no matter what their origin. It includes biological diversity at all its levels, from genes to populations to species to ecosystems; cultural diversity in all its manifestations (including linguistic diversity), ranging from individual ideas to entire cultures; and, importantly, the interactions among all of these…

The beliefs and worldviews, livelihood and practices, knowledge base and language, norms and institutions form the interface between biodiversity and cultural diversity (Pretty, et al, 2009). The concept can be seen as devised to offset the predominantly biocentric approach to conservation that has ignored the cultural dimensions of diversity (Maffi, 2005; Sponsel, 2013), with a view to broadening the nature and meaning of diversity in all its forms. Due to the increasing awareness among concerned parties of the essential connections between the two, and the importance of traditional communities in conservation, biocultural diversity, finally emerged in the 1990's (Orlove & Brush, 1996; Maffi, 2005).

Understandings about the connections between culture and nature in the biocultural diversity debate, however, are not uniform. Some have emphasized the cultural side, while most the biological, in a separatist approach. The endgame has often seemed to be using the idea of cultural diversity for the furtherance of biodiversity conservation. Considering cultural diversity as a co-opted element of biological diversity seems to have dominated conventional conservation thinking (Redford & Brosius, 2006), although works focusing on an integrative approach are growing (Pretty, et al, 2009; Loh & Harmon, 2014). Maffi & Woodley (2010) and Sponsel (2013) provide a useful conceptual framework for this integrative interface between biodiversity and cultural diversity. The aim of this framework is to show that it is not just cultural diversity for biological diversity or vice-versa; rather, it is integrated biocultural diversity, each for the benefit of, not at the cost of, itself and the other.

Such framework thus stressed the inextricable link between biological and cultural diversity. The geographical convergence of biological and cultural diversity throughout the world has especially gained attention in the biocultural diversty and conservation discourse. Sponsel (2013) calls this geographical coincidence the Diversity Principle, while Maffi & Woodley (2010) call it the 'true web of life'. The densities of ethnic groups and languages spoken in a given area have been shown to correlate with biocultural diversity richness (Pretty et al, 2009) and these are now considered as among key proxy indicators for such diversity. The search for and focus on biocultural diversity hot-spots has climbed atop of some conservation organizations' agendas.

Before closing this sub-section, it is perhaps fitting to note at this juncture on the concept of culture as it is used in this study. The literature of biocultural diversity conservation often highlights the ideational dimension of culture, seemingly neglecting the material cultural component. This study, while appreciating the ideational as primarily important in Wonsho sacred sites study, considers the material component also important. Further, the biocultural diversity literature also appears to project what Siebert (2008: 165) calls a "static, isolated and romanticized concept of culture." An overt emphasis on traditional cultural systems as perennially linked to specific physical environments, the tendency to project indigenous peoples and traditional knowledge as the all-important matters and underemphasizing non-indigenous communities in global biocultural analysis, etc. are some of the issues critics raise concerning the field of biocultural diversity (see, for example, Cocks, 2006; Brosius & Hithner, 2010; Martin et al, 2012). This study, while emphasizing Wonsho Sidama cultural traditions as enduring institutions with important boundary markers, also considers the culture as dynamic, living system that transcends boundaries and shape and is shaped through interactions across multiple scales over time and space.

2.1.2 Theoretical approaches in biocultural diversity conservation & people-plant relations

A body of theoretical literature setting out conceptual frameworks for interface between biodiversity and cultural diversity and the role of traditional knowledge and institutions as they relate to the natural and botanical world has been growing. An important framework emerging from this is the Biocultural Synthesis which sees an inextricable link between biological and cultural diversity, whereby the former (genes, species and habitats) co-evolve and co-adapt with the latter (knowledge, values, beliefs, practices and institutions) (Balée, 2006; Dove & Carpenter, 2008; Maffi & Woodley, 2010). This framework facilitates theoretical understanding of how human socio-cultural systems and biological systems co-adaptively change and

influence each other. It sheds light on the patterns of dynamic interaction and interdependence between a local community's socio-cultural systems and conservation consequences of maintaining this for sacred sites and biodiversity.

The Biocultural Synthesis, although often associated with biocultural anthropology and evolutionary theory, is also related to the conceptual framework of Historical Ecology employed by anthropologists, geographers and ecologists for understanding human–environment interaction and biodiversity conservation, explaining historical and cultural embeddedness of physical places created and recreated through time (Posey, 1999; Balée, 1998, 2006; Dove & Carpenter, 2008). Historical Ecology contends that cultural landscapes are composed of cumulative layers of history, progressively created and maintained by a people who inhabit that ecosystem and dialectically interact with the environment and biodiversity, mutually shaping each other's development. This is crucial in understanding the imprint of human-environment interactions in a given temporal and socio-ecological context (Balée, 1998, 2006; Chouin, 2008).

Broadly applied to human ecology, culture and health, the Biocultural Synthesis, or in this sense, the Biocultural Approach, deals with the interplay among these systems (Goodman, 1998; Khongsdier, 2007). With specific reference to human–plant interaction in the sphere of, for example, health, Biocultural Synthesis deals with the co-adaptation of plants and people's use and knowledge of them. Hsu (2010) noted this model has gained dominance in medical ethnobiological researches. Within a Darwinian evolutionary framework, ethnobiological researches have tried to account for the nature of human–plant relationships and the origins of people's knowledge and use of them for various needs, such as medicinal, in the context of mutually influencing human-environment interactions (Ingold, 1992; Croll & Parkin, 1992; Ford 2001; Harris, 2010). A social science paradigm, Social Constructionsm, criticizes the 'overt scientism' of Biocultural Synthesis and argues "plants and their parts become cultural artifacts pregnant with situational and social significance" (Hsu 2010: 21). However, the two approaches need not be viewed as necessarily incompatible, as each may be better suited to explain certain dimension of the people-plant relationship.

2.2 Botanical foundations

2.2.1 Plants in human history, society and economy

A review of ethnobotanical works shows the fascination of scholars with the centrality of plants in human material, cultural, and spiritual realms. Ethnobotany itself is defined within this

framework (See, for example, Alcron, 1995; Balick & Cox, 1996; Cotton, 1996). There has been philosophical and applied interest in plants from ancient times: Aristotle (384-322 BCE) and Theophrastus (370-285 BCE) proposed the first principles of botanical philosophy (Harris, 2010).

As Cotton (1996) summarizes, within ethnobotany itself, utilitarian, cognitive and ecological perspectives have been used to understand the place of plants in human society. The utilitarian approach looks at how people use plants. Cognitive ethnobotany was influenced by cognitive anthropology. It focuses on peoples' beliefs, symbolizations and perceptions of plants, and how these perceptions and beliefs affect their use and management of plants. Folk taxonomy and the place of plants in myths, art and rituals is one of its central interests (Berlin, 1992; Cotton, 1996). The ecological approach stresses "how the management and exploitation of plants can influence–or be influenced by—the characteristics and dynamics of the local environment," (Cotton, 1996: 62).

Plants make the very foundation of humanity in its entirety (Schultes & Raffauf, 1992; Alcron, 1995; Balick & Cox, 1996; Cotton, 1996; Minnis, 2000; Deur & Turner, 2005; Harris, 2010; Weckerle et al, 2010). It is quite inconceivable to think of the world of humans as devoid of plants (Minnis, 2000). Archaeological evidences show the place of plants in people's lives from ancient times. The ideologies, religious beliefs and practices, livelihoods, medicines, diets, etc., of people all have depended on plants; and that the development of human material and non-material culture has been tied to plants, rather than animals (Deur & Turner, 2005).

2.2.2 Botanical foundations of the sacred

Indigenous plant knowledge and use provides the foundations of the meaning of life, death and the supernatural. Plants occupy key positions in religious rituals and other socio-cultural beliefs in traditional societies, serving as gateways to the sacred world (Minnis, 2000). The world of the sprits is approached with various uses of plants, whether it is to approach benevolent or malevolent spirits or to worship the Supreme Being (Anderson, 2002).

In many societies, plants are a particularly important part of people's familial lives, connecting ancestors and their progenies. Ancestors may be represented by trees. Trees are objects of symbolic worship in many parts of the world, from India, China, and Ethiopia to the Native American Indians. Trees have had important place in the classical world and were linked to gods; "in cult and myth, many of the gods of the classical world were associated with particular plants…," (Ruck, 1995: 131). Trees and forests, for example, have been worshipped in Indian

tribal societies for centuries, where over 27 tree species were considered sacred objects of worship (Rao, 2002). Trees are also important in religious beliefs of the Maya communities (Anderson, 2002), and among several other indigenous American communities, it is common to take plants as friends of people (Nabhan et al, 1996). In short, trees have played an instrumental role in human culture and religion serving to define the ethno-linguistic, sociocultural and geopolitical identity of a group. They have received active agency in human life transcending their simple plant life, commanding ethical attitudes and respects from people, and are believed to be capable of moral power (Descola, 1996).

The centrality of plants in human culture is most evident in medicinal and spiritual quests. The knowledge of plants' healing power for both physical and psychological illnesses by herbalists is a key force that commands the attention and respect of community members (Schultes & Raffauf, 1992). There is power believed to be resident in trees. Medically efficacious plants, particularly those inducing psychotropic effects, were regarded in high esteem; thus herbalists would often approach plants not as an "inert vegetable but as an anthropomorphic being" (J, Wilbert, quoted in Schultes & Raffauf, 1992:19), as those that connect humans to the gods and the spirit world (Pennacchio et al, 2010). In some traditional communities, herbalists regard trees as their teachers, as is reported among Amazonian Indians (Schultes & Raffauf, 1992; Freedman, 2010); the Dogon (Van et al, 1992); and in India, where, it is reported people speak to plants by singing to them (Shiva, 1998) or speaking to them in China (Hsu, 2010). Shamanic medicinal plants are treated in a gendered way in some Amazonian Indian communities: some plants are masculine, others feminine, impersonated by the gendered spirits (Freedman, 2010).

2.2.3 Traditional herbal medicine

It is difficult to think of a people's health concepts and medical system without plants. According to WHO, cited in Cotton (1996), the term 'traditional medicine' includes all forms of medical systems that fall outside of scientific medicine. Traditional herbal-medicine in particular continues to support local communities and indigenous people globally, and is deeply engrained in a people's ethnoecological and ethnobotanical knowledge systems (Berlin, 1999; Whistler, 2000). The role of traditional medicine has long been recognized as an alternative medical system as over 3 billion people all over the world depend on it for primary health care (Cotton, 1996).

The use of plants in traditional medicine has received considerable attention in ethnobotany and the closely related field of ethnopharmacology. Plant chemicals have been applied for various medical and related purposes from time immemorial (Cotton, 1996). These plant chemicals have

proved to be crucially useful in daily lives of traditional peoples: cosmetics, pigmentations, adhesives; preserving and flavouring foods; decoration of articles and poisons in subsistence activities.

Medicinal plants as they are used in the ethnomedical system present biomedically-oriented scientists, health policy makers and ethnobotanists with concrete, material facts to reckon with. Folk identification of biologically active plant species has proven useful and a wealth of information accumulated over millennia has been used as an important spur in the discovery of the world's known drug resources (Schultes & Raffauf, 1992; Hofmann, 1995; Balick & Cox, 1996; Cotton, 1996; Brush, 1996; Shiva, 1998; Harris, 2010).

Review of the literature further stresses the preponderance of plants in traditional medicinal use across time and space. For example, ancient Greek scholars compiled a book of herbal medicine documenting over 500 medicinal plants (Balick & Cox, 1996). In China, documented sources indicate historically, there were about 12,807 species used in medicinal treatment, of which 1582 were animals, 11,146 plants and 81 minerals (Pei, 2002). Among the Buganda in Uganda, more than 200 plant species were used by healers (Hamil et al, 2002). The Dogon utilize well over 200 plant species (Van et al, 1992); while over 130 plants were used by Samoans (Whistler, 2000).

2.3 Ethnobotanical beliefs and knowledge systems

2.3.1 Traditional conceptions of natural & botanical world

The way a people conceptualize plants is part of its general conceptions about the natural world, which is often dynamic (Ellen, 1996b). As Descola (1996) notes, conceptions of nature are socially constructed, vary across cultures and are shaped by dynamic historical processes, as opposed to the long established view of culture—nature division in western societies. Traditional people hold a holistic view of nature and the place of man in it (Ellen, 1996b). Palsson (1996) argues traditional conceptions of environment might be viewed best in a communalistic paradigm, which promotes the unity of man and nature, as opposed to western paternalistic paradigm of human-environment relationship. The latter's view assumes the superiority of humans over other animals, of culture over nature, and has persistently continued to be a dominant ideology (Howell et al, 1996).

Traditional conceptions of natural environment, especially the forest, often hold a view of nature as infused with soul, an animism giving non-human life the capacity to be embodied and

capable of possessing moral codes; animals and plants are perceived as possessing human dispositions and behaviours (Descola, 1996). Ellen (2006a) reports on the Nuaulu conceptual engagements with forests, stating that forest is never characterized as something that is homogenous; it is a complex categorical construction; that there is an inner connection between history, identity and forest and that forest is something capable of moral nature. Similarly, folk-science has included an active belief in spirit world, which among other things, acknowledges spiritual and psychic powers of plants (Schultes & von Reis, 1995; Anderson, 2002). The idea of unity and diversity of life at the core of traditional communities' environmental perceptions and sacred landscapes are the basis for practical ecological matters, having far-reaching consequences for human resource utilization and everyday social life (Atleo, 2005). This is echoed in what Árthem (1996) calls eco-cosmology, which he argues is a concept that best captures the traditional model of human-nature relationship. However, this notion of traditional peoples should never be seen as fixed reality, nor should traditional people be considered as inherently ecological conscious. They and their institutions are dynamic ones capable of changing and adapting to new situations (Baleé, 2005; Sheridan & Nyamweru, 2008).

2.3.2 Ethnobotanical knowledge systems

The wealth and value of traditional botanical knowledge is often expressed through the idea of indigenous people as 'living museums' for botanical information. Balick & Cox (1996) argued that accumulated folk botanical knowledge was the basis for systematizing botanical collections and research. Indigenous people have direct links to, and dependence on, plants in their everyday lives (Prain et al., 1999). A local herbalist in an indigenous community may possess an amazing array of botanical knowledge which may surpass that of botanists (Nelson, 1998).

Studies have documented the manner in which traditional botanical knowledge is produced, transmitted and utilized. In a review of the nature of traditional botanical knowledge, Cotton (1996) has argued that such knowledge is dynamic. Its distribution is also affected by a number of social, political and personal dynamics in society. Indigenous people use experimentations, observations and adaptations to create new knowledge or to incorporate a borrowed one into their existing knowledge system (Prain et al., 1999). The way in which such knowledge is disseminated orally has also drawn much attention. Knowledge is transmitted from parents to children, older to younger generation through practical in situ learning.

The other key aspect that has drawn attention of researchers is folk classification of plants, which "refers to how members of a language community, the "folk", name and categorize plants and animals" (Brown, 2000; 65). It is argued that people around the world use certain

classificatory schemes to name and categorize plants in their environment. Ethno-taxonomy as part of the general biological classification system is comparable with the scientific classificatory schemes; folk plant taxonomic principles are comparable among all traditional societies (Berlin, 1992). However, folk classification is not something that is static, but it is a dynamic process (Ellen, 2006b).

2.4 Approaches to biocultural diversity conservation

This section summarizes literature on the concept of conservation, approaches to conserving biocultural diversity and debates on the nature and relevance of traditional conservation systems.

2.4.1 The idea of conservation and its assumptions

The idea of conservation is popularly expressed through global media, environmentalism and 'green' movements (Townsend, 2013). However, the manner in which nature, culture and conservation have been conceptualized is biased towards western views of the world (Igoe, 2004; Bhagwat et al, 2011). It has considered nature and culture dichotomous, and antagonized one over the other (Ellen, 1996b; Dove & Carpenter, 2008), which most now dismiss as a false dichotomy (Fairlead & Leach, 1996; Posey, 2000), and rather focus on the unity of cultural and biological diversity, and how this conception is inherent in many traditional views of the world, wherein environment, culture and people are linked (Alcron, 1995; Ford, 1996; Maffi & Woodley, 2010; Sponsel, 2013), and having positive, albeit unintended, conservation consequences.

The discourse on biodiversity conservation, culture and society has similarly been tilted towards western assumptions being globally legitimized and imposed on local peoples throughout the world. The latter are blamed for alleged lack of "conservation values", and often were encouraged to emulate western concepts of conservation to the detriment of their own epistemologies, ecologies and livelihoods (Cunningham, 2001; Igoe, 2004; Johnson, 2006) and this has often led to a worsened state of livelihoods, biocultural diversity and community development.

More recently, attention is drawn to the link between the biological and cultural diversity and the positive role of traditional knowledge and indigenous peoples in conservation (Belem Declaration, 1988; Cunningham, 2001; Pilgrim et al., 2009; Pilgrim & Pretty, 2010; Loh & Harmon, 2014); and addressing the loss of both in holistic approach is global society's urgent

assignment (Harrop, 2003) and its "ethnoecological" (Zent et al, 1999) and "moral-ethical" (Harmon, 2001) imperative. This imperative is further supported by the compelling justifications for conserving biocultural diversity, including their intrinsic, moral, anthropocentric, scientific and other values (Plotkin, 1993; Harris, 2010); the richness of ethnoecological knowledge in areas of rich biodiversity (Maffi, 2001; Sponsel, 2013); the conservation knowledge in endangered languages (McNeely, 2001); the practical development and livelihood benefits of preserving these heritages as a matter of basic human rights, cultural survival and compensation for past colonial crimes (Posey, 1996; Johnson, 2006). However, some scholars suggest the need for cautiousness in such matters arguing that the cultural preservationist approaches in biocultural discourse may impose unnecessary categories on local communities and traditional knowledge systems by painting a static, romantic notion of these peoples and their culture. The parallels and analogies between biological and cultural diversity need also be taken cautiously (Brosius & Hithner, 2010; Martin et al, 2012).

2.4.2 Conservation approaches

A dominant paradigm of conservation is based on the concept of protected areas, itself built on the idea of wilderness as a natural world shaped without human influence (Orlove & Brush, 1996; Igoe, 2004). Different strands of conservation models have been promoted within this broad framework, such as species-based conservation, flagship species conservation and so on (Cunningham, 2001). The ecosystem approach within this framework is relatively inclusive as it takes into account the whole ecosystem or habitat. In recent decades, a paradigm shift has occurred in conservation approach to include local communities and their beliefs, institutions and knowledge relating to biodiversity and its management. Conservation is now recognized as more of managing people and their complex values, behaviours and institutions all of which are its key incentives (Cotton, 1996; Cunningham, 2001). Out of this has grown what has come to be known as ‘integrated biocultural diversity conservation’ that, among other things, views local people and their traditions as endangered entities and essential elements in sustainable biodiversity (Stolton & Dudley, 2010; Higgins-Zogib et al., 2010; Toledo, 2013).

Some specific strategies, such as extractive conservation appear to have two senses in the conservation literature: in one sense, it is the expropriation of local ethnoecological knowledge by outside agents for advancing global goals with little or no returns for owners of the knowledge (Posey & Dutfield, 1996) and is another form of colonialism (Shiva, 1998; Johnson, 2006). The other sense is one that encourages use of resources by local people within protected areas (Cunningham, 2001). This latter sense is *in situ* conservation which entails active involvement of local communities and ensuring their resource use and access rights (Brush,

1996; Zent et al, 1999). Within the *in situ* conservation strategy, participatory conservation, community-based conservation, co-management, participatory forest management and other similar concepts broadly entail recognition of the roles of traditional knowledge and local people in conservation, their empowerment, and protection of their rights to benefit sharing, cultural survival, and livelihood development (Harrop, 2007). This approach, though, continues to be controversial and some dub it as mere rhetoric in the politics of biodiversity conservation, citing lack of real empowerment where local people own conservation management processes (Igoe, 2004).

In recent years, the rise in Indigenous and Community Conserved Areas (ICCAs) and Community Conservation Areas (CCAs) is an evidence for a shift in conservation approaches. Linking conservation and development in a way that benefits local peoples and promotes their livelihoods while at the same time conserving biodiversity has gained an increasing support (Toledo et al, 2001; Higgins-Zogib et al., 2010; Maffi & Woodley, 2010; Verschuuren et al., 2010; Anon, 2014). A related approach, biodiversity hotspots, argues that communities with strong conservation ethic are good allies for biodiversity conservation and development (Bhagwat et al, 2011). The emphasis is on those geographic areas and communities of the world where the moral agendas of conservation and development coincide.

2.4.3 The nature and relevance of traditional biodiversity management

A dominant view in the literature promoted the notion of native stewardship and advanced the arguments that threats to biodiversity often do not come from small-scale native populations; that specific native management practices, based on rich and extensive environmental knowledge, have often maintained animal and plant populations (Durning, 1995; Orlove & Brush, 1996; Nelson, 1998; Prain et al., 1999; Toledo et al, 2001; Fincke et al, 2008). However, it is generally understood no human society is by nature pro-conservation (Orlove & Brush, 1996; Balee, 1998). Traditional knowledge is not inherently biodiversity-friendly; some traditional practices may actually encourage species loss (Cunningham, 2001).

A related debate is whether traditional communities undertake conscious conservation of species. There are generally two views in this debate. One argues traditional communities engage in inadvertent conservation; conservation consequences of traditional practices are instrumental by-products of livelihood engagements and socio-spiritual conceptions of nature and species. Certain plant species are, for example, necessary for the expression and conduct of rituals (Nabhan & Joe, 2002). Traditional communities do not actually have any specific, inherent conservation urge or ecological consciousness (Siebert, 2008). It is better described as

what local people do as part of their subsistence and social strategies wherein there may be some bad elements, as there certainly is in modern approaches (Ellen, 1996a). The other view argues that conscious conservation practices do exist in traditional societies (See for example, Alcron, 1995; Brush, 2000; Estabrook, 2000; Ford, 2000).

However, the current consensus is that traditional knowledge is indispensable in biodiversity conservation. Many traditional resource management practices that were formerly criticized as wasteful and irrational are now recognized as having useful conservation values (Ellen et al., 2000; Hall et al., 2000; Sillitoe, 2007).

2.4.4 Local conceptions and institutions of resources use, access and ownership

Cunningham (2001) summarizes existing schemes of local peoples' conceptions of place, territorial access and resource use from a cognitive anthropological perspective. This explains how local people express their territorial attachments and symbolisms of access to, and control of, resources in a given territory. One way of affirming territorial attachment and resource ownership is, for example, through conducting rituals at designated spaces in the landscape (Fowler, 2002; Nyameru et al, 2008). Symbolic territorial and ethnogenetic myths often link a local group to a territory and the group invokes that symbol to affirm its rights to resources and its geopolitical identity (Schlee, 1992). These provide important context and authority for use and management of natural resources (Cunningham, 2001).

A related concept is regimes of resource tenure. Typologies of resource tenure vary across time and culture; however, existing typologies may be grouped as private, common, state, and open-access property regimes (Brush, 1996). Conservation within open-access regimes is particularly important in the context of this research. Common resource regimes such as sacred sites risk the labelling of the "tragedy of the commons"; however, it is refuted that under "un-disturbed," native institutional context, these regimes tend to be rather strongly supportive of conservation and sustainable resource use (Johnston, 2006), though this should not regarded as ecological consciousness of motivation on the part of the people (Siebert, 2008). Local communities have their own customary norms for maintaining resource in such regimes (Ostrom 1990). For millennia, these norms have provided a secure tenure for local communities.

At the core of customary resource ownership and access norms is the idea of sacred landscape. Resource tenure is not merely a matter of instrumental utility; it rather is mainly a matter of strong psychosocial and spiritual attachment (Gold, 2001). Meaning of space, its use and

management are rooted in a sacred human-land relationship, an intimate bond that unites man to his land (Parajuli, 2001). People attach a sense of sanctity to land (Plenderleith, 1999) and the symbolism involved is a crucial element in an inadvertent biodiversity conservation (Gray, 1999; Senanayake, 1999; Ford, 1999). This cosmo-geography supports the idea of a Diversity Principle (Sponsel, 2013), and strengthening it as a key ally for biocultural conservation is crucial (Dutfield, 1999; Bernbaum, 1999); it is worth-protecting (Turner et al, 2005).

Consequences of the interaction between informal-formal resource ownership and access norms for conservation focus on how local community rights are eclipsed by globally legitimated national resource conservation goals (see Nelson, 2010). Local communities get into complex struggles at multiple levels concerning resource governance. Their claims to ownership of ancestral land are often a bone of contention (Li, 2000; Igoe, 2004; Wily, 2008; Nelson, 2010). Problems also arise when globally legitimated conservation laws for establishing protected areas are applied to areas in local communities on the basis of a 'wilderness' concept. This denies peoples of their human, cultural history tied to a space (Shiva, 1998; Anderson & Berglund, 2003). The other issue is supplanting local communities for national development goals and thus disrupting their lives leading to adverse consequences for conservation (Igoe, 2004). In view of this, then, amalgamation (and perhaps negotiation) of customary norms relating to conservation with formal conservation laws is important (Harrop, 2003), taking into account, though, the fact that the conservation and development motivations and goals of formal institutions may not be necessarily compatible with that of local communities (Siebert, 2008). Community-based participatory conservation takes this assumption that customary institutions can co-exist with formal laws, for better conservation and management of natural resources (Monjane, 2010). Inclusion of these customary resource use regimes in national policies is a crucial, positive factor in the integration of conservation and development (Eaton, 2005).

A particular mention of forest resource tenures is in order here. Collective resources such as sacred forest sites often thrived within this sacred, shared trust. Local communities have developed resilient and often sustainable forest tenure systems, generally well adapted to local conditions (Egbe, 2002). However, forest tenures have been evolving across different cultures and new elements have arisen and are threatening their resilient institutions adversely (Amanor, 2002), although such elements and interactions are not necessarily detrimental, nor are the traditional cultural institutions static and inherently vulnerable; rather, they are dynamic and often make and remake themselves through interactions (Sheridan & Nyamweru, 2008) The dynamics of interaction with national forest laws have, though, often adverse effects on the former, though participatory forest management combining elements of both customary and

formal laws is becoming popular. Recognizing traditional tenure relating to forest and re-strengthening it is thus very important (Eaton, 2005).

2.5 SNS: showcases for biocultural diversity conservation

2.5.1 Meaning, categories and basis of sacredness

There has been an increasing academic, governmental and NGO interest in interdisciplinary research on sacred sites and their merits for bio-cultural diversity conservation since the 1990s (Sponsel, 2008). This is partly due to growing awareness of the roles religion plays in addressing global environmental and climate change problems. Sacred sites are generally linked to traditional religious institutions of indigenous communities.

The term 'sacred' invokes an aura of fear, uniqueness, respect and power. According to Schaffer (2003), the term stands in contrast to profane, both central to a Durkheimian conception of religion (Durkheim, 1965). Thus, sacred sites are symbols of power and deep belief (Sponsel, 2008). They are socially constructed places centring on natural and other man-made objects as epicentres of local ecology, community life, and livelihoods. They are landscapes with cultures sustained by on-going interaction and interdependence between a people and its local environment (Chouin, 2002). Sacred sites include forests, trees, rocks, mountains, waterfalls, rivers, the sun, moon, stones, caves, etc. Temporally, sacred sites may vary from those that have in existence for millennia to those recently created. The entire landscape may be regarded as sacred though some elements of the environment may be more sacred than others (Sponsel, 2008). Among the Amazonian Indians, for example, various landscapes and topographic features such as waterfalls, rivers, forests, rocks, mountain tops, caves, plants, etc. are sacred (Schultes & Raffauf, 1992). Mountains are considered more sacred in Tibet (Salick et al., 1999, 2007). Indigenous people across the world regard sacred sites such as forests and mountain tops as the navel of the earth, the point of connection between the creator and the creation, between the ancestral spirits and the progeny (Schultes & Raffauf, 1992; Johnston, 2006).

There are socio-cultural dimensions to any form of sacred sites regardless of their bio-physical character. Hence, all sacred sites are culturally defined, as what makes an entity sacred is the social construction of reality that is invested in it. An entity such as a tree is sacred because of people's belief that there is some connection between trees and deities or ancestral spirits (Schultes & Raffauf, 1992). There is no sacredness intrinsically in a place or a thing in and of itself. Sacredness resides in the socially shared belief of a social group about an entity.

It is important here to note about the dynamic nature of sacred groves. With increasing recognition of community based conservation, recent years have seen a growing inerest in the sacred groves of the third world such as those in Africa with respect to understanding their origin, maintenance motivations and characteristics. A popular view about sacred groves has been one that saw them as relics from the primeval past forests. But emerging researches have now shown that sacred groves are human artifacts and historically changing landscapes shaped by human action over time (Sheridan & Nyamweru, 2008). They are ecologically and socially dynamic and complex, with changing meanings and compositions (Hellerman, 2009).

2.5.2 Multifaceted roles of SNS

The multi-faceted roles of sacred sites have drawn the attention of scholars: their social, cultural, economic, political, aesthetic, recreational and related functions. Sponsel (2013) argues about the practical relevance of sacred sites for socio-economic development as centres of ecotourism, due to their biodiversity conservation values, though some are cautious about exposure of sacred sites to tourism (e.g., Johnson, 2006). In particular, sacred forests are evidence of the human-influenced nature: they demonstrate the way traditional people have managed forest sites. Such forests are not only the collection of trees or those plants that provide livelihood functions but they define the holistic socio-spiritual identity of an ethnic group. They serve as the epicentres of a local community's social-cultural, spiritual, economic and political activities thereby contributing towards community identity expression, cohesion, reinforcement and continuity (Posey, 2000). They are places and institutions of cultural memory (Chouin, 2008) and important locus for public administration of justice and community relationships (Ross, 2008). As noted above, sacred groves are, however, not static entities; rather, they are dynamic institutions whose multifaceted functions in socio-cultural, political, ecological and symbolic areas change with changing conditions (Siebert, 2008).

The argument that sacred sites, particularly forests, are now important hotspots for biodiversity conservation is supported by empirical study findings. Posey (2000) argues that sacred forest sites have great biodiversity conservation importance. Anderson et al. (2005) also argue that in many regions of the world, sacred sites have been shown to have a major effect on conservation, and environment due to the special precautions and restrictions associated with them. The 1972 World Heritage Convention of UNESCO recognizes the values of the natural and cultural heritages of humanity, dubbing them as repositories of biocultural diversity (Posey & Dutfield, 1996). Similarly, IUCN’s classification of protected areas recognizes them as important (Cunningham, 2001).

Literature makes particular reference to the close link between sacred sites, rituals and trees wherein conservation of both sites and trees is achieved. While human societies have essentially depended on trees establishing institutions of sacred ecology, trees in their own turn have also benefited from this interaction. This is the direct plant biodiversity conservation values of sacred institutions. As noted elsewhere, the conception of natural environment, especially the forest, held by traditional people often unites people with nature and creates a tree-friendly relationship. Their attitudes towards sacred forests are steeped in rich socio-spiritual imageries, providing a sense of morality to the forest as an entity and such a sense then creates a chain-reaction effect which is benign to the environment. The values they attach to their sacred forest sites as part of the general environment are materially useful and culturally meaningful (Ellen, 1996a).

Ethics and religious beliefs are the centre of plant conservation. The principles of conservation of plant species are inherent in the daily lives and regular rituals, as people and plants are intertwined together in the web of the spirit world and such principle dictates that people should behave ethically towards plants. What Cunningham (2001) calls a 'theology of the environment' is fundamental to conservation beliefs and practices of traditional societies. Sacred ancestral rituals with their characteristic territorial cult system, a system that is based on veneration of ancestral spirits at sacred groves, play key roles in instilling and re-instilling conservation values and ethics.

Similarly, mythologies wherein certain tree species are eulogized in many tribal societies, are very important factors for the conservation of plant species. For example, Salick et al. (2007) report how sacred mountains have served as hotspots for conservation of important plant species in the Himalayas region of Tibet, arguing that Tibetan sacred sites are ecologically unique and important for conservation on varying scales of landscape, community, and species. In the same region, Anderson et al. (2005, p. 3066) noted "… As a result of limited human activity due to taboos and prohibitions, sacred places frequently possess old growth vegetation, integrated nutrient cycling with high soil fertility, and many ecologically and socially valuable plant species." Salick, et al (1999) also argue that there is a direct relationship between biodiversity conservation and culturally useful plants, stating that the Dusun people of Borneo consider sacred mountain forests are the home of spirits and such a cosmology has helped to conserve plants found there.

Rao (2002) argued that in India, tree folklore has contributed to conservation of 25 tree species. Similarly, in Kenya's coastal communities, traditionally protected sacred sites harbour many of the threatened endemic fauna and flora (Nyamweru et al, 2008; Metcalfe, et al, 2009; GVI

Kenya, 2014; Githitho, n.d.). The Maya of Mexico have a religious philosophy that strongly includes biodiversity conservation as a principle (Anderson, 2002).

All the foregoing instances demonstrate that there are mutually interdependent relationships among ancestral beliefs and practices relating to sacred forest sites and trees. Human communities have needed trees to express their perennial desires of connecting with other worlds and ancestral spirits, using trees as important mediums. Trees on their part depend on ancestral rituals for their continuity. In general, this 'divinity in nature' worldview of traditional religions embodied in sacred sites' maintenance has produced biocultural diversity hotspots around the world (Bhagwat et al, 2011). Both cultural diversity (beliefs, practices, knowledge and institutions) and biodiversity (genes, species and habitats) have benefited from this "holy" union.

At this juncture, it is important to note that traditional resource management mechanisms and sacred groves should not be viewed as equivalent to 'traditional conservation areas,' since their motivations and goals do not necessarily arise from ecological consciousness or an urge for biodiversity conservation (Siebert, 2008). And their institutional and motivational structures primarily exist as human artefacts that may or may not take biodiversity protection into account (Sheridan & Nyamweru, 2008). Sacred groves in Africa and beyond are dynamic institutions whose maintenance motivation, while resulting in fortuitous biodiversity conservation outcomes, nevertheless, are based on diverse, changing socio-cultural, political and ecological factors. In short, sacred groves are human artifacts having changing historical, socio-political and symbolic significance (Chouin, 2008).

2.6 Conservation threats of biocultural diversity and sacred sites

Evidence is mounting on increasing loss of the rich diversity in nature and culture. The fact of biodiversity loss is well-established (Ramakrishnan, 2001); such a loss is taking place at an alarming rate (Plotkin, 1993; Sponsel, 2013); and it is a relentless one (Harrop, 2011). Unless effective reversing mechanisms are in place, our planet will lose as high as 20 per cent of species in the near future (Maffi, 2001; Sponsel 2013; Loh & Harmon, 2014). The world's most bio-diverse regions in the Third World are witnessing the most alarming rate of loss; this extinction process is both natural and anthropogenic, the latter being more accountable (Plotkin, 1993).

The loss in cultural diversity, leading to loss of biocultural diversity, is currently recognized and it is also taking place at alarming rate (Naranjo, 1995; Smith, 2001); among the notable

dimensions of this loss is in linguistic diversity (Maffi, 2001; Zent & Maffi, 2001; Mishler, 2001; the CBD's Aichi Targets, 2013; Loh & Harmon, 2014). Muhlhauseler (2001) calls this 'eco-linguistic diversity loss'. Ethnobotanical and forest-related knowledge loss is another key aspect (Davis et al, 1995; Snape III, 1996; Shiva, 1998; Ford, 2000), triggered by a loss of plants due to deforestation, unsustainable development practices, processes of globalization and climate change, among others (Balick & Cox, 1996; Zent & Maffi, 2001; Latore & Latore, 2012). In short, not just plants or forests are endangered, people and their cultures are, too (Nabhan, 2001; Nabhan and Joe, 2002; Anderson, 2002). Biocultural diversity loss is thus now understood as an interconnected phenomenon. "Biological and cultural diversity rely on one another, and losing one or the other can create conditions for the erosion of both" (Redford & Brosius, 2006: 3). One's loss imperils the other (Brush, 1996).

The move towards integrating native and local communities into mainstream society and 'developing' them has resulted often in alienating them, as the attempts often ignore cultural and social sensitivities of these communities. These often result in local communities losing their sustainable methods, ecologies and livelihoods once their systems are disturbed. Attempts at modernizing native, local communities have resulted in negative consequences for the people, their biocultural resources and identities (Bodley, 1999; Durning, 1995; Igoe, 2004). Threats to ancestral traditions, sacred and ethnobotanical knowledge may be summed up as occurring due to enculturation into mainstream society, commercialization, religious innovation, modernization, environmental degradation, habitat destruction and various 'development' interventions (Ossewijer, 2000; Cunningham 2001; Harrop, 2004).

In sum, the world's sacred sites and ancestral traditions are in veritable danger as are associated local ecologies and livelihoods (Johnston, 2006; Verschuuren, et al, 2010; Maffi & Woodley, 2010; Sponsel, 2013), requiring urgent action, mitigative frameworks and protection instruments.

2.7 Protection frameworks for biocultural-diversity, sacred sites and local communities

There is a basic assumption that local institutions of conservation practices require formal backing by policy instruments. This assumption drives from a related assumption that the exposure of these local institutions to global forces has mainly weakened the former, with adverse effects on their livelihoods, ecologies and conservation. Hence, there is a need for formal, or official, backing of local bio-diversity friendly values and institutions. This last

section reviews literature on evolution, types, substance and effectiveness of policy frameworks supporting conservation of biocultural diversity, local institutions and traditional knowledge.

Earlier attempts at international laws generally gave mandate for western nations to colonize and exploit resources and cultures of Third World (Shiva, 1998). However, over the years supportive frameworks came into being. These have been categorically termed 'hard' and 'soft' laws, depending on the degree of enforcement they call forth. They both contain rights, principles and concepts relevant to supporting and protecting local institutions and rights (Posey & Dutfield, 1996; Harrop, 2003).

Among these, the Convention on Biodiversity (CBD) is regarded as "our planet's seminal biodiversity blueprint" (Snape III, 1996: 81), and an important document that makes explicit reference to the critical role of indigenous communities in biodiversity conservations (Posey & Dutfield, 1996). The International Labour Organization (ILO) Convention 169 specifically supports continuance of customary law regimes and recognizes and upholds the rights of indigenous people to land, natural resources and traditional knowledge. The International Union for Conservation of Nature (IUCN); the UNESCO Man and Biosphere program (1977); the United Nations Millennium Declaration and the MDG (2000); and the Globally Important, Ingenious, Agricultural Heritage Systems (GIIAHS) Initiative all provide a strong protection for local institutions, traditional livelihood and agricultural practices, sacred sites, bio-cultural hotspots and local ecosystems (Harrop, 2009).

The Forest Principles is important statement of principles for a global consensus on management, conservation and sustainable development of all types of forests (*Ibid*.). Some of the instruments specifically address issues of conserving medicinal plants, protecting traditional medical knowledge and benefit sharing (e.g. the WHO Health for All by 2000; the 1991, IUCN, WWF and WHO joint declaration regarding conservation of medicinal plants; the 1992 WHO declaration that medicinal plants are endangered due to environmental changes; Cotton, 1996). Various other statements of ethics and declaration by concerned professional and other associations also exist. Granted, recent decades' of effort have created relatively better outcomes for local communities; and in some cases increased awareness, empowerment and representation in world stages of conservation, development and environment discourses (Varese, 1996; Ford, 2001; Igoe, 2004). The international community has now given express recognition for the preservation of traditional knowledge and the participation of indigenous and local communities in the implementation of global conservation program (the CBD's Aichi Targets, 2013).

However, there is a lack of more specific and practical frameworks (Moran, 1999). The issuance of these laws and other ethical declarations do not by themselves ensure better consequences for biocultural diversity conservation. Scholars in this field are generally not happy with the overall outcome, implementation and effectiveness of these instruments. One major problem is national governments often ignore the laws and local, native communities' ancestral rights are abused (Posey & Dutfield, 1996; Igoe, 2004). Some also note local communities are not wholly supportive as they continue to be suspicious of polices which might be interpreted in ways harming them (Posey, 2000). Still further, these laws are seen as serving, in some subtle ways, the interest of the more powerful parties (Johnson, 2006).

In view of such generally vague and low results, some have proposed specific mechanisms of protecting resources rights of local communities, including their rights to collective intellectual properties and cultural survival. Called traditional resources rights (TRR) (Posey & Dutfield, 1996), this is premised on the need for creating and promoting incentives for biodiversity conservation among indigenous and rural communities in the context of their increasing integration into global community which brings many adverse consequences. It is further justified by a flow of traditional knowledge systems to the global community without due compensation (Greaves, 1996; Zent et al, 1999; Stephenson, Jr., 1999; Johnston, 2006), an increasing awareness among local communities of the need to protect their knowledge systems and resources (Posey, 2000; Hunn, 2002; Soejarto, et al, 2002) and a utilitarian view that preservation and protection of local knowledge and rights is beneficial to biodiversity and global development (Brush, 1996). TRR is a much more flexible form of intellectual property rights protection which allows local communities to have access to and use of biodiversity resources in their localities (Snape III, 1996; Shiva 1998).

Specifically, TRR calls for making arrangements for in situ, extractive conservation of forests, ensuring local community's tenure over sacred sites and recognition of local intellectual rights in the form of cash returns, protecting ancestral norms of resource ownership, maintaining a balance between state and community ownership in protected areas and protected zones and ensuring the right to continuance of cultures and traditional practices. In short, the collective cultural heritages that need protection span across wider ranging issues (Greaves, 1996; Stephenson, Jr. 1999).

Within this framework then, sacred sites are treated as a human rights issue. If they fall within national protected areas schemes and their management approach is one that excludes owners of the sacred sites, and desecrates their sacred landscapes, then then this amounts to a violation of human rights and should be treated as such (Johnston, 2006). The co-management approach,

one that makes proper place for active participation and decision making by local communities, would ensure that the people would have access to and control of their sacred sites (Igoe, 2004).

This Chapter has discussed the concepts of biocultural diversity conservation; approaches to conservation; the nature and role of traditional knowledge relating to biodiversity conservation; the meaning, values and and status of sacred sites; conservation threats facing biocultural diversity; and informal-formal governance frameworks and protection instruments.

In conclusion, biological and cultural diversity are inextricably linked and the concept of Biocultural Diversity is a salient paradigm that explains how the former (genes, species and habitats) co-adapt with the latter (knowledge, values, beliefs, practices and institutions). Sacred natural sites are dynamic institutions of cultural landscapes that form epicenters of local life, belief, livelihood and environment. They are increasingly gaining attention among scholars, conservationists and policy makers since the 1990's. Sacred natural sites, such as ancestral groves, are particularly considered showcases for conservation of biocultural diversity, because their cultural importance derives from, and requires maintenance of, biodiversity, a mutual relationship that does not inherently conserve the latter. Biocultural diversity conservation as a concept and approach to conservation emerges from this context and a growing understanding of how similar processes are involved in the increasing endangerment of both biodiversity and cultural diversity, though this narrative is challenged, engendering growing research interests in the field of biocultural diversity; the nature, origins, structures and role of SNS, with competing theoretical narratives and approaches.

In the following chapter, I will introduce the study areas and describe their location, history, biocultural diversity and socio-economic profile.

Chapter 3. Introducing the Study Area

Chapter Three introduces and describes the study areas in three sections. Section One provides a brief overview of Ethiopia to situate the study in broader national context, while Sections Two and Three, respectively, introduce Sidama and Wonsho, the main study sites. The Chapter is limited to presentation of salient background information such as location, agro-ecology, socio-demographics, ethno-history and a profile of biocultural diversity. The latter aspect will be treated fully in separate data chapters.

3.1 Background to Ethiopia

3.1.1 Location, administrative division and socio-demographic composition

Ethiopia is located in the north–east of the Horn of Africa, between longitudes 33° and 48°E and latitudes 30° and 15°N. It is bounded by the Sudan in the west, Eritrea in the north and north-east, Kenya in the south, Somalia in the south-east and Djibouti in the east.

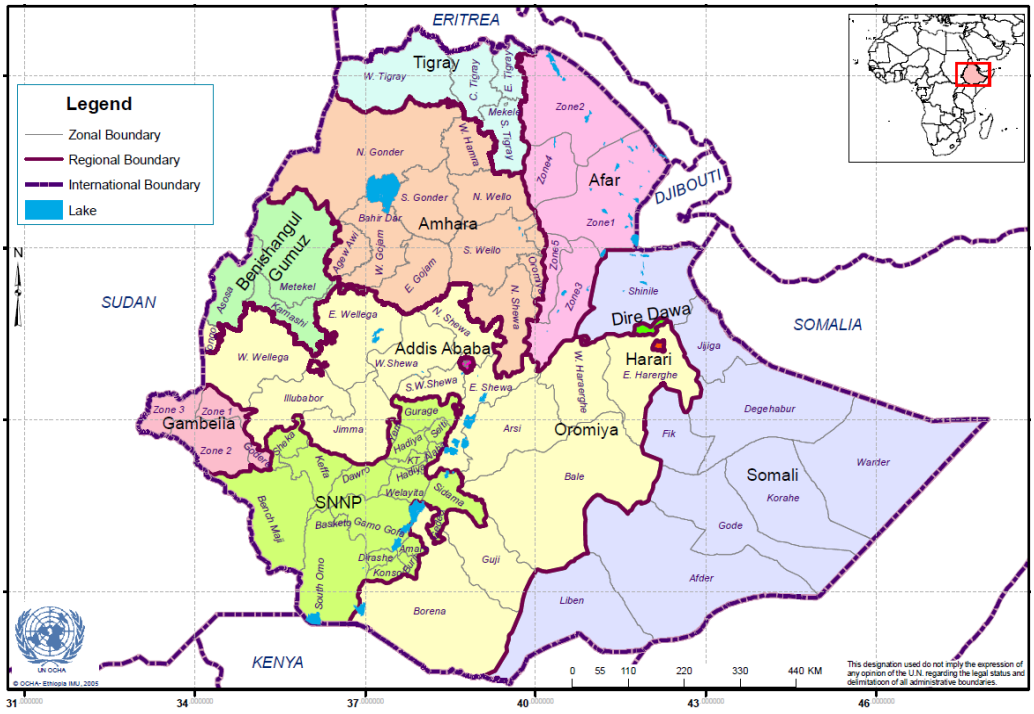


Figure 3-1 Location and administrative divisions map of Ethiopia
(Soruce: http://www.idp-uk.org/Resources/Maps/Administrative%20Regions/Ethiopia%20Regions%20Zones.pdf)

The country is divided into nine regional states in a federal government system. With an estimated population of over 94 million, based on 2007 National Population and Housing Census (FDRE PCC, 2008; CSA, 2013), Ethiopia stands out as the second most populous country in Africa and is a land of diverse ethno-linguistic, faith, socio-cultural and livelihood communities (Zewide, 2002). The majority of the population (ca. 85%) is rural, making their livelihoods on mixed farming, employing traditional agricultural technologies, with about 12 per cent estimated to be pastoral nomads (Abbink, 1997; SOS Sahel Ethiopia, n.d.). Religious following is divided among Christians and Muslims, with diminishing presence of traditional ancestral religion. According to the 2007 Census, over 43.5 per cent were adherents of Ethiopian Orthodox Christianity. Islam constitutes about 33.9 per cent and Protestant Christianity is 18.6 per cent. Decades of religious conversions have led to a rapid decline of African traditional religion; the Census estimated their proportion at 2.6 per cent (CSA, 2012).

The Southern Nations, Nationalities, and Peoples' Regional States of Ethiopia (SNNPRS, hereafter), is located between $4^{o}.43$ - $8^{o}.58$ North and $34^{o}.88$- $39^{o}.14$ East and bordered by Kenya in the south, the Sudan in the southwest, Gambella Regional State in the northwest and surrounded by Oromiya region in northwest, north and east directions. It has the highest number of ethnic and linguistic groups in Ethiopia (SNNPRS Office of the President, 2014; Anon, 2014), and hosts diverse ecologies, languages, cultures, livelihoods and religions. The 2007 census estimates the region's population at about 17.9 million; dominantly rural (84.4%) with sedentary, intensive cultivation as the main-stay, while about 20.1 per cent adhere to pastoral nomadism (FDRE PCC, 2008; CSA, 2013; Adugna, 2014). The majority of the region are Protestant Christians (55%), making the region a bastion of Protestant Christianity in Ethiopia, as contrasted with the northern and eastern parts of the country where, respectively, EOTC and Islam dominate. About 20 per cent and 14 per cent of the population adhered, respectively, to EOTC and Islam, while less than 7 per cent maintain their ancestral religion (Ibid, p. 7 & 15).

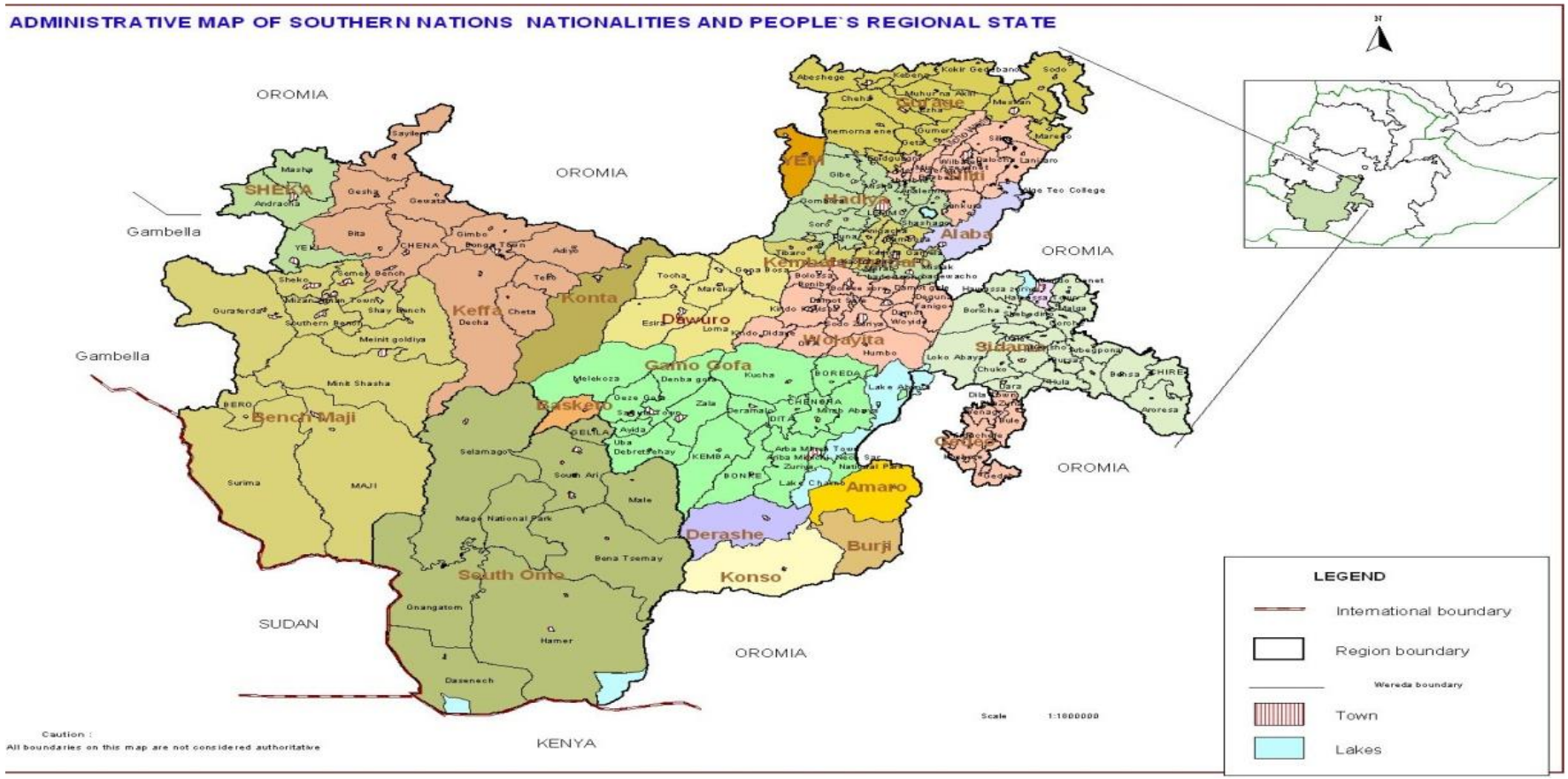


Figure 3-2 SNNPRS, location and administrative divisions
(Source: BoFED, SNNPRS, Hawassa, Ethiopia)

3.1.2 Climate, topography, agro-ecology & biodiversity profile

With a greater area share of the 'Horn of African' region, covering about 1,221,900 sq. km and wide-ranging altitude (from 126m below to 4620m above sea level), Ethiopia is characterized by great topographic diversity with wide variations in climate, soils, natural vegetation and settlement types (Walker et al, 2002; Ethiopian Flora Network, 2012).

The climate is largely temperate on the plateau of central and western highlands and tropical in northeastern and southeastern regions (Lizcano et al, 2008; Anon, 2015). Despite there are regional diversities in climate, traditionally, the country's climate has been classified into three different climate zones: *kolla* (tropical zone), *woyna dega* (sub-tropical) and *dega* (cool temperate), with four main seasons that are known in most parts of the country: *kiremt* (summer, heavy rainy months of June – August), *belg* (Autumn, September – November), *bega* (the dry winter season, December –February) and *tsedeay* (Spring, March-May) (Munroe-Hay, 2002; IBDC, 2009). Mean annual temperatures are between 25-30 ^{o}C in the low lands and 15-20 ^{o}C in the highlands. The temperature can rise up to 50 ^{o}C at Danakil Depression, one of the hottest and lowest places on earth (Anon, 2015).

The seasonality of rainfall varies across regions (Funk et al, 2012), from 4 inch in southeastern tip to 80 inch in the westernmost region of Ethiopia, with average annual precipitation in central plateau at 48 inch (Encyclopedia of Nations, 2014). Most of the country experiences a major one wet season between May and mid-September. The southern regions of the country experience two distinct rain seasons of March to May and October to December. Eastern part of the country receives very little rain (Lizcano et al, 2008).

A variety of ecologically distinct areas with diverse biophysical and agro-ecological conditions, and considerable numbers of plant species suited to these various agro-climatic zones exist in the country (IBE, 2014). Ethiopia is one of the bio-diversity rich countries of the world (Biodiversity Indicators Development National Task Force, 2010), and a centre of origin and diversity (IBCR, 2009). It is estimated that a total of 6500 - 7000 plant species exist of which about 12 per cent endemic (Negash, 2010; Tadesse, 2012). The total number of woody plant species is about 1017 of which 29 are endemic. These species represent 104 families and 387 genera. Further, diverse fauna exist, including, for example, 284 species of mammals and 861 species of birds (EBI, 2014).

3.1.3 Ethnic and cultural diversity

Ethiopia is also known for its ethnic, cultural, linguistic livelihood diversities. Having paleo-anthropological and archaeological records of global importance and an ancient civilization (Marcus, 1994; Pankhurst, 2000; Zewde, 2001; Henze, 2000; Munro-Hay, 2002), Ethiopia is at the heart of the birthplace of humanity, the Rift Valley of East Africa, which has served as a repository of biological and cultural diversity and human societies for thousands of years. Over 85 ethnic groups speaking some 150 dialects exist, making the country one of the most culturally diverse countries of the world (Vaughan, 2003; Kibrework, 2011).

Southwest Ethiopia is noted for being home of over 56 ethnic groups that have maintained traditional knowledge systems and hotspots of biocultural diversity for millennia, and is well known for its rich mix of peoples, cultures, languages, ecologies, traditional knowledge and livelihoods (Cerulli, 1956; Zewde, 2001; Vaughan, 2003; Kibrework, 2011; Van der Beken, 2013). The region's peoples maintain diverse ethnohistorical origins, socio-cultural systems and practice multiple livelihood systems including home gardens, hunting and gathering, pastoral-nomadism, agro-pastoralism, agro-forestry and intensive agriculture (SNNPRS, Council of Nationalities, 2008; SNNPRS Office of the President, 2014; Adugna, 2014).

3.1.4 Environmental and biocultural diversity challenges

Although considerable broad range improvements have been taking place since the 1990s, centuries of political upheavals, protracted civil war during the 20th century, coupled with recurrent drought conditions, increasing population size and urbanization have inflicted a heavy scourge of poverty, environmental degradation, biodiversity loss and overall underdevelopment in the country (Rahmato, 1991; Kiros, 1993; Berisso, 1995; Dessie, 2007; FDRE, 2012.). Environmental degradation and resource deteriorations have become key issues in the contemporary dialogue about environment and society in Ethiopia.

The country's forest coverage, for example, was over 40 per cent at the turn of 20th century but it has declined to 4 per cent over the decades (Negash, 2010), although recent years of reforestation efforts have reportedly resulted in a reversal of this trend, the most recent official estimate being about 10 per cent (EIB, 2014). After decades of protracted civil wars the country has been now embarked on an ambitious path of rebuilding since the 1990s (Kiros, 1993; Marcus, 2002; FDRE, The Greeen Wall Initiative, 2012; Gill, 2012; Prabhakar & Alemu, 2013). In the realm of cultural diversity, many indigenous knowledge systems that have supported biocultural diversity have been facing challenges. The traditional social institutions, religions and cultural landscapes are being changed through increasing expansion of modern religions,

urbanization, resettlement, industrialization and modernization (Abbute, 2004; Gebre, 2004; Kebede; Tadelle, 2004; Berriso, 2004; Melese, 2004; Yntso, 2004).

3.2 The Sidama

In this section the broader ethnographic and ethnohistorical context of southwest Ethiopia and the way these were approached are first reviewed, followed by an examination of questions of Sidama origins, identity, socio-cultural organization, its current socio-demographic and biocultural diversity profiles and the challenges these face.

3.2.1 An overview of approaches to ethnography of Sidama and its south-west Ethiopia context

The Sidama are a Cushitic speaking people of Ethiopia in northeast Africa (Braukámper, 1978; Hamer, 2002, 2007; Kumo, 2009a; Hameso, 2014). Systematic ethnographic and ethnohistorical studies of peoples of Ethiopia date back to the 1920s, when significant efforts were made by expatriate scholars. Prior to that time, various studies were made though they lacked theoretical and methodological rigor (Bishaw, 1990). The 1950s heralded a new era of ethnographic work in Ethiopia at greater scale both in geographical and culture-area coverage. However, contemporary critics of Ethiopian ethnography and historiography claim most of these earlier studies suffer from a bias towards historically, politically and demographically dominant ethnic groups (Pankhurst, 1990; Zewdie, 1990). The peoples of southwest Ethiopia have been either ignored or given token attention; and the few existing studies often suffer from lack of comprehensive material or misrepresentation of the group being studied (Bishaw, 1990).

There has been a considerable paradigm shift in recent decades (Zewdie, 1990). Although the gaps and misrepresentations of the peoples of southwestern Ethiopia are now being rectified, there still remains a need for rigorous, comprehensive and systematic ethnographic work. On the other hand, scholars have found it challenging to explicate the complex socio-cultural, linguistic and ethnogenetic relationships among the numerous groups in southwest Ethiopia; classification of ethno-linguistic groups has produced contested models (Theil, 2014). The Sidama have received some level of ethnographic coverage from some western ethnographers such as John Hamer, who has written extensively on the Sidama since the 1960s. A few home-grown individuals from the ethnic group itself have in recent decades begun contributing to the ethnohistory, ethnography and other contemporary conditions of Sidama (See Hoteso, 1990; Hameso, 1998, 2014; Kummo, 2009; Tekile et al., 2012).

3.2.2 Location and socio-demographic backgrounds

The Sidama Zone[2], according to current administrative divisions, is one of 13 such zones in the SNNPRS in southwest Ethiopia, about 275 km south-west of Addis Ababa, the national capital. It is located between 7.92-39.19 E and 6.14-7.18 N. The Zone is further sub-divided into 23 *woreda*s (an administrative division below a zone) of which Wonsho, the main study location is one (SNNPRS, Council of Nationalities, 2008; Anon, 2014a).

As noted in Chapter One, the Sidama are most populous in SNNPRS, with various sources estimating their population size between 3 and 4.5 million (Hameso, 1998, 2014; Kumo, 2009a; CSA, 2013; Anon, 2014). The zone has an average of 4.99 persons per household, making it one of the most densely populated areas in the country at roughly 450 persons/km^2 (ESA, 1996; FDRE PCC, 2008; Yilma, 2013; Anon, 2014e). Major urban centres of the Sidama Zone, particularly Hawassa City, which is also the SNNPRS political and regional commercial capital, are home to multiple ethnic and religious groups. The vast majority of the rural population adheres to Protestant Christianity except for the relative dominance of EOTC in urban centers. Sidama ancestral religion is in decline (Hamer, 2002, 2007; Kumo, 2009b); however, there has been a revival of ancestral religion in recent years, whereby some reaffirm their ancestral religious identity and others adapt to a sort of syncretism between ancestral religion and other mainstream religions (as discussed in subsequent chapters), a fact demonstrating that ancestral religions are not just static entities and relics of the past; rather, they are dynamic institutions capable of adapting to new situations (Sheridan, 2008).

3.2.3 Overview of Sidama origins and identity

The Sidama oral tradition traces their origins to north-east Ethiopia and beyond the Red Sea to an unknown place in south Arabia. Some argue, although this might be difficult to verify, oral tradition often seems to correlate with available historical sources (Braukámper, 1973, 1978). Other sources suggest the ancient Cushitic Sidama ancestors were part of the great population movements in the 1st century AD from North Africa moving towards the south of the continent. It is now generally agreed that northeast Africa and the south Arabian peninsula were hot-spots of Afro-Asiatic peoples, including proto-Cushites of Ethiopia whose descendants include the Sidama (Munro-Hay, 1991).

Existing ethnographic literature and oral tradition hold that the present day Sidama is composed of fourteen major clans that trace their origins to two founding ancestors, Bushe and Maldea.

[2] A 'Zone' in the present Ethiopian government structure is the third highest level, or a sub-division of a a regional state.

The ancestors moved as far as the southernmost part of today's Ethiopia, in a place called Dawa and then later, in the 16th century, their descendants moved back to the present area (Hamer, 1970, 1976; Braukámper, 1978; Hoteso, 1990). Informants and some written sources indicate that it was during the earliest southward ancestral migrations that the proto-Sidama branched out, forming today's five major ethnic groups: the Sidama proper, Alaba, Tambaaro, Qawena and Maraqo (Braukámper, 1973; Hoteso, 1990; Doffana, 2011).

3.2.4 Polity and social-organization

Sidama traditional social organization is clan-based and patriarchal; each clan being further structured into smaller sub-clans and patrilocally organized villages (Hamer, 1970, 1976). A form of gerontocratic structure, based on generational class system, has been a key aspect of the polity and social organization (Hamer, 1972, 2007; Hamer & Hamer, 1998; Kumo, 2009). The highest rank in the hierarchy was held by the *moottee* (king) (Hamer, 2007). Existing sources generally support the view that each of the major clans is an independent unit ruled by its *moottee* and a *garro* (elderly council).

All matters of community importance were discussed in a form of indigenous parliamentary assembly called the *Songo* (Hamer, 1976; Kumo, 2009b). The *moottee* was responsible for secular politico-defense system; the *womma*, holder of another high rank, was responsible for overseeing religious and cultural dimensions. However, there have been variations in the power and responsibilities of such cultural and political positions across clans and over the years (Hoteso, 1990; Hamer, 1976, 2007). The political system contained aspects of traditional democratic and egalitarian values (Stanley, 1966; Aadland, 2002; Kumo, 2009b). This system has been enduring challenges since 1893 (Hoteso, 1990; Hameso, 1998; Hamer 2007) when Sidama was incorporated into the Ethiopian nation-state under the reign of Emperor Menilik II (1889-1913) (Donald & James, 1986; Dilebo, 1996).

3.2.5 Sidama ancestral religion

Sidama ancestral religion (SAR), their conception of cosmos and a moral-social world are governed by the idea of *hallale* ('the rule of truth'), belief in and fear of *Magano* ('Supreme Being'), other lesser spirits, and belief in, and the placation of *annu-akako ayana (*spirits of ancestors') (Hamer, 2002, 2007; Wansamo, 2009). The Sidama believe *Magano* is the creator of all things. He is further identified by certain terms such as *Kalaqa* ('the Creator'), *Kaaliiqa* ('the Almighty') and *Hallalancho* ('the True One'). Sidama theology further states that *Magano* in the beginning lived with humans but he departed to the sky due to the sins committed by them.

Hence, people now cannot directly relate to him except through the mediatory role of ancestral spirits. There is a parallel with Christianity and Islam in a range of areas such as accounts of creation, nature of God and human relation to the creator, existence of monotheistic supreme being, mediatorial roles and needs, etc (Braukámper, 2002; Wanasamo, 2009). There exists a complex hierarchical ladder in the religious and socio-moral order of things, the ultimate power being *Magano*. This is a strict authority structure that governs the order of things in religious, social, political and all other human-human and human-nature relationships. The spirit entities are often masculine. However, there are also feminine spirits which are extolled in certain spirit possession cults such as during child birth (Wansamo, 2009; Tekle et al, 2012).

The SAR cosmology is defined by the pervasive role and influence of ancestral spirits, who serve as mediators between *Magano* and the progeny. They are conceptualized as the good spirits and are thought to share *Magano's* abode. They are in turn approached by ritual leaders and other ritually eligible adult males. Some have argued that the Sidama do not actually worship their deceased ancestors *per se*. They reject the animistic portrayal of SAR in some writings and argue for its monotheistic nature (See Wansamo, 2009). Sidama's belief in *Magano* is indeed characteristic of monotheism. Even so, most agree that the ancestors are held in deified status, capable of performing acts which only a divine being could do. Thus, in practical senses, SAR appears to be a form of ancestral worship that is similar to other traditional religions of Africa (Hammond, 1972).

A holistic concept of morality exists that binds *Magano*, the ancestors, the living progeny, the nature and all creatures into one moral community. The SAR dictates ethical behaviour towards the earth, plants and animals. The concept of *seera* is a code for moral and ethical behaviour and proper socio-cultural relationships in the community. *Seera* is linked to the idea of *halale*, the governance of truth. It is effectively a system of social control and works as a grand constitution for the entire social-cultural and economic life. The moral code of *halale*, enshrined in the *seera*, provides the overall framework for distinguishing between good and evil, truth and falsehood (Hamer, 2002; Wansamo, 2009). Community members are thus very careful to abide by the *halale*, as breaking it invokes the application of the *seera*, and referral to Magano, by the elders' council, invoking his wrath.

A caveat is in order here: Such traditional conceptions and institutions should not be taken as static and monolithically representing the entire Sidama; neither do they necessarily represent the ethnographic present. A whole set of change processes are in play today, causing erosion as well as syncretism and innovative transformations, resulting in a dynamic and heterogeneous socio-cultural and religious landscape (Braukámper, 1992; Hamer, 2002, 2007). This lends

support to recent studies which challenge the narrative that African ancestral religions are vulnerable, static entities as relics of the pre-colonial past requiring urgent measures of preservation; these studies hold the view that African traditional religions are dynamic, living institutions (Sheridan, 2008).

3.2.6 Economy

The Sidama economic organization is primarily based on subsistence agriculture, combining crop production and animal husbandry (Hotesso, 1990; Kumo, 2009a). It belongs to what has been labeled the *Ensete Culture Complex*, which is a major economic organization of the peoples of southwest Ethiopia (Westphall, 1975; Doffana, 2007). *Ensete* (*Ensete ventricosum*), sometimes called the 'Abyssinian banana', is a staple tuber crop that has defined the livelihood, ecological and socio-cultural landscape of ethnic groups in southwest Ethiopia. The role of livestock was highly significant in medieval and early 20th century Sidama, though this dimension has now significantly declined (Hoteso, 1990). The Sidama also cultivate varieties of cereals, fruits, condiments, cash crops, etc. Coffee is the most notable cash crop grown in Sidama, a major contributor to the national coffee export. Agro-forestry is also notable; however, in recent decades the increasingly significant shift towards economically lucrative cash and woody trees such as eucalyptus (*Eucalypetus camaldulensis*) and *Khatha edulis* is having its toll on traditional agroforestry and native woody trees (more on this in subsequent chapters).

3.2.7 Topography, climate, biodiversity and biocultural diversity hotspots

Sidama has a total land area of ca. 7200 km^2, characterized by varieties of topographic, climatic and agro-ecological features. The highest point is Garamba Mountain, at about 3500 m. As noted above for the nation and SNNPRS as a whole, three agro-ecological zones characterize the land: *dega* (high altitude with cold weather) constitutes 30 percent, *woynadega* (a mid-hot climatic) covers 60 percent; and about 10 percent *qolla* (hot, arid climatic). The Great East African Rift Valley divides the land into two, the western lowlands and eastern highlands. The altitude ranges from 500 masl in the west to 3500 masl in the eastern highlands, with mean annual temperature and rainfall of 10-27 ^oC and 800-1600 ml, respectively (SNNPRS, Council of Nationalities, 2008; Tekile et al., 2012; Yilma, 2013; Anon, 2014a).

The land is home to many sacred forests, where various tree species and other biodiversity are conserved, some of which have gained regional and national recognition and are becoming

tourist attractions. Further, as mentioned above, a traditional agroforestry supports an extractive form of conservation of otherwise endangered native tree species and diverse flora (Asfaw, 2003; Abebe, 2005). A recently designated national protected area, Locka Abaya, is part of the Sidama landscape, and a home for diverse flora and fauna. Sacred groves are important components of the Sidama topographic, biocultural and livelihood landscape, enabling protection of trees and ancestral institutions. As this thesis demonstrates, the social-cultural institutions and practices supporting maintenance of sacred sites have existed for centuries (Chapter 4), defying the onslaughts of war and colonialism, religious conversions, recent attempts to modernize, and contemporary globalization and other political-economic forces. Though resilient, they have declined in scope and are facing significant threats to their continuity (Chapter 9).

3.3 Wonsho

The foregoing description of Sidama more or less situates the Wonsho community in context. This section, therefore, briefly describes Wonsho District, expanding on the account provided in the methods section in Chapter One.

The Wonsho District is one of 23 such sub-divisions located in the southeastern part of Sidama Zone. It is located at 06°45′11″N and 38°30′16″E and is approximately 45 km from Hawassa, the zonal and regional capital (See Figure 1.1 & 1.2). The District is further divided into 19 PAs, including Bokaso. The semi-rural town of Bokaso is the seat of Wonsho Woreda Administration. It served as the local headquarters for this study. The main sacred forest, Abbo Wonsho (henceforth AWSF), is located on the outskirts of Bokaso Town. The other three main study localities, namely Lalamo, Huleteṇa Ferro and Menafesha, encircle this main sacred forest, all within walking distance from the town. Andeṇa Ferro, Halaqana and Kinante, the additional PAs studied, are also located near to the town and the sacred forest (See Figure 1.2).

Figure 3.3 A view of Bokaso locality from the 'main street' of Bokaso town, observation, August 2012, Bokaso, Ethiopia

Wonsho topography and agroecology are characterized as cooler and to some extent milder compared to other districts in Sidama Zone, as the district lies in the highland area of Sidama, east of the Rift Valley. Its altitude ranges from 1978 m (West, lower end) to 2149 m (East or upper end) above sea level (Moges et al., 2013). Most of the 19 PAs are in this high mountainous and rugged range where the rain falls throughout the year.

Figure 3.4. A view of AWSF from an edge of Bokaso Town, SNS survey & observation, August 2012, Bokaso, Ethiopia (Taken form a highway leading to the forest and other localities)

The 2013 projection of the District population, based on the 2007 National Population and Housing Census, is around 104,474 of which 51,416 (49.2%) are female and 3,895 (3.7%) are urban. It is one of the districts in Sidama with the highest population density (CSA, 2012, 2013). Religious composition of the population follows more or less a similar pattern with that of Sidama: Protestant Christians dominate, with a minority adhering to Islam and SAR; the latter is relatively stronger in this part of Sidama, perhaps explained by the presence of AWSF which has recognition throughout Sidama and beyond. The Hollo and Garbicho are two major clans that constitute Wonsho, tracing their ancestry to Abbo, the founding ancestor. As will be presented in subsequent chapters, remnant ancestral groves dot the Wonsho, serving as centres of community life, livelihood, and biocultural diversity.

The District's livelihood is similar with the rest of Sidama: Intensive crop cultivation, cash crop production and cattle raising in a mixed agriculture forms the basis of the economy. The major food crops include maize, sugar beet, ensete, wheat, peas, beans, yam and taro, while the major cash crops are coffee, *çaate (Katha edulis)*, banana, and various other fruit trees.

The local botanical environment, ecology and agricultural landscape is rich in a diverse and dense floristic community, from massive, high-growing native trees to the ubiquitous and popular Eucalyptus, as well as other recently introduced exotic trees. These serve multiple and complex needs including agro-forestry, firewood, aesthetics and ornament, herbal medicine, shade for crops, animals and humans, soil fertility management, income sources and food security supplement. While a crucial component in the dynamics of local livelihoods, and the environmental and biocultural diversity interface, the botanical environment is under intense pressure from socio-economic change, especially population increase—a central theme running through all local dialogues about local ecology, livelihood and biocultural diversity (Chapter 9).

This Chapter has described basic background information concerning the study area. The next chapter will examine some of the themes raised here in more detail, along with the broader thematic issues of what Wonsho-Sidama biocultural areas and sacred sites look like, their geographic profiles, ethnohistorical origins and socio-cultural backgrounds, with a view to providing the geography of Wonsho sacred sites (in regional and national context) and ethnohistory and social organization of custodian communities, to provide a dynamic socio-cultural institutional and historical context for sacred groves.

Chapter 4. Origins, Social Organization and Geography of Wonsho SNS & Custodians

This Chapter summarizes findings on historical origins and social organization and religious contexts, as well as the present geography of sacred sites. The Chapter sets a framework for ensuing chapters by discussing national, regional and zonal scales of biocultural diversity areas and sacred sites. Emphasis is on defining Wonsho sacred groves and their custodians, understanding their socio-historical origins, and characterizing their present geography and socio-demographics.

The findings are presented in four sections. Section one introduces national contexts of BCD. Section two describes that of regional scales. In section three, BCD of Sidama sub-region is presented. Section four summarizes local accounts of the custodian community's ethnohistorical origins, underlying workings of ancestral religion, and current structures of socio-cultural organization; and the local scale of sacred sites, their types, distributions and socio-demographic attributes of the owners or caretakers of sacred groves in the community. The last section summarizes the main points and discusses the conclusions.

4.1 Biocultural diversity areas and sacred sites in Ethiopia

Ethiopia is among the one of biodiversity rich countries of the world (Biodiversity Indicators Development National Task Force, 2010; Ethiopia Flora Network, 2012; BIE, 2014), has the fifth largest flora in tropical Africa, and is one of the eight centres of crop origins on the global level (Heide, 2012). The reasons for this rich biodiversity, endemism and centrality are diverse themselves: diverse ecological conditions and geo-diversities--geographical, topographical, climatic, altitudinal and related differences for which the country is known (BIE, 2014); as well as a rich mix of ethnic, religious and cultural groups with differing social, political and economic organization. The resultant rich biocultural diversity, therefore, derives from the complex interdependence and co-adaptive processes between the people and the environment.

Although systematic documentation of the country's biocultural diversity did not exist at the time of the fieldwork in 2012/2013 (Officers, FMCT, 2013; Expert, ARCCH, 2013), general indicative statements such as the above show the country's rich mix of geographic regions, biodiversity (genes, species and habitats), and cultures (languages, religions and diverse life-

ways). The Institute of Biodiversity Research of Ethiopia states this in its national strategy of conservation (IBCR, 2005) and it has the mandate for this in its establishment proclamation (Proclamation No. 120/1998). A more recent proclamation provides for the protection of community knowledge and rights with respect to genetic resources of the country (BIE, 2006). Similarly, the nation's 1995 Constitution provides for the support of such a rich mix of culture, peoples, language, and history (FDRE, 1995).

Various international entities recognize this and some of the nation's biocultural diversity, paleoanthropological and other manmade resources are protected within UNESCO World Heritage Sites. Nine such areas exist, with five others proposed, making the country rich in heritages (UNESCO, 2014; Anon, 2014d).

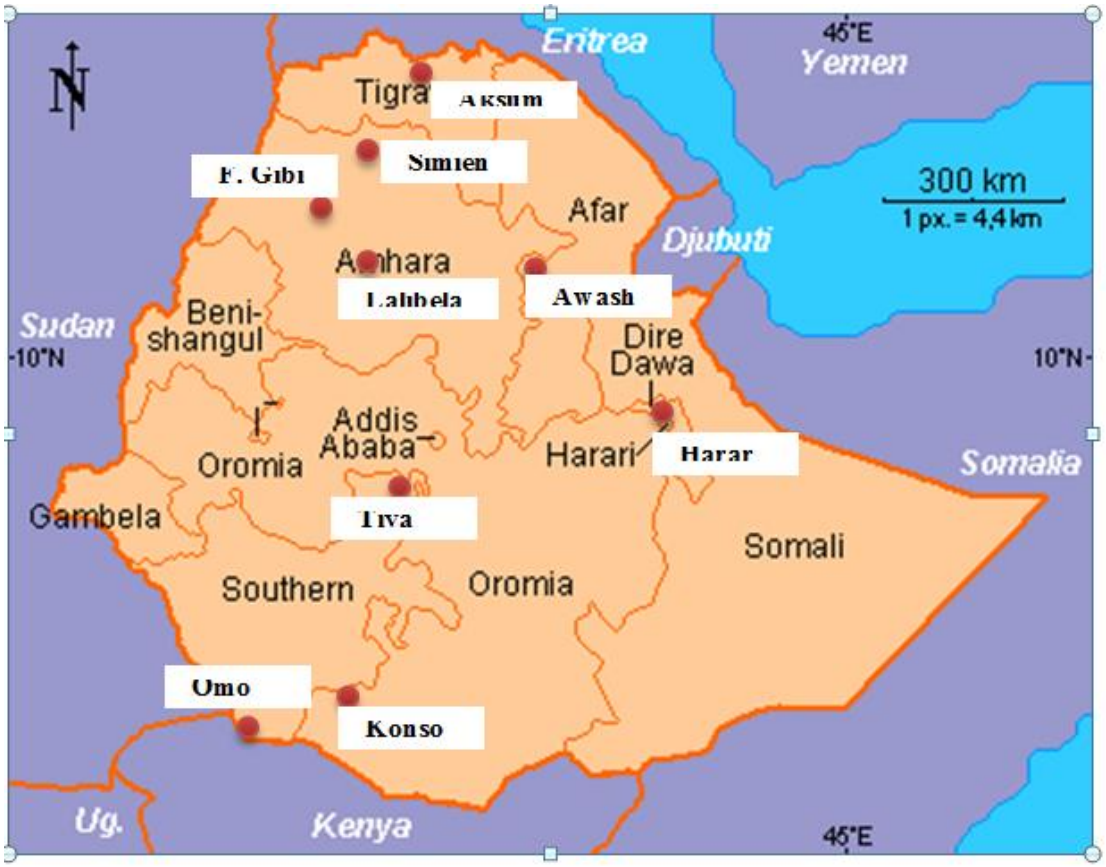


Figure 4-1 UNESCO World Heritage Sites of Ethiopia
(Base map source: http://www.idp-uk.org/Resources/Maps/Administrative%20Regions/Ethiopia%20Regions.gif)

Religion occupies a salient place in the country's cultural diversity. There are three main religious traditions in Ethiopia: African ancestral religion, Christianity (particularly EOTC) and Islam. In association with these religions, sacred sites have characterized the country's vast landmass and played important roles in the culture-environment nexus. Intangible cultural resources, physical landscapes and the biodiversity on which these depend are widely

distributed all over the country. They are considered important instruments in national identity, tourism resources and economic development (Director, BIE, 2013; Officers, FMCT, 2013).

EOTC in the north and central, Islam in east and southeast, and ancestral religions in the south and southwest, all venerate these sacred landscapes. The respective geographic regions being their major strongholds, the religious groups, however, have also had representations all over the country. The long established EOTC tradition has coevolved with forest areas where tree, bird and mammal species thrived. There are about 34,000 such churches throughout the country (Wassie, 2007; Berhanie-Selassie, 2008; Heide, 2012; Massey et al, 2014). Where these religious institutions maintained their presence, a rich mix of biocultural diversity resulted. These church forests are dubbed 'islands of biodiversity' to denote the fact they are surrounded by vast biodiversity-poor areas resulting from decades of biodiversity-eroding processes.

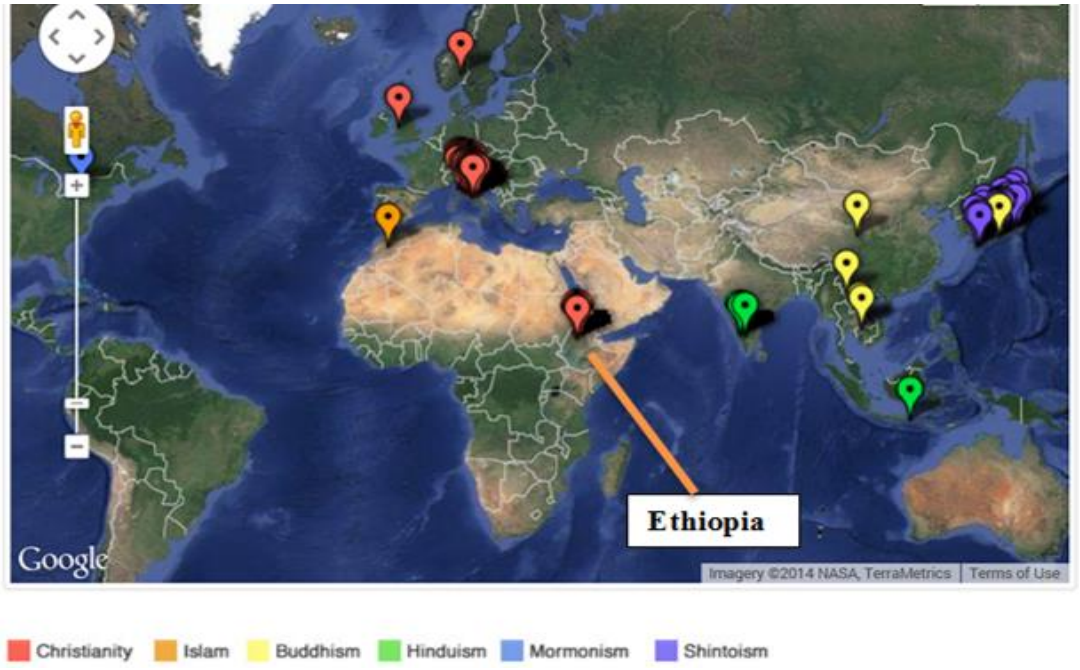


Figure 4-2 Religious forest sites of the world
Ethiopia is represented by the sampled 300 EOTC owned forests
(*Source: Massey et al., 2014)*

Eastern, north eastern and south eastern areas of Ethiopia are bastions of Islam, where they have maintained Islamic sacred sites since the introduction of the faith in the 8th century. The Walled City of Harar, for example, is a sacred landscape registered as a UNESCO World Heritage Site, and it is based on Islamic history and values. Dirre Sheik Husein is another key biocultural diversity area, among those considered for nominations as UNESCO World Heritage Site (Heide, 2012). Dating back to the 10th century, it has continued as a centre of culture, religion, community life and also a sacred site with a large area of spiritually protected forest landscape

(UNESCO World Heritage Centre, 2014). Other places of smaller scale containing biocultural diversity and carrying Islamic motifs dot the diverse and vast landscape, where useful intangible values with the potential of biodiversity friendliness have existed for generations.

In south and southwestern Ethiopia ancestral religions have flourished, practiced by diverse local groups. Indigenous religious systems particularly have been more likely to be linked to biodiversity and forests, where custodians have maintained beliefs that are animal and plant-friendly. Despite local diversities, a unifying element exists in the form of an ancestor cult mediated through biodiversity, particularly forests and trees.

In sum, despite a lack of systematic documentation of these sacred sites, their national significance is manifested and recognized through various channels and occasions, and multiple-scale policies and laws uphold them.

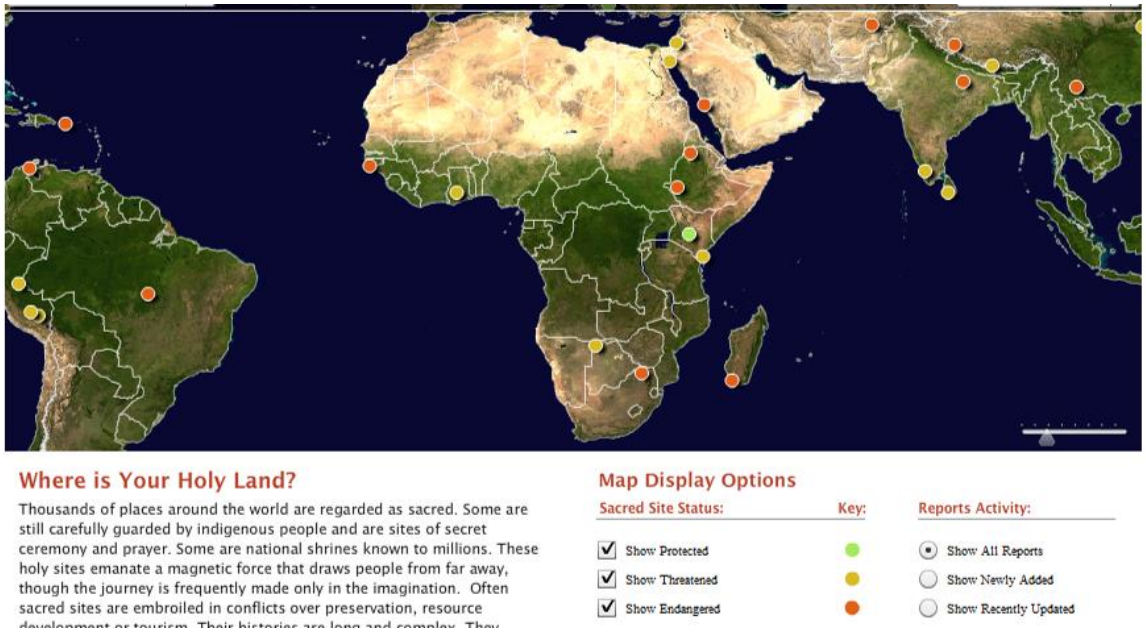


Figure 4-3 Sacred sites of the world
(Note: Two red dots in Ethiopia denote threatened sacred sites)
(Source: Sacred Land Film Project, 2014)

4.2 Biocultural diversity and sacred sites in SNNPRS of Ethiopia

In the southern Rift Valley region of Ethiopia there are unique indigenous traditions that place high value on ancestral practices and sacred sites. As noted above, ancestral religions have dominated in this region, fostering as well as depending on sacred groves. Traditional burial practices in these societies often require that burial sites are planted with various trees. According to interviews, the SNNPRS-BoCT is aware of the region's wealth of biocultural

diversity and some of the more known and of significant scale are in the limelight of the region's tourism and biocultural diversity development.

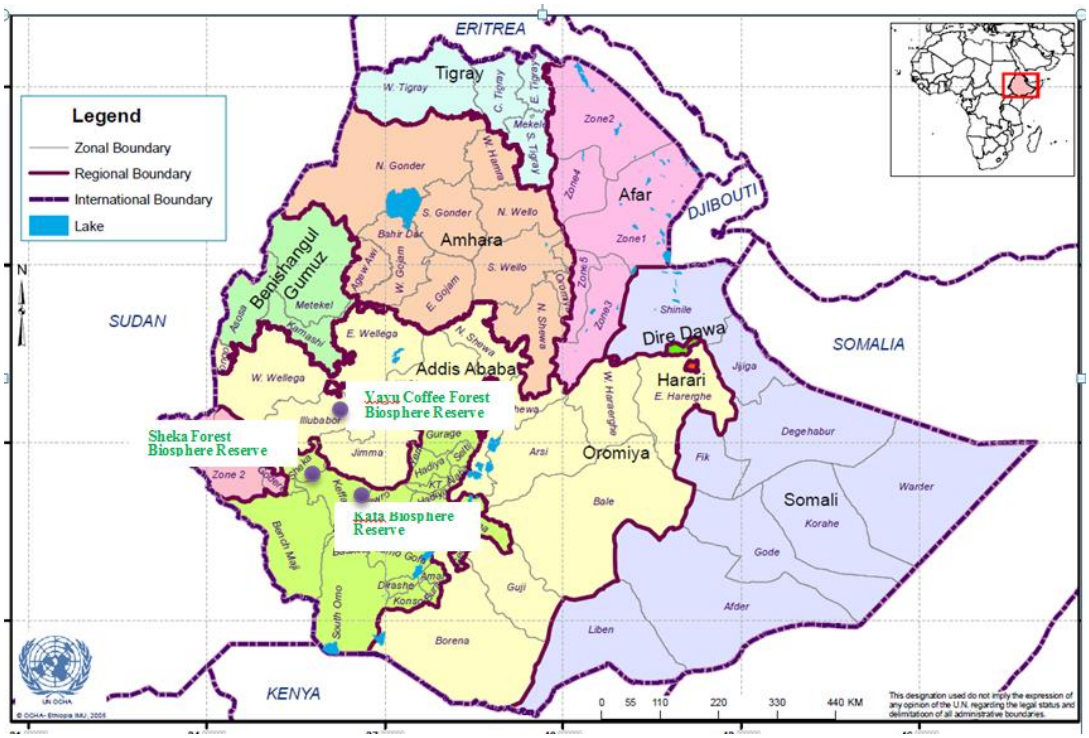


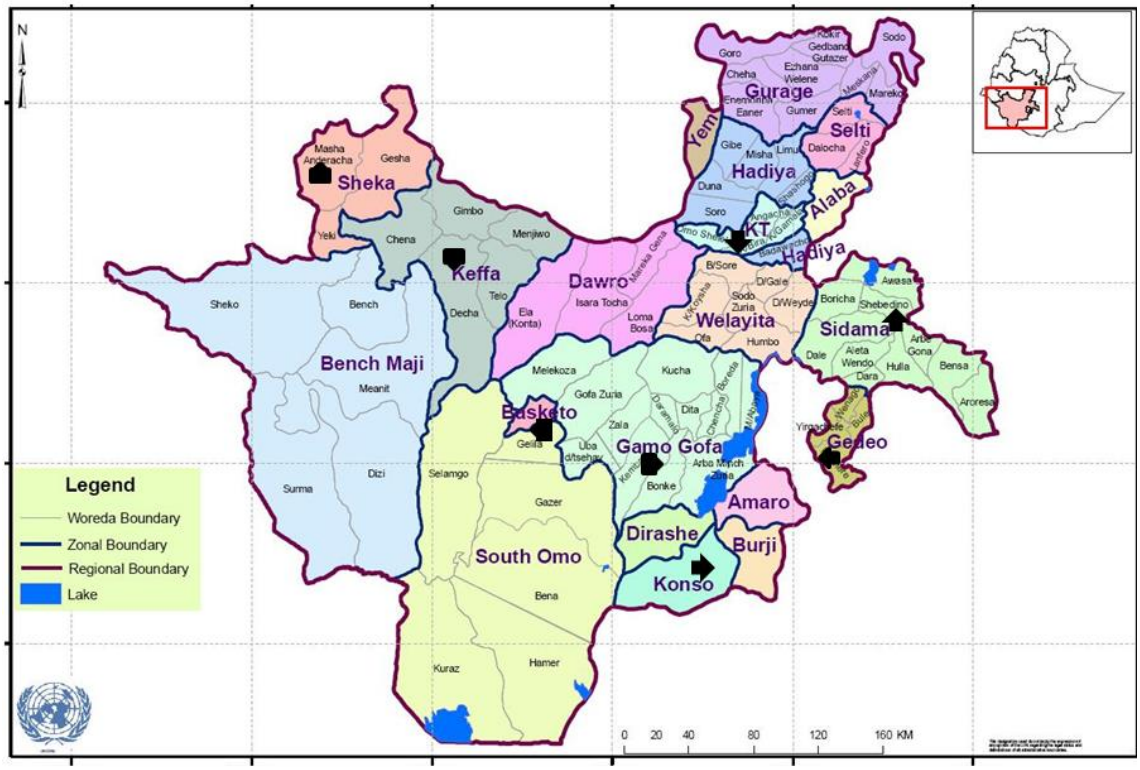
Figure 4-4 UNESCO's Biosphere Reservesof Ethiopia
(Base map source:http://www.idp-uk.org/Resources/Maps/Administrative%20Regions/Ethiopia%20Regions%20Zones.pdf)

UNESCO's Biosphere Reserves in Keffa and Shaka sub-regions of southern Ethiopia are reported as ancient 'natural forests' supported by sacred ancestral traditions and sustainable livelihoods (Forestry expert, SNNPRS-BABR, 2013), a view which is dominant in the narratives about the nation's forest areas, often depicting existing culture protected forest as remnants from natural forest from bygone era. Some regard the Sheka Forest as one of the largest 'natural' forests in Eastern Africa (Vaughn, 2010; Woldemariam & Fetene, 2010). This makes an important contribution in the national forest area coverage currently (Ibid; EBI, 2014).

The Gedeo's (an ethnic group south of Sidama) renowned agroforestry system that has combined a sustainable agroforestry practice with conservation of endangered woody tree species is now proposed for UNESCO nomination as a World Heritage Site (Anon, 2014d) and also as a GIAHS[3] (Wubalem, 2014). In Konso district of the region, further south, an ingenious terracing and agronomical system has gained world fame leading to its recent designation as UNESCO World Heritage Area. Figure 4.5 shows an informal attempt to represent distribution

[3] FAO's Globally Important Agricultural Heritage Systems

of some selected biocultural diversity hotspots in the region. A survey by a team of researchers in Gammo Highlands in the southwest, for example, found about 635 sacred forests of varying scales (Desisa, 2009). Mini-sized sacred sites (ranging from just a few square meters of area) occupying designated spaces in household backyards or communal burial areas characterize many parts of the region.



Base map source: http://www.ethiodemographyandhealth.org/SNNPR.html

Konso UNESCO WHS | *Gedeo Agroforests* | *AWSF* | *Tuppa, Ţambaro* | *Gammo sacred highlands* | *Kaffa Biosphere Reserve* | *Shaka Biosphere Reserve* | *Baskeś Ŝossa*

Figure 4-5 Major selected SNS in SNNPRS, documentary sources & interviews, April 2013, Hawassa, Ethiopia

Fifty-six ethnic groups, belonging to three major linguistic families of Omotic, Cushitic and Nilo-Saharan, exist in the region and the maintenance of sacred landscapes is a crucial part of these people's ideological and practical engagements with the natural environment. Despite each being unique and thus maintaining its own identity, cross-culturally comparable and principally similar sacred landscapes exist across this multitude of people and cultures. From Keffa- Shakka to Dawro- Konta, from Basketo to Sidama, across Gedeo, Ari and Gurage, the region has been characterized by a widespread distribution of sacred sites. The *gudumale* and *harra* of Sidama, *dubusha* and *nagassa* of Gamo-Goffa, *gutarra* of Wolayta, *Šossa* of Basketo, etc. are regionally known, comprising the "lots of sacred sites" the Regional Bureau of Culture and Tourism recognizes that are in connection with ancestral religion and that "Such things are also similarly found among many other ethnic groups" (Officer, SNNPRS-BoCT, 2013). Of the

nationally estimated ca. 34000 Ethiopian Orthodox churches in the country, the Southern Region has a large share. While more or less every such church in a rural and semi-rural setting is associated with "an island of trees", the Regional Bureau has a preliminary registration of just seven major sacred sites with EOTC motifs in the western part of the Region. These are deemed places of major importance.

4.3 Biocultural diversity and sacred sites of Sidama

As noted in Chapter Three, Sidama has a land area of 7200 sq. km. Land use patterns of the sub-region are divided between intensive crop cultivation, grazing, wetlands, water bodies, and forest areas. About 10.2 per cent of the total land mass is covered by various categories of forests including agroforestry (4.4%), all manmade forest areas (3.2%) and natural forests (2.6%) (Expert, SZ-ANRD, 2013). The Zonal Department recognizes the natural forest areas as containing culture-protected, sacred sites.

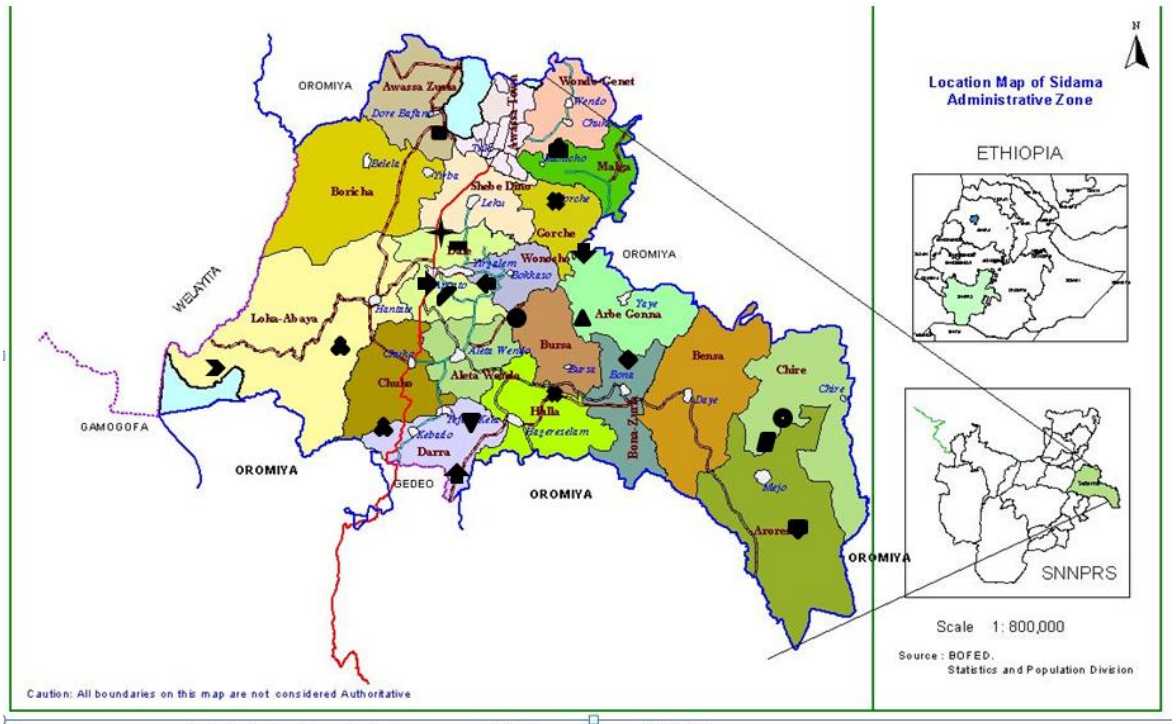
SNNPRS Bureau of Culture and Tourism considers Sidama as one of the major areas in the region where persistent forest supporting traditions exist. Existing culture-mediated forest areas in Sidama along with those in other parts of the region contribute a lot to the regional cover of existing forest areas. According to a senior culture expert at the Bureau, the Sidama *Fiche—Çambalala* (New Year Celebration) is in the process of getting nominated as a UNESCO World Heritage activity. *Fiche-Çambalala* is a cultural tradition that combines elements of ancestral values and folk astronomy, and its enactment takes places at *gudumales* (forested community assembly places) and in recent years has been gaining regional and national recognition. The Sidama Zone Culture and Tourism Department (2012) notes existence and distribution of a number of biocultural diversity areas in the Zone. As stated earlier, Lokka Abaya National Park is home to a number of otherwise endangered trees, large mammals and endemic birds such as *wolima* (Prince Ruspoli's Turaco) and other aquatic species. The Park serves as a growing attraction area for tourism and local development.

Sacred mountains, holy springs, waterfalls, river bodies, caves and other historical heritage sites in Sidama serve as important places for the preservation and continuity of culture and biodiversity. Landscapes combining local beliefs, practices, agroforestry, burial places, initiation grounds, public gathering sites, etc. with trees have characterized the land, despite facing threats (Officer, SZ-CTD, 2013). Some of these currently well known. The Garamba Mountain, for instance, some 84 km southeast of Hawassa City in Arbe Gonna is recognized as a community conservation area. The mountain is the highest in Sidama at 3360m, and it houses various fauna and flora, including some otherwise threatened species such as the endemic red

fox *(Canis simensis)*, bamboo forest, *Hagenia africana* and *Juniperas procera* (Sidama Zone Culture, Tourism and Government Affairs Department, 2012). Similar areas of this mix of biodiversity are also found in Bansa district of Sidama.

However, to date, there exists no systematic inventory and mapping of sacred sites and other biocultural diversity hotspots in Sidama (Expert, SZ-ANRD, 2013). The relevant zonal departments of Culture and Tourism and Agriculture and Natural Resources had piecemeal identification and documentation of such sites in the Zone, though a plan was underway to carry out a large scale survey and mapping of these sites (Officer, SZ-CTD, 2013). Reviews of documents from zonal offices and discussion with informants generally show existence of a number of major sacred sites centring on the burial place of ancestors, which also serves as *gudumale* ('public assembly') or *songo harra*s ('ritual places). These are relatively large-scale biocultural landmarks mainly characterized by the presence of threatened native woody trees and practice of ancestral rituals, forming an imposing presence in the landscape and an important contributor to the forest cover in localities and districts across Sidamaland.

AWSF, centring on an ancestor of Hollo—Garbicho clan in Wonsho District, is regarded as the most significant in terms of its physical scale (ca. 90.6 ha), persistent ancestral rituals, sizable number of adherents to SAR and a well-structured ritual leadership that governs the sacred rituals and protects the forest. Other major sacred groves include: Womme Bunamo in Gorche; Telamo, Meerro and Maato Hawella in Shebedino; Beera in Alata Wondo; Girija in Aroresa; Shisho and Meçesholela in Dara; Qawena Burtie and Manicho in Malga (SNNPR, Council of Nationalities' Profile: 2008; Hameso, 2014; Tekle et al, 2011). Further, hundreds of 'satellite' sacred sites of a smaller scale are distributed throughout the land (Officers, SCRBO, 2012; Officer, SZ-CTD, 2013). While the prevalence and distribution of sacred sites is primarily attributable to indigenous religion, ancestral origins and clan identities, biocultural diversity landmarks are also linked to other religious traditions. Thus, Sidama Zone Department of Agriculture and Natural Resources recognizes other mainstream religious institutional premises as imporant areas of biocultural diversity. EOTC are found dispersed across Sidama land fostering small patches or 'islands' of forests. According to the officer at the Agriculture and Natural Resources Department (*ibid*), their extent and coverage were not documented but their significance is well recognized at the zonal government level.



Base map source Administrative division map of Sidama Zone, FEDD

Keys

Girja Harra	Meeme Forest	Haafursa Forest	Garamba	Bursa natural Forest	Gidawo
Abbo Wonsho	Wome Bunamo	Hasana Haqa	Micisholela Forest	Lokka Abaya Park	Holy
Manicho Harra	Me'ero Harra	Shisho Harra	Telamo Forest	Gudumale Hawassa	Spring
Gubbo Heema	Aregash Lodge	Beera Harra	W/ Genet Forest	Haalo Tuulo Forest	

Figure 4-6 Some major biocultural landmarks in Sidama, March 2013, Hawassa, Ethiopia (Soruce: documentary reviews, FGDs & interviews)

4.4 Origins, organization and religious foundations of Wonsho sacred sites

4.4.1 Ethnohistory and clan organization

This section presents findings on historical origins, and socio organization of sacred groves of Wonsho. It also discusses foundations of SAR and the dynamics of religious composition and syncretism, and implications of this for the distribution of sacred sites.

Wonsho District is an amalgamation of nineteen peasant associations (PAs). The population of these localities, other residents in nearby districts, and the hundreds of sacred groves all trace their origins to the Hoollo–Garbicho clan that descends from Abbo, the founding ancestor. A

discussion of ethnohistorical origins of this community, therefore, requires accounting for the origins of this founding ancestor and the structures of clan divisions.

Reviewed documents on clan origins and interviews with informants present divergent narratives of local history. This study does not make an attempt to present any in-depth analysis of this ethnohistory. As noted in Chapter Three, concerning Sidama spatio-temporal history, different views, both oral and written, exist. One plausible conjecture, which is generally accepted among educated Sidama individuals and narrated by elders, is that the ancestors were part of the indigenous Cushitic inhabitants of the present day north-eastern Ethiopia beginning from the 5th century BC. They gradually moved southward over the centuries until they finally settled in their present day land (Hamer, 1970; Braukámper, 1978; Hoteso, 1990).

Quite long years and multiple spatial points were covered in the itinerary of the ancestors. Despite divergences in the narrations and interpretations of identities, there are some convergences regarding the commonly narrated account that the founding ancestors of Sidama were Bushe'e and Maldea, from whom all the present day clans branched out. A mythical apical ancestor named Maana is thought of as the progenitor of these two founding ancestors. Some elders trace the genealogies all the way to Adam the first man on earth, while others narrate a myth accounting *Magano* ('God') himself creating the two ancestors, one (Bushe) from the clay and the other (Maldea) from iron.

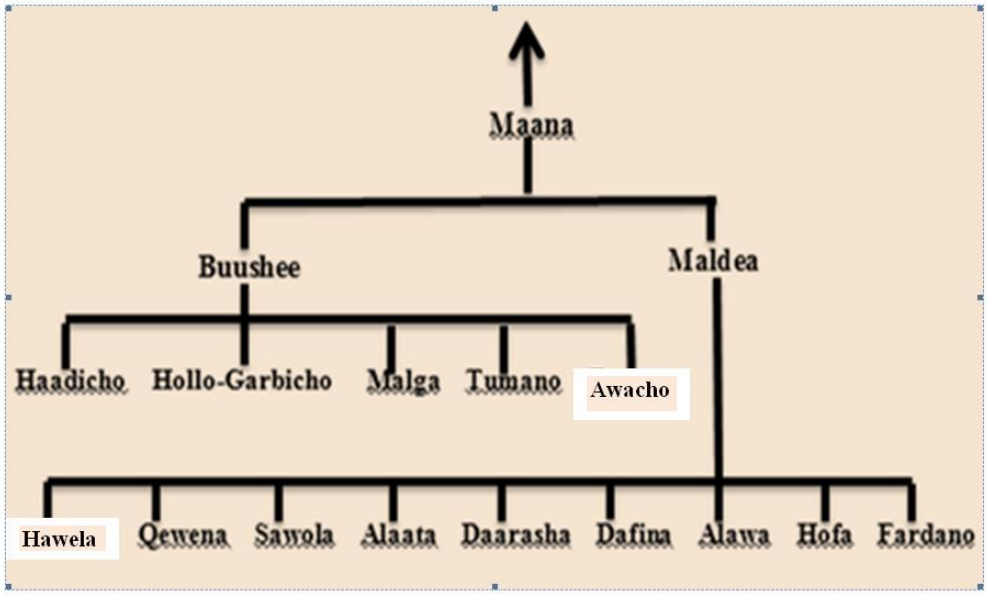


Figure 4-7 Clan divisions of Sidama
(*Adapted from Tekle et al, 2012*)

The Hoollo-Garbicho community mainly lives in Wonsho and in other districts of Sidama. A common narrative runs concerning the origins, itinerary, identity, naming and personality of Abbo the founding ancestor. An honorific, filial name, 'Abbo', roughly equivalent to 'exalted father', is used to address the founding ancestor. There was lack of uniformity concerning the proper name of the ancestor. Local elders, like Kimo Alaka (Interview, 2012), claim their ancestor originally came from abroad: "The first place for Abbo was in Ziquala beyond Addis Ababa in central Ethiopia. He originally emigrated from abroad, Arabia. When he was in Arabia he was called Hajji Hashim." This oral tradition, which is difficult to verify, is often a common narrative among other ethnic groups as well, and the idea of coming from abroad, crossing the Red Sea or some other larger water body has been a common narrative.

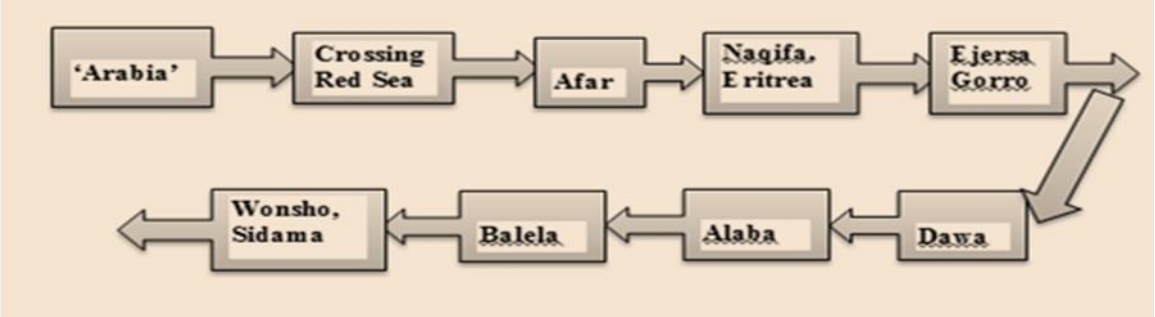


Figure 4-8 An informant's view of the migration routes of Hollo-Garbicho ancestor, interview, October 2012, Bokaso, Ethiopia

As noted, informants provide conflicting accounts of the geography of the ancestral migrations, the period of time they stayed at different locations. However, there is a general consensus regarding the fact of the ancestral migration originating in the north east, travelling south-westerly direction, involving siblings coming together, engaging in sibling rivalry as well as war with host communities of the places they landed at, staying long periods at a place called Dawa which is located in the present southeast region of Oromia, and finally arriving and settling at the present Wonsho land. Sidama tradition generally relishes the idea that "our ancestors had come from the east." The concept of "easterly direction" is itself highly regarded (Hoteso, 1990; Officers, SCRBO, 2012).

The interviews often included some genealogical exercise and elderly informants quite confidently traced their genealogies to Abbo. A series of such genealogical tracings provided an mostly a count of 15 generations. A caveat is in order here: genealogical accounts are dependent on correct memory of informants and the calculation may not yield correct estimations. Nevertheless, based on these genealogical traces, it may be possible to estimate the time of

Abbo's settlement in the present day Wonsho land. The span for a generation is often taken as 25 years which gives us about 375 years. This corresponds well with what is understood in Ethiopian history as an era when there were large-scale population movements (Marcus, 1994; Pankhurst, 1995; Zewde, 2001). Existing historical scholarship agrees that the ancestors of Abboic community, settled in their present–day land sometime in the late 16th or early 17th centuries (Stanley, 1966; Hamer, 1970; Braukámper, 1978; Tekle et al 2012).

At a more local, Wonsho scale, oral tradition holds that the most concrete cultural landscape evidence for the historicity of Abboic territoriality is the presence of AWSF where the cemetry of Abbo is believed to exist at Bokasso. This sacred grove is the epicenter of the entire Holloic-Garbicho clan. According to elders, Abbo's historic migration finally came to a stop at the present Bokasso locality. However, when Abbo entered the present day Wonsho area, crossing the River Gidawo and parting farewell to his siblings, he first made a stop at a place in Kinante which is today believed to be the "original" place where Abbo "dug the soil", and conducted his proverbial experimentation of "testing the suitability of the soil and the land for their cattle and crop cultivation" (Interviews & FGDs). His experimentation yielded a positive result and hence the name 'Wonsho', literally meaning 'full'. Today, this 'original' place is commemorated as a sacred site where totemic trees of *dagucho* (*Podocarpus falcatus*), *duwancho* (*Sygyzium guinnense*) and other native trees are found.

Oral tradition holds that Abbo gave birth to two sons from different wives: Hoollo and Garbe. Hoollo gave birth to nine sons, while Garbe to five. Informants say "*Hoollo honeste; Garbicho ontete*!" meaning, literally, "Hoollo is nine! Garbicho is five!" Current consensus among native writers and local elders shows the Hoollo-Garbicho clan is one of the fourteen such clans that constitute Sidama nation today, although divergent views exist.

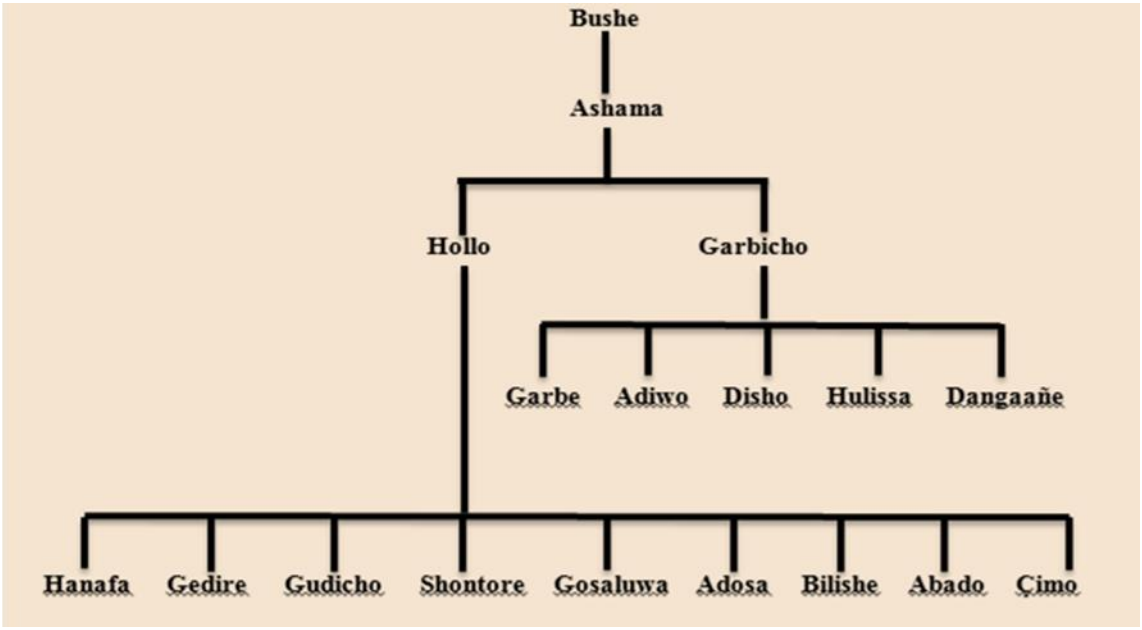


Figure 4-9 "Hollo is nine! Garbicho is five!" clan divisions of the Hollo-Garbicho of Abboic Community of Wonsho-Sidama, documentary reviews, interviews & FGDs, October 2012, Bokaso, Ethiopia

4.4.2 Clan layers, social organization and sacred sites

The relevance of clan structures in social organization, maintenance and governance of sacred sites and ancestral rituals is such that it provides a foundational ideological ground wherein these latter operate.

The lowest level in the patriarchally organized Wonsho clan structure is *mine'e*, which is one or more households that share a common father or grandfather. Members of this clan layer are considered simply a family and the term itself means 'house'. A group of *mine'e* form the next higher level of clan structure, *ayide'e*, which comprises relatives who share a common ancestor as far back as five generations. These groups on mine'e share common affairs in basic communal and livelihood arena. *Bosso*, the third layer, comprises kin who trace their genealogy from five up to nine generations. These form the social category for communal collaborations in certain intra-clan and community wide-rituals; they support each other in times of vital events such as wedding and death. The fourth higher layer, *gare'e*, comprises groups of *mine'e* that trace their genealogies from 9 to 13 generations. It is mostly at this level that clan members congregate seasonally for ancestor placation rituals. They may be loosely knit socially as members live in dispersed and distant localities. The highest level in the scale is *gossa*, or clan proper. The *gossa* comprises all progenies that claim a common mythical ancestor called *akako*.

Figure 4-10 Structure of clan – social organization of Wonsho-Sidama
(Adapted from Teklie et al, 2012)

Ownership and governance of sacred sites is situated within this broader social organization and clan structures. Individual sacred groves may be owned and managed at all the clan levels, the most common being at the *mine'e*. The maintenance of sacred sites is in a sense bound with such clan identification and territorial alignments. Sacred sites validate social unity, territorial attachments and ethnogenetic roots of clans. Sacred sites at the *gare'e* and *gossa* scale call for communal participation and they serve as salient social devices that bring members together to reinforce their common descent and consanguinal alliance and reaffirm allegiance to ancestors. Typologies of sacred sites in Wonsho below show this importance of social organization through clan layers. In the remainder of this section, I discuss this. But first, the foundations of SAR are described.

4.4.3 Foundations of ancestral religion

In Chapter Three, SAR was introduced; here, I want to build upon that discussion and examine origins and general characteristics of the SAR as a way to situate the ontological and functional basis of sacred sites. Thus, what follows is a discussion of the nature, structures and workings of this religion. It is important to note at the outset that this study makes the assumption that ancestral religion is a core factor in Wonsho, Sidama biocultural diversity, origin and dynamics of sacred groves. Without resorting to essentialising it, the ancestral religion bears the mark and essence of sacredness of the sacred sites.

First, we need to clarify the concept of SAR as used in this study. The term *religion* as applied to Wonsho ancestral beliefs, rituals and practices is rejected by some informants, especially among the educated, in an effort to counter the denigration of the SAR among the largely modernizing and Christianized Sidama community. They generally prefer to designate it 'culture', which is generally understood as ancestral traditions. *Religion* according to their

understanding is about the mainstream, organized institutions of Islam or Christianity. Divergent views exist at the present concerning this, which is beyond the scope of this study. By Abboic religion, I intend to refer to all the ancestral beliefs, rituals and institutions that cohere in a folk-theological framework and include notions of the nature of beings, rituals undertaken to reinforce values and the phenomenon of a single moral community created through exercise of communal ceremonies and feasts. This is a Durkheimian view of religion (Durkheim, 1965; Keesing, 1981) applied to the SAR.

4.4.3.1 Origins and foundations

As noted earlier, SAR displays both monotheistic and polytheistic elements in the sense that the core of the system is belief in *Magano* ('the Supreme Being') on the one hand, and, on the other hand, the veneration of *annu-akako ayana* ('spirits of deceased ancestors'), instrumentalized through sacred forests, trees, rivers and other natural elements (Brøgger, 1986; Hoteso, 1990; Wansamo, 2009). *Amate woxxa* ('the cult of feminine figures') also has some place in the ancestral religion but it is marginal (Tekile et al., 2012).

The folk theology depicts *Magano* as creating man and other entities, that he lived among men, man deviates from the divine commandments resulting in punishment, and henceforth a mediatorial agent required to approach him. Since then, *Magano* is approached through the brokerage of other spirit beings. *Annu-akako ayana* are the mediators through whom the people approach the Supreme Being. As noted above, debates exist as to whether the SAR is monotheistic or polytheistic (Wansamo, 2014a); this study does not address this debate *per se*, instead I concentrate on the 'ancestors-as-mediators' concept as this is is more relevant in the context of this study.

The SAR thus involves veneration of ancestors who are believed to mediate between humans and the creator (Hamer, 1976; Hoteso, 1990; Wansamo, 2009). A participant in a local technocrats' focus group observed:

> Sidama people believe in ancestral spirits. For example, if my father dies, I can maintain a specially designated graveyard where the dead would be buried and regard the graveyard as sacred. When a renowned ancestor dies, they believe that the spirit of the ancestor lives together with the progeny. They venerate the ancestral graveyard….by offering honey mead and other sacrificial items (Officers, SCRBO, 2012)

According to informants, a worshipper can pray to *Magano* invoking his name and also his ancestors' names. This is effectively done by providing propitiation sacrifices to ancestors who are then believed to "take" the request and bring it to *Magano* on their behalf. Statements along this line, "*Magano* hears Abbo because he is holy and lives closer to *Magano*; that is why we

pray to Abbo," are thus characteristic of local beliefs about the workings of their religious system. A renowned *budu's* (ancestral religionist) statement is a reflection of this: "We pray to Abbo. Abbo then prays to *Magano*," (Manissa, 2012).

Abbo is the centre of the religion in this part of Sidama. Adherents of Abboic religion hold extreme form of adoration for him conferring him with varieties of honorific titles and attributes. A local elder's focus group participant called him "one who devised our original culture and transmitted it to us"; an informant touted him, "Abbo is respected ancestor of Hoollo and Garbicho." A ritual leader adored him: "Abbo was an adventurous hero and visited many areas before settling at this place. He was like a philosopher. He predicted what would happen in the future," (Ganna Ke'e, 2012). Local people from other mainstream religions had varying attitudes towards the SAR and the deification and mediatorial role of Abbo. This mediatorial concept attached to the ancestral religion is better explained by an informant who was a local Sidama priest at an EOTC:

> In the law of the Old Testament, they used to settle disputes and made vows under the trees. This is a residue from the Old Testament practice. The elders sit there and pray for various issues such as for peace of the land, for good weather, land productivity, etc. in their traditional way. They pray to Abbo who would in turn ask God on their behalf. They pray to Abbo, considering him as an agent who can approach God (Priest Aggnehu Tira, 2012).

A Muslim Sidama and an ex-SAR adherent had this to say:

> … Our Muslim faith orders us to worship God only. But the people here consider Abbo, who is dead man, as a deity. Although he cannot make people die or get healed, people believe this. We used to believe this and practice this in the past but now we no longer believe in this. Abbo has his own spirit. People respect him. I also, as a Hoolloic man, respect him; but we cannot take him as a God. I do not worship him… (Kedir Tirra, 2012)

Over the decades in the last century and particularly since the onset of 21st Century, conversions to Islam among local Sidama have taken place, albeit limited in scope compared to, say, Protestant Christianity. Motives for conversions to Islam often tended to be more idiosyncratic (e.g. through dreams, healing experiences, etc) compared to Protestant Christianity, which often involved a structured form of proselytization. Conversion to Islam in the past several decades has not resulted in any form of radical detachment from SAR. Only in recent years, a stricter form of Islam has been introduced which forbids converts to participate in ancestral rituals. In most cases, though, the Abboic and Islamic religions coexist, syncretizing each other. This explains partly the existence of Muslim worship shelters at Abbo sacred forest (See Figure 4. 14 below). Loyalty to ethnic roots is much stronger than to religious affiliation among the more traditional form of Islam in Wonsho-Sidama.

4.4.3.2 Social organization and core rituals

The AWSF is one of the major cnetres of the SAR. Like other mainstream religions, there are priestly offices in the AWSF. The *qaddo* ('ritual leaders') are recruited from sub-clans within Hoolloic—Garbicho clan (See Figure 4.9). There are four ritual leadership positions combining religious, social and political roles. The highest priestly, political office is that of the *Ganna*; the three other positions are: *Qaricha*, *Womma* and *Gadala*. However, there are conflicting views regarding these positions. Although all agree that the *Ganna* is the supreme position, there are variations concerning the other three. The *Ganna* is the ultimate ritual-political leadership position in Wonsho. Elsewhere in Sidama, the highest ranking ritual-political position is generally designated as *Mo'ote*, translated as 'lord' or 'king'. *Gadana* is a widespread leadership position in relation to the *luwaa* ('rite of passage') institution (Stanley, 1966; Hamer, 1970; Hameso, 2014).

Figure 4-11 Ganna Ke'e, supreme ritual leader of AWSF & his aide, interview, November 2012, Bokaso, Ethiopia (The Ganna (Left), his aide (right), research assistant & myself, in an interview episode at the Sacred Forest)

There is a substantive link between these ritual positions and the sub-clans they are recruited from. The logic of this is explained by an elderly informant:

> These ritual leaders come or represent different sub-clans from the Hoollo-Garbicho clan. Ganna represents the Rera clan of Hoollo. Qaricha represents the house of Ma'eke clan. Womma can be allocated to both turn by turn. For Garbicho, there is only Gadala while for Hoollo all the four positions are given [because Hoollo was the first-born]. In authority, the Ganna and Qaricha are equal; but the people prefer Ganna. The others, Womma and Gadala are of lower rank (Qasim Mehamed, 2012).

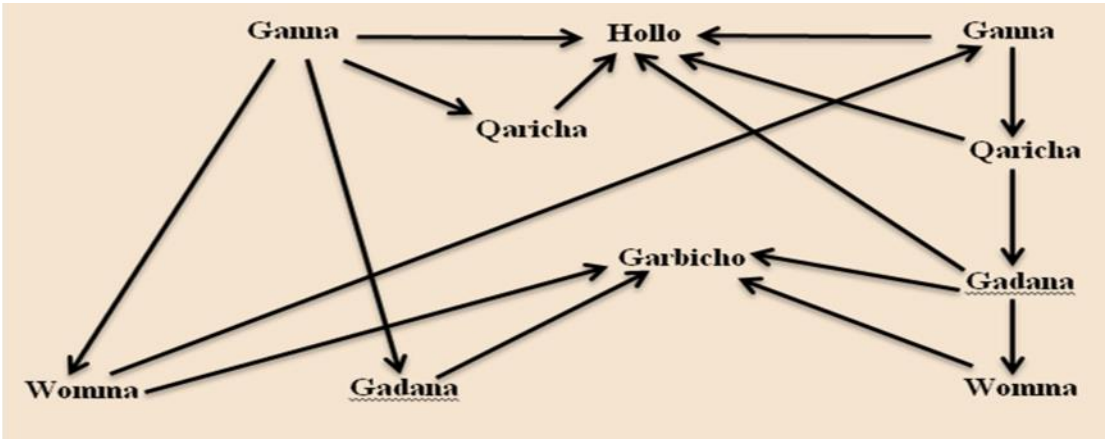


Figure 4-12 Two models of organizational structure of priestly-political leadership and clan identification of ritual leaders, AWSF, Bokaso, Ethiopia
(Left: semi-hierarchical; right: hierarchical)

Abboic religion involves the 'core stuff' of religion like other religions: placations, prayers, places; and making of vows, requests for healing, wealth, blessings, children, bounteous crops, etc. As one informant notes, "infertile women pray and make vows for getting children; poor people pray for wealth, sick people pray for health. He gives them," (Manisa, 2012). The use of a designated worship place is an important aspect of social organization. The practitioners would use a family graveyard as a temple to placate spirits of their immediate ancestors (at *mine'e* and *gare'e* scales) while *songo harra* (communal sacred groves and assembly venues) would be used for worshipping common ancestors at higher clan scales.

Figure 4-13 A view of AWSF ritual centre, SNS survey & observation, October 2012, Bokaso, Ethiopia
(Second compound, ritual leaders' office and ancestor grave site (right); close-up view of Abbo Wonsho temple (left)

One such large- scale clan-wide worship temple is at AWSF. At the nucleus of the 90.6 ha sacred forest lies the Abbo graveyard. A temple modelling after EOTC stands upon the semetry. There are three compartments each separated by fences. The first level fence is open to all interested. The second fenced compartment is allowed for worshippers. The third is the holiest place and only ritual leaders are allowed to enter. The *Ganna* explained it thus:

> Not all people are allowed to enter there…. To the third most holy place where the temple is, the ones that enter are we the sons and ritual leaders of Hoollo and Garbicho and those who have fulfilled all the ritual requirements such as circumcision. ... Those who enter there must be circumcised in the traditional manner; …. No one can enter by force or through friendship. Anyone that enters without permission will be struck dead. Those who come to fulfil their vows … are permitted to do it in the second compartment. The second compartment is the place where the bulls are killed for sacrifice. The first compartment is the place where lambs are sacrificed. The third and most holy place is the place where the ritual leaders enter (Interview, Ibid.)

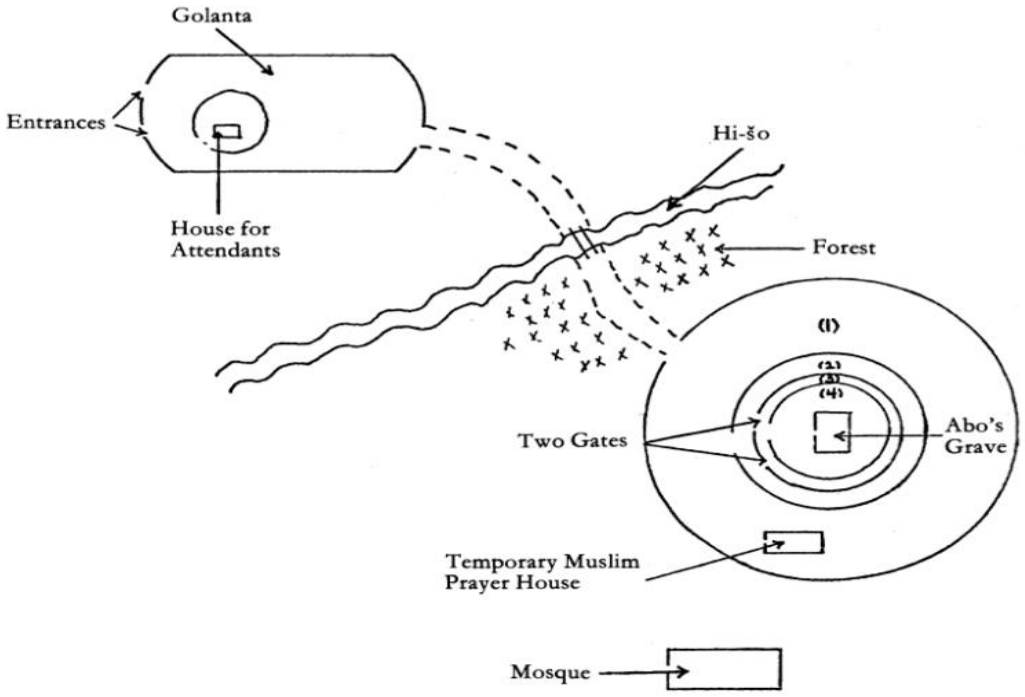


Figure 4-14 Layout of AWSF
(Source Hamer, 1976)

Sacred sites and native woody trees are concrete, material representation of the realities of religion, clan identity and ethnohistory. Where these occur, they are symbolic of clan identities, artefacts of genealogies, bearers of temporal spans and markers of territorial attachments. It is in these sacred sites and totemic trees that ancestral spirits are believed to manifest themselves. In this sense, sacred sites and trees are the meeting points for the present living and deceased generations of humans, spirit entities and the creator. With due recognition of the dynamic

syncretism and emerging diversities in the social organization of sacred sites, it may be safe to argue, given the central role of SAR plays, that sacred sites, embodying ancestral religion,are crucial predictors of the future of the Abboic community as a unified moral entity.

There are certain salient rituals that may be considered the core of the SAR. One of these is the *dasho* ritual. It is a major ritual event that brings together at AWSF all faithful members of the descendants of the ancestor living all over Sidama and beyond. It is a time of getting together and making solemn placations and prayers, as an elder noted, "…we have *dasho* ritual. During this ritual, we pray to Abbo and ask him to bless our cattle, children, land and the government" (Kimmo, ibid).

Figure 4-15 A view of first & second compounds of AWSF, SNS survey & observation, October 2012, Bokaso, Ethiopia
(A view of entrance to second compound (left); a view of entrance to first compound (right))

The term *dasho* signifies, literally, 'flooding'. At a *dasho* event, blood of sacrificial animals would flow like a flood in the sacred grove (Hoteso, 1990). Informants reported that during a *dasho* ritual, hundreds of bulls might be sacrificed. The highest recorded number of killed animals in such an event was 300 in 2008 (KI-AiO-RA, 2012). This is not an unprecedented number. Documentation of such events was rarely practiced before Wonsho District came into being as a District in 2008, and it might be possible that quite much higher number of animal sacrifices were made in the past, given the fact that obtaining animals was cheaper and adherence to SAR was much stronger.

During such rituals, it is reported, the pool of blood inside the open space would attract crowds of people. The ground of the sacred site would be littered with bones, dried blood and dirt, which would be a boon to insects, birds and nocturnal scavengers. There was no wastage of the

animal sacrifice: the meat was feasted on at the spot, and the remainder was divided among the attendees to take home; the skins belong to the individual worshippers; horns, bones and other residues for scavengers.

The continuity of the SAR has depended partly on this animal sacrifice as part of the thanksgiving and veneration of ancestors. Preparations for such great events are well thought out. A typical practicing ancestral religionist would begin by setting aside a newly born calf or lamb for a number of years until they are much fattened, and these animals would be treated with utmost care as they are designated as "Abbo's" gift. This is the principal way of making available sacrificial animals. Bulls, rams and other sacrificial animals may also be obtained from local markets. Different types of animals and plants are used in the various Abboic rituals. Bulls form the core of the animal sacrifices, while sheep are also used occasionally. Since honey is a salient component of the rituals, bees play an important indirect role in such rituals (See Chapter 8). The use of plants (from a humble herb to a massive tree) in the ritual is central. I will discuss this in more detail in Chapters 5 and 8.

Figure 4-16 Bones from animal sacrifice, AWSF, SNS survey & observation, November 2012, Wonsho, Ethiopia

Apart from such long term and seasonal ritual events, sacred sites, especially clan-wide ones such as AWSF, are always busy as people come to seek help from ritual leaders for various purposes. On Sundays, at least four categories of people would be available: senior priests, associate priests, helping staff such as couriers and guards, and help-seekers. A typical Sunday morning service in the sacred site often involves what is called the *songo*, a term for a council of

ritually confirmed local and clan elders as well as an institution for ritually governed dispute settlement (Hamer, 1972, 1976; Aadland, 2002; Hoteso, 1990; Teshome, 2009).

This is a salient function of sacred sites in Wonsho, Sidama, as discussed further in chapter 5 and 8. The *qaddo*s (ritual leaders) and other elderly persons are those entrusted with managing such conflicts. However, serious cases are often brought to the ritual leaders. The disputes often involve those between members of the Abboic clans and those who take their cases to such places are those who subscribe to the ancestral religion. However, informants reported that customers from other members of the local community, including those from the migrants and other religious groups, may also often bring their cases to the ritual leaders. In fact, according to informants, some people come "even from Addis Ababa itself." Most commonly seen or managed cases of disputes include typically those that involve mysticism, boundary issues, theft, promise breaking, etc. These are often cases that lack tangible evidences if the accusers are to take their cases to the state legal courts. It is generally believed that the resolution given by the ritual leaders is binding. The accused if found guilty (the ritual leaders are known to find out the truth through spirit agency so it is believed no use to lie or deny) and refuses to abide by the decision is believed to face the wrath of the ancestors, ranging from sickness to death.

Unlike in other mainstream religions, there is no formal teaching or preaching on Sundays or other days at AWSF, nor is there any written book of religion and morality to read from. "We do not have other services like preaching. We pray to Abbo for the peace of the land and for development of the country. We do not preach for converting others to our religion. People from all backgrounds come for varieties of cases and needs; we tell them not to steal or do other illegal things," (Ganna Ke'e, ibid*)*.

The practice of Sunday as a Sabbath appears, though, to have been borrowed from Christian tradition. The physical look of the temple where Abbo's body rests is also similar to EOTC building, which local informants agree is an influence from EOTC tradition. Equivalent sacred objects and symbols exist, including the use of a holy spring, which, like the widespread EOTC tradition, provides a curative service for people seeking solutions to various ailments. Thus, syncretism of religious ideas, symbols and practices are plainly evident, as is the case in many other parts of southwest Ethiopia (Hamer, 1976, 2002; Braukámper, 1992), a fact demonstrating that ancestral religion is not just a monolithic, homogenous entity; rather, it has incorporated creatively elements through dynamic interactions with other systems of thought and institutions, affecting and being affected thereby.

In sum, the SAR is characterized by a well-established social organization, presence of a sacred place of worship, use of sacred symbols and objects, enactment of prayers, vows, and other

placation rituals, religious priests entrusted with dealing with meeting the spiritual and psycho-social needs of the faithful, claims of answered prayers and healing occurring in the name of the ancestor, etc. The religion is a critical factor engendering salutary outcomes for biodiversity and ancestral traditions and maintenance of sacred sites.

4.4.4 Distribution and typologies of sacred groves in Wonsho

A typology of sacred groves may be based on a number of models or criteria. The model used in this study is spatial scale combined with clan layers and ownership regimes. Accordingly, sacred groves at lower scale of clan structure may be termed as *mine'e ha'ara*, 'household sacred groves'. These are owned and maintained by individual households. These are insignificant in terms of the space they occupy and the extent of trees that make up the sites. The lowest spatial scale in this case is a sacred place where an individual tree stands. In our surveys, the highest number of trees found in a household level sacred grove was twelve. *Danawwa* or *songo harra* are sacred sites that are collectively owned and managed (*Danawwa* may also refer to any collectively owned land irrespective of its sacredness). They are relatively vaster in their spatial scale. These sites often link with higher clan scales. These are burial places of ancestors from sub-sub clan scale upwards. The highest scale may be designated as *gossa ha'ara*, the sacred graveyard centering on the body of the founding ancestor; AWSF is such a place.

Figure 4-17 Model of sacred site typology based on spatial scale and clan layers, interview & FGD, Decemeber 2012, Bokaso, Ethiopia

A functional model may also be utilized to explicate the typology of sacred sites. By functional is meant the immediate and practical functions for which a sacred grove or a totemic tree is maintained. In a generic sense, all sacred groves may be conceptualized as having similar underlying functions; namely, serving as totemic symbols and physical spaces for ritual enactments. However, in a more concrete sense, there may be various other functions. Based on this criterion, sacred sites may be categorized as household shade trees, ancestral burial sites or graveyards, *gudumales* (ritual-meeting arenas) and *luwaa* (initiation grounds).

Figure 4-18 A SAR adherent at his household sacred Podocarpus falcatus shade with his sacrificial animals, interview & SNS survey, November 2012, H. Ferro, Wonsho, Ethiopia

Keeping native trees for shade in the front-yards of households is a valued practice in Sidama (Chapter 5). A native tree, mostly *dagucho* (*Podocarpus falcatus*), is planted and maintained having latent and manifest functions. The manifest function of having such a tree is for the practical needs of shade, shelter, resting and recreational space for households. Its latent function is to reinforce clan identities and connections. In some instances, such trees are inherited from fathers to sons and they are maintained until they fall down due to age. These are non-economic trees and hence never meant for mundane uses. The household front-yard trees also function as palaver trees, whereby a range of neighborhood and kinfolk issues are discussed and settled.

The other dominant function is using these spaces as burial sites, grave markers, demarcations and protection instruments. Individual households maintain these in their backyards; a group of households, members of sub-clans and clans in general collectively own and manage them as places where their common ancestors are buried. Ancestors are placated at these sites as well. *Luwaa* sites are mini-forest places serving as initiation grounds where a valued age-grading rite of passage takes place. *Gudumales* are multipurpose spaces for communal events, New Year celebrations, collective rituals and other social activities. They could be owned and managed by individual households or collectively.

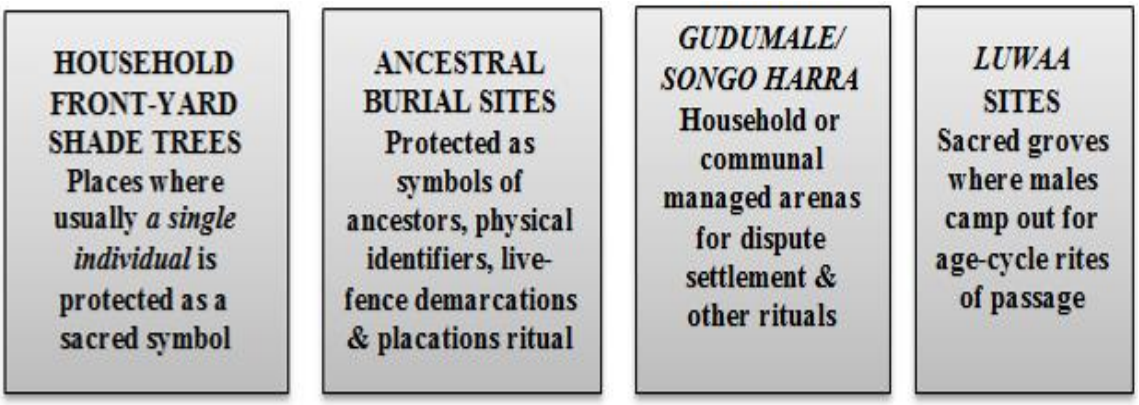


Figure 4-19 A model of sacred sites based on functional classification, SNS survey, interview & FGD, December 2012, Bokaso, Ethiopia

A final typology could be based on protection status of sacred sites. Sacred groves may be classified into three types based on this model. What may be termed as "extant" sacred sites are those that exist currently, despite pressures on them, with their underlying ancestral values resilient in maintenance and some form of protection in place for their physical space. A second category belong to what may be termed as 'extinct'; in the sense that such sites have disappeared because of a variety of factors (See Chapter 9).

"Transformed" sites include those which have been exposed to varying degrees of transformations, both physically and ideologically. They may exist in a degraded state. In a few cases, these transformed sacred sites may still physically exist, but they will have lost their underlying ideological purpose. Such is a case when ex-SAR owners convert to other mainstream religions, especially Protestant Christianity, and the owner decides to continue maintaining the sacred grove as his ancestral inheritance. They no longer serve as places of ancestor worship. Devoid of their spiritual aura, they may continue as mere "social" trees.

Our informal surveys and interviews thus yielded a total of 26 sacred groves in the "extant" category; eight in "transformed" category and fourteen "extinct". A total of 48 sacred sites were identified (Figure 4.20).

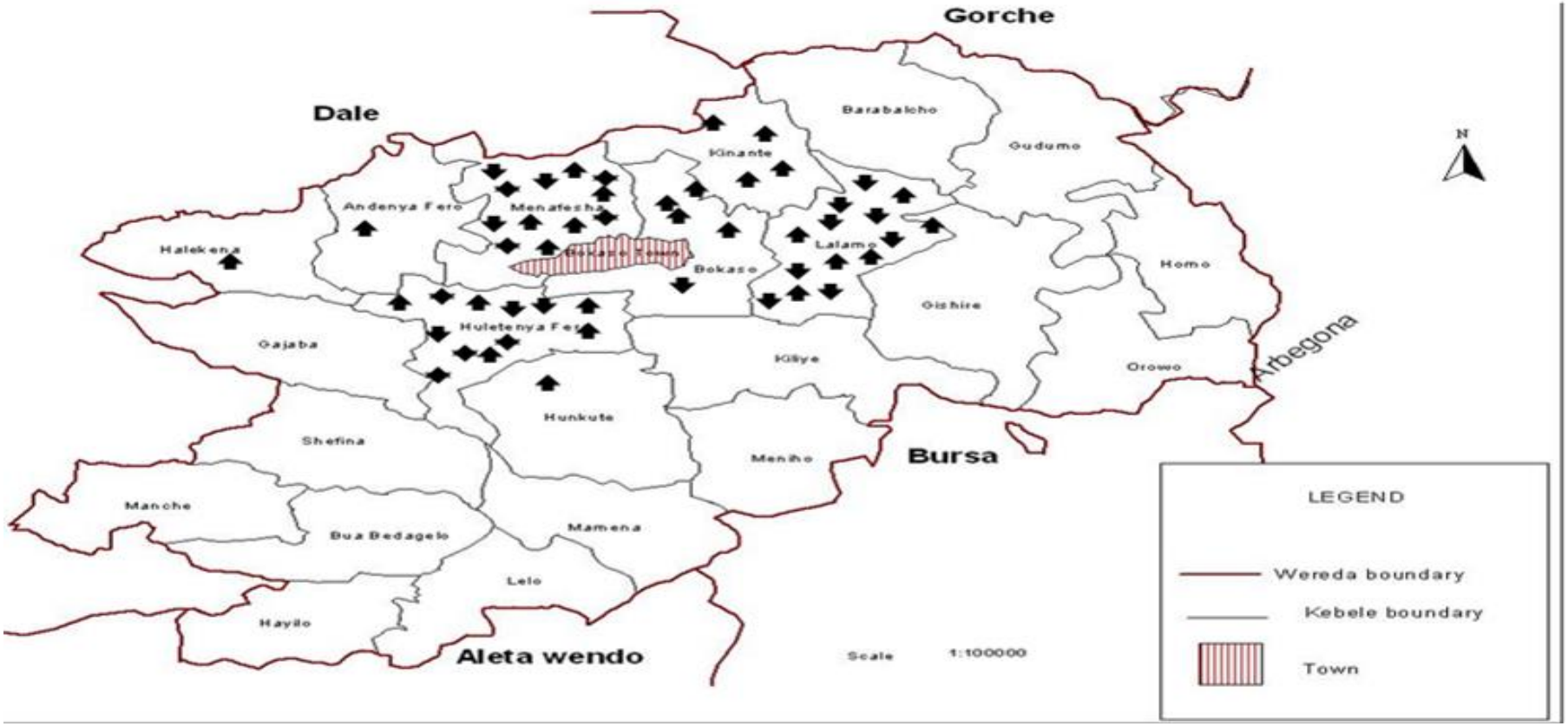


Figure 4-20 Distribution and conservational state of sacred sites in studied localities, SNS survey, interviews & FGDs, July 2012-Jan 2013, Wonsho, Sidama, Ethiopia (Base map source: SZ- ANRD, March 2012, Hawassa, Ethiopia)

Legend "Extant" (Protected) "Transformed" (Endangered) "Extinct" (Lost)

4.4.5 Sacred groves and dynamics of religious syncretism

Here, I examine in some detail the significance of ancestral religion in the distribution and maintenance of sacred groves. It is also worth pausing at this juncture to investigate religious composition and syncretism found in study households, and to further understand distribution of sacred sites among other mainstream religions and their views of ancestral traditions.

As noted in Chapter 3, Protestant Christianity is the dominant religion in Sidama in general, while SAR has declined significantly especially since the 1960s following the expansion of missionary work in the region (Hoteso, 1990; Hamer, 2002; Tekile et al., 2012). Wonsho District Administration does not maintain a record of the current extent of adherents of the SAR. However, interviews and common observations show that many still practice SAR and those that identify themselves officially as Protestants may also still continue in SAR, as an officer at Sidama Zone Department of Culture and Tourism noted, "from our experience and common observation we know there are many who practice ancestral religion. These days, almost all people, wherever you go in Sidama, associate themselves with Protestant Christianity and they hide their ancestral religious affiliation. Due to this, it is difficult to determine the actual number and scope of adherents of Sidama ancestral religion," (Head, WDCTCO, 2013).

In my survey, 141 respondents (70.5%) of sample households (n=200) were Protestant while 24 per cent (48) adhered to ancestral religion. This appears as a microcosm of the overall picture. Adherence to ancestral religion was stronger among older persons. This is quite congruent with the findings from qualitative interviews and general observations. Aged persons in the survey (60 and above) had significantly higher percentage of following compared to those in age groups below 40 (Figure 4. 22).

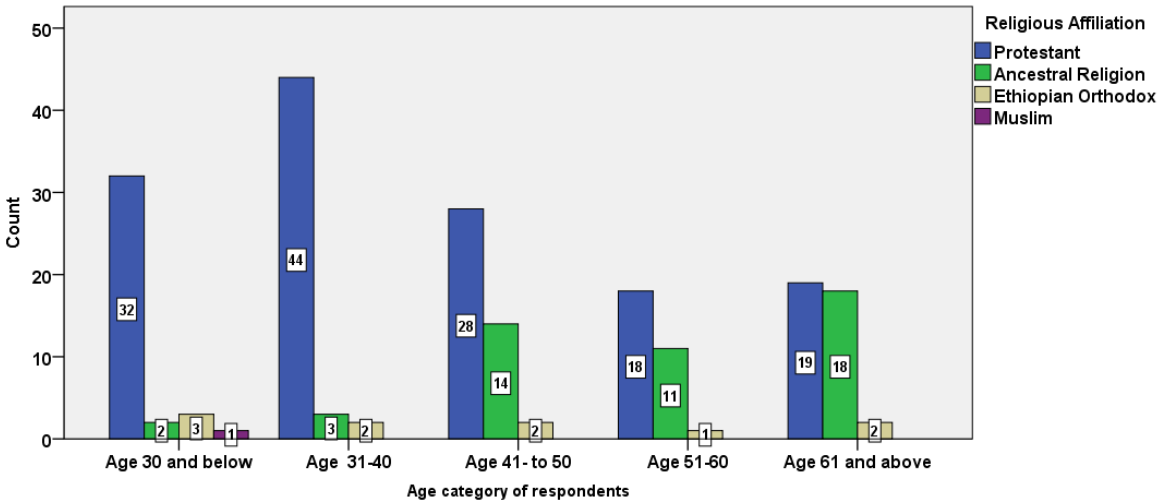


Figure 4-21 Religious affiliations by age category of household heads, HHS, September 2012, Wonsho, Ethiopia

Maintenance of household sacred sites thus varied across these religious lines (Table 4.1). Adherents of the SAR were more likely to own and maintain a sacred site. Respondents were asked whether they maintained a grove for non-economic purposes and adherents of ancestral religion were found, quite expectedly, more likely to engage in non-social driven maintenance of trees. Practice of ancestral rituals and attitudes towards such are also closely related to religious adherence. As a matter of principle and observation, ancestral religion essentially coheres in such rituals. Attitudes and practices of respondents reveal that differences between various religious groups might be blurred. Reported behavioural and attitudinal positions and actual practices might also differ.

Table 4-1 Religious affiliation & maintenance of tree for noncash among surveyed households, HHS September 2012, Wonsho,

	Maintaining tree for noncash use				Total	
	No		Yes			
Religious Affiliation	Count	% within Religious Affiliation	Count	% within Religious Affiliation	Count	% within Religious Affiliation
Protestant	46	32.6%	95	67.4%	141	100.0%
Ancestral Religion	8	16.7%	40	83.3%	48	100.0%
Ethiopian Orthodox	1	10.0%	9	90.0%	10	100.0%
Muslim	1	100.0%	0	0.0%	1	100.0%
Total	56	28.0%	144	72.0%	200	100.0%

Maintenance of sacred groves in Wonsho is directly associated with the practice of ancestral religions. Thus, a participant of a local technocrats' focus group noted:

> Those who adhere to Sidama ancestral religion believe that ancestral spirits reside on trees; those who do not are not afraid of any spirits and they easily cut trees and use them for their immediate needs. Therefore, in most cases, it is those who adhere to Sidama ancestral religion who these days have managed to own sacred groves in their backyards and on the graveyards (Officers, SCRBO, 2012).

We would expect that SAR adherents are more likely to report positive opinions of ancestral rituals. Significantly higher percentage (87.5%) of SAR followers reported engagement in such rituals, while only 29.1 per cent of Protestants reported so (Table 4.2). The report by Protestants in the affirmative may show a number of local dynamics in the religious landscape; one is the phenomenon of religious syncretism and coexistence whereby native religious conversion to Protestantism may not be so radical as to require a complete abandoning of ancestral religion. In limited instances such things do occur.

Table 4-2 Religious affiliation & practice of ancestral rituals, HHS, September 2012, Wonsho, Ethiopia

	Practice of ancestral rituals				Total	
	No		Yes			
Religious Affiliation	Count	% within Religious Affiliation	Count	% within Religious Affiliation	Count	% within Religious Affiliation
Protestant	100	70.9%	41	29.1%	141	100.0%
Ancestral Religion	6	12.5%	42	87.5%	48	100.0%
Ethiopian Orthodox	4	40.0%	6	60.0%	10	100.0%
Muslim	1	100.0%	0	0.0%	1	100.0%
Total	111	55.5%	89	44.5%	200	100.0%

It is reported as well as observed in other data that Protestants and other mainstream religion followers often continue allegiance to many ancestral values. Such a blending of religious values was much stronger among local Sidama who reported their affiliation as Ethiopian Orthodox and Muslim. These are less likely to require radical dissociation from ancestral rituals compared to evangelical Protestant Christianity. Syncretism between SAR and these was much more pronounced, as conversion to them was often a matter of superficial allegiance. EOTC and Islam, however, are limited in the community.

Figure 4-22 A Muslim Sidama praying in AWSFS, SNS survey & observation, November 2012, Bokaso, Ethiopia

As noted above, a strong yet subtle approach has been to remove religious cloaks from the ancestral rituals and to designate them as purely matters of ethnic expression. So in recent years,

a growing move has occurred along this line especially among a relatively modernized and educated class, who see themselves as belonging to the 'back-to-the-cultural-roots' campaign. While participation in ancestral rituals was a matter of sin and a reason for excommunication of Protestant converts in the past, these days there is a growing sense of leniency where more and more Protestants tend to ally with ancestral traditions. In view of this, Protestants reporting maintenance of sacred groves in the household survey (about 67%), documentation of four ex-SAR turned Protestants maintaining sacred groves and their reporting of participation in various ancestral rituals, events and celebrations are, therefore, understandable.

The phenomenon of religious syncretism and co-existence is, therefore, an important factor in the present social landscape of the community and it is a key organizing principle in matters of community relationships, identity expressions, reaffirmation of origins, pacification of social tensions and preservation of sacred site institutions and ancestral values. Progressive increase in the phenomenon was confirmed and was generally salutary for the continuity of ancestral traditions, useful tree-based traditions and overall conservation outcomes for sacred sites and trees. In recent years, increasing levels of community engagement, local government actions and, especially, the educated members have worked towards both creating and fostering this religious syncretism and coexistence on the one hand, and countering the rather radical stances of denigration of ancestral rituals, on the other. In such dynamic and creative syncretism may lie the future of the SAR as it struggles to maintain its core while at the same time incorporating elements from others.

The idea of "religion is private, culture is collective" was well integrated into the current thinking of locals, so it runs as a common theme when discussing participation in ancestral rituals. The argument is that people can keep their faith or religion as personal and still work together in matters of protecting their "father land" and ancestral traditions. So argued a young man:

> We take part in the Fiche—Çambalala celebration. The Church forbids eating ritual food but no other activities. When the worshippers eat the ritual food, the Full Gospel adherents leave. This is our culture. Religion is personal while culture is collective, (Ayele Senbeta, 2013).

In sum, maintenance of sacred sites in Wonsho is a function of religious affiliation, and such an affiliation becomes more visible in view of the gradual diversification of religious identities from the original homogeneity, especially since the last half of 20th century, whereby mainstream Protestant Christianity has become the dominant religion. Such diversification has tended to have adverse outcomes for sacred sites in general. However, people tend to live in two

religious worlds, and religious syncretism in recent years is becoming a positive factor in terms of the preservation of sacred sites.

4.5 Discussion and conclusion

This Chapter set off with an overview of the scale and distribution of biocultural diversity areas at a macro-level, reiterating Ethiopia's wealth of, and the importance of SNNPRS as a "home" for, biocultural diversity. Review of biocultural hotspots and sacred sites showed a general lack of their systematic documentation and mapping, pointing to the fragmented aspect of the geography of sacred sites at all scales in the country. Wonsho community's ethnohistory, social organization, clan structure and religious diversity were presented as broader contexts for understanding the geography of sacred sites. Findings on the folk narratives of origins of sacred site institutions, the nature and workings of underlying worldviews, clan structures and the dynamics of religious diversification and syncretism were also presented with a view to understanding how these support or impede the welfare and robustness of sacred sites. The following paragraphs provide concluding discussion.

4.5.1 Discussion

Biocultural diversity hotspots in general and sacred sites in particular, as introduced in Chapter Two, are humanity's important heritages built from time immemorial; they are manifestations of an inextricable link between human cultural systems and nature (Balée, 2006); key evidences of nature as cultural archives and anthropogenic imprints (Pretty, et al, 2009). Human societies have set aside land areas for special cultural or other needs from time immemorial (Sobrevila, 2008). Sacred mountains, rivers, forests and groves, caves, wells and islands are the world's oldest conservation areas (Dudley et al., 2009), and still form a large and mainly unrecognized network of sanctuaries around the world (Dudley et al, 2005; Papayannis and Mallarach, 2007; McIvor et al, 2008:9).

Sacred sites may comprise a whole range of natural and manmade entities; their importance derives from their historical relevance, they may be associated with faiths of all forms of religious groups and their current place as part of living practices of indigenous communities. However, the existing discourse on sacred sites recognizes the special importance of natural sacred sites and those linked to religions of indigenous peoples and local communities in Third World countries (Papayannis and Mallarach, 2007; Wild and McLeod, 2008). In this sense, sacred sites are salient embodiments of biocultural diversity (Maffi, 2001; Verschuuren et al., 2010; Pungetti et al., 2012; Sponsel, 2013). This study considers sacred groves of Wonsho

within the framework of sacred natural sites, which are "considered nodes of biological and cultural diversity" (Verschuuren et al, 2010). They share that common origin and basic features with other similar places and institutions throughout the traditional world where the ancient religions and human spirituality essentially link with such places (Verschuuren et al, 2010). What Verschuuren et al (2010) define as "site" in the phrase "sacred natural sites" is applicable to sacred sites in Wonsho. According to this consideration, a site may include a single tree. Some of the sacred sites in our study localities comprise a single totemic tree maintained in front yards of homesteads, as discussed above.

Due to their localized, complex and mystical nature, the global extent and distribution of sacred sites has been difficult to estimate. The total number of sacred sites is unknown. Verschuuren et al. (Ibid, p. 5) note that sacred natural sites of the world are not yet systemically documented, but they argue that "the list is very long, uncounted and in a sense uncountable." They estimated that over a quarter of a million sacred natural sites exist globally. Such estimation was based on findings for some countries of the world, including India where between 150,000-200,000 sacred groves are estimated to exist; Ghana (1900) and Mongolia (800) also have many sites (Malhotra et al, 2001; Dudley et al, 2010; Verschuuren et al., 2010).

Sacred sites and traditional religious worldviews have had an inextricable affinity; paleo-anthropological research suggest that the origin of sacred sites can be traced to what some call "the cult of ancestor worship," which has been in existence for the past 50,000 years (Verschuuren et al. ibid). It is important to note that globally, sacred sites tend to concentrate in regions where traditional religion and biodiversity flourish (Bhagwat et al, 2011). Where traditional religion persists, mainly in parts of Sub Saharan Africa, South America, Southeast Asia and other less developed nations (Park, 2004), sacred natural sites in the form of ancestral burial grounds, groves, palaver trees, initiation grounds, etc., have played a central role in these religious systems.

In connection with the question of what sacred groves are, especially those of Third World societies such as in Africa, and their origin, a dominant western view has been what is termed as the 'relic theory of sacred groves' (Hellermann, 2009), which sees sacred groves as islands of primeval relic forests from a static pre-colonial era. However, such views are now increasingly challenged in studies that view sacred groves in historical ecological framework. Emerging researches have now shown that sacred groves are human artifacts and historically changing landscapes shaped by human action over time (Sheridan & Nyamweru, 2008). They are ecologically and socially dynamic and complex, with changing meanings and compositions (Hellerman, 2009).

Of the world's roughly 7000 languages, the overwhelming majority exist in regions of rich ethnic and high biological diversity, such as Amazonia, parts of Africa and Southeast Asia (Harmon & Loh, 2010). The global density and distribution of biodiversity areas coincide with ethnic and linguistic density areas where sacred sites also dominate (Brosius & Redford, 2006; Pretty et al, 2009; Loh & Harmon, 2014). Further, 95 per cent of the global cultural diversity is represented by the tiny 4 per cent of the world's 5000 indigenous and local communities across the world (Toledo, 2013). Sobrevila (2008: xii) also makes a similar argument:

> Traditional Indigenous Territories encompass up to 22 percent of the world's land surface and they coincide with areas that hold 80 percent of the planet's biodiversity. Also, the greatest diversity of indigenous groups coincides with the world's largest tropical forest wilderness areas in the Americas (including Amazon), Africa, and Asia, and 11 percent of world forest lands are legally owned by Indigenous Peoples and communities.

Ethiopia is an ancient country rich in paleoanthropological, historical, ecological and natural heritages (Marcus, 1994; Pankhurst, 1995; Henze, 2000; Zewde, 2001; Munro-Hay, 2002). With over a million indigenous peoples from 85 distinct ethnic groups, it is one of the most culturally diverse countries in Africa and ranks 9th in the world (Sobrevila, 2008). Despite controversial, indigenous peoples exist in higher density in the southern and southwestern part of the country and they constitute a great majority of the country's ethnic groups (Kibrework, 2011). In line with the generally observed global phenomenon, important areas of biocultural diversity and sacred sites in Ethiopia converge with those areas where ethno-linguistic groups are densely distributed. The southern Rift Valley region of the country in general, and southwest Ethiopia in particular (where over 56 of the country's overall ethnic groups reside), is an important area for sacred sites (Officer, SNNPRS-CoN, 2013). However, it is difficult to establish a static relationship between a geographical, biocultural area with a particular culture and language group in the country, since there have been dynamic and continuous flows of cultural information and values among the different groups. Sheridan and Nyamweru (2008) also draw attention to the need for understanding African sacred groves as dynamic institutions.

The country's major faith groups, EOTC and Islam, are linked to and internationally recognized for UNESCO world heritage sites. The former with its widespread national presence (over 34,000 such churches), "owns 300 fragments of forest including the last remnants of Afro-montane tropical forest," (Wassie, 2007; Massey et al, 2014). However, despite a lack of systemic documentation and mapping of the country's bicultural diversity areas vis-à-vis ancestral religions, common observations and piecemeal findings show a high concentration of

such areas in those parts of the country where ancestral religions show relatively higher degrees of robustness.

Sidama people of the SNNPRS are one of the indigenous inhabitants that have lived in close relationship with their ancestral land and biodiversity. The prevalence of an ancestor cult as an important social institution, linked to an overarching worldview, has enabled the creation of sacred natural sites that can be seen dotting the land today, despite complex and increasing pressures on them (Chapter 9). Like other traditional peoples of Ethiopia, Africa and the world over, the Sidama religious system involves nature as the medium of worship, even though they also maintain a monotheistic system of belief whereby a unitary supreme being, Magano, takes centre stage in the lives of the people (Hamer, 1976, 2002; Braukämper, 1978; Hoteso, 1990; Wansamo, 2014).

The SAR may be conceptualized as part of an African traditional religion whereby ancestor veneration is an important feature (Hammond, 1971; Keesing, 1981). The tendency among some informants to regard forest areas and trees as inhabited by spirits of ancestors is an aspect of what anthropologists label 'animism', "the belief in the existence of 'spiritual beings' embodied in natural elements" (Verschuuren et al., Ibid, p. 4). Masculine ancestors occupy a decidedly crucial place in defining the structure, content and functionality of the traditional religious system, social organization and clan structures (Hamer, 1976; Hoteso, 1990; Wansamo, 2009). This intertwining of sacred sites and religious belief also exists among other ethnic groups. For example, among the Baskeś of southwest Ethiopia, sacred forest is termed as *Šossa*, which is also a term for Supreme Being. Their ancestral spirits are also identified with this term (Doffana, 2010a). Similarly, among the Ţambaro of southwest Ethiopia, sacred groves exist as direct manifestation of ancestral clan origins and religious identities. *Gambala Magano*, 'the Black God', is worshipped on such sites (Doffana, 2011). In many of communities in Africa and beyond, sacred groves are important locus for ancestral religious practice and the ancestral spirits and gods are believed to inhabit forests (Nyamweru et al, 2008; Gotleb, 2008; Siebert, 2008; Deil et al, 2008).

Linking the geography and maintenance of sacred sites with broader contexts of ethnohistorical origins, clan structures, social organization and religious institutions is thus understandable. Ethnic identity, genealogies and various myths about temporal and spatial dimension of the custodian communities are concretized through the creation and maintenance of sacred sites which are one of the most prominent geographical dimensions of religious expression (Park, 1994) and fundamental elements of religion in general (Davies, 1994). The existence and maintenance of sacred sites today is a living testimony of the need for continuity and vitality of

ancestral roots, and a demonstration of allegiance to one's clan identity, cultural integrity and social unity.

Sacred sites carry with them a range of rules and regulations institutionalized in the community's social structure, to regulate people's behaviors as well as a set of beliefs relating to the world of deities and ancestral spirits. These rules also specify local views and parameters of what aspect or part of the physical landscape is treated as sacred and why; the degrees of sacredness imputed to these; who or which social category is invested with the right to own, approach and maintain these places; how ritual leaders are recruited to manage them, etc. (Carmichael et al, 1994). On the other hand, all these obtain their sacredness from association with the sacred histories and attributes of ancestors (Verschuuren et al., 2010). It is, therefore, important to note that sacred sites in Wonsho of Sidama are linked to maintenance of indigenous social and cultural institutions of which ancestor veneration is central.

As noted above, many of the sacred sites identified in the study localities qualify as spatially minimal areas. In many cases they occupied just a few square meters of space in a household's front or back yard. These are understood in the framework of Verschuuren et al's (Ibid) argument that a sacred site may vary in size from an area occupied by a single tree to a whole region. Only one major sacred forest, AWSF, had a relatively large area (ca. 90.6 ha). However, due to lack of documentation, it was difficult to know their spatial distribution. In many countries of Africa and Asia, there is a similar problem of a lack of systemic information on the number, distribution and spatial patterns of sacred sites, and existing information is often fragmentary (See, for example, Deil, 2009; Shen et al., 2012).

In the surveyed communities, the total number of sacred sites identified, 48 of which fourteen were only in cultural memory, was a far cry from the past when, as informants noted, their lands were teeming with forest sites. It may be argued that the present figure of 26 functioning sacred groves shows some important indications of their continuing resilience[4] amidst eroding factors (Chapter 9). At the regional and national level, extent of such biocultural hotspots maintained by different peoples and religious groups reported by Desissa (2009), Massey et al (2014), and the Christensen Fund (2014) similarly show such resilience. In sum, the sacred sites documented in the survey localities may be considered as important indicators of their

[4] The concept of resilience is used in diverse ways across disciplines and its meaning and application are different in different contexts. I broadly subscribe to the definition of resilience by Stockholm Resilience Centre (2014: 3) "the capacity of a system … to deal with change and continue to develop." While broadly falling within the framework of social-ecological resilience, the sense in which I use the concept, unless otherwise specified, relates to resilience of sacred sites and associated ancestral values as social systems.

.

resilience, and they form salient components of regional and nationally important biocultural diversity areas.

With respect to the main questions of this chapter, i.e., what are Wonsho sacred groves and what is their origin and nature? How important are history, social organization and religion? The findings, from the existing geographical profile, lead us to argue that Wonsho sacred groves generally maintain vital link to the custodians' history, social organization and religion. In an important sense, there is an ample reason to support the view that these groves possess enduring qualities of history and social organization which are in turn vitally dependent on a well-defined group of people, the Abboic community who maintain values, institutions and religious worldviews that have existed for millennia.

However, the findings also attest to dynamic processes in the ecological, social, cultural and symbolic realms demonstrating that Wonsho sacred groves are living institutions and as such they have been adapting to new situations in dynamic and dialectical interactions across multiple temporal, spatial, socio-cultural and symbolic scales. This lends support to recent growing interest in the dynamism of sacred groves of Africa and beyond in the wake of global recognition accorded to them since the 1990s in the field of biocultural diversity. As Sheridan & Nyamweru (2008:1) noted, African sacred groves have been projected as "the remains of primeval forests, ethnographic curiosities and cultural relics from a static pre-colonial past." They have "long been described examples par excellence of ahistorical cultural and ecological equilibria," (Sheridan, 2008: 10). However, they are not only indicators of ecological and cultural continuity but they are also dynamic institutions; simultaneously ecological, social, political and religious phenomena.

4.5.2 Conclusion

In conclusion, the frameworks of the Biocultural Synthesis and Historical Ecology, presented in Chapter Two, portray sacred sites as showcases of biocultural diversity, embedded in the global history of human manifestations of co-adapting, nature-dependent spiritualities and socio-ecological systems. Ethiopia as a developing country where diverse ethnic, religious, cultural and linguistic groups exist is one of those areas of the world where sacred natural sites are an important part of its landscapes, people's lifeways and their overall socio-cultural identities.

The current geography of sacred natural sites of the country is generally linked to three great religious identities, namely, EOTC, Islam and ancestral religion. Today's existing sacred sites are, viewed from historical ecology, the concrete manifestation of cultural landscapes, built

from time immemorial through dynamic interactions with local ecologies. The existence of nine UNESCO World Heritage areas in the country, the hundreds of "islands of biodiversity" of the EOTC , the un-documented yet estimated tens of thousands of sacred groves based on ancestral religions, including the 26 living sacred groves identified in the Wonsho study, are all best understood in the broader context of dynamic socio-ecological, political and symbolic processes The need to sustain identity of the community and sacredness of collective origins; the desire to understand the present and connect with the past, the future as well as with the world of the supernatural; and the need to deal with practical socio-political, livelihood needs and ecological challenges all provide important context for sacred sites.

Understanding of local conceptions of custodian communities' sacred histories that derive their sacredness from myths about founding ancestors; the intricacies of common ethnic roots and clan structures based on collective understandings; the social institutions and religious rituals that operate to validate and concretize these conceptions, etc., are crucial to understand the geography of sacred sites in today's Wonsho community, Sidama, SNNPRS and the nation at large. This especially becomes more important when we consider sacred sites that derive their validation from their association with the religious traditions of ancestor veneration, which is probably as old as humanity itself.

The geography of today's sacred sites of Abbo Wonsho cannot be dissociated from the broader contexts of the custodian community's conceptions of ethnogenetic myths, their sacred histories of origin, clan structures, social organization and the manifold values, rituals and institutions that form the basis of the ancestral religion. Conceptualizing Abbo the founding ancestor as a hero, a glorified patron saint, and a deified being capable of mediating between man and the deities are important elements of the ancestral religious structures that support sacred sites. Notions of the heroic deeds of the founding ancestor, myths of ethnogenetic origins, clan structures, and social organization all merge forming a complex and dynamic web that enmeshes and help maintain the sacred site.

The ongoing phenomena of dynamic interactions among the various world views, the diversities in the current geography and maintenance pattern of sacred groves, and the creative syncretism all show that Wonsho sacred groves and ancestral institutions are not just monolithic and homogenous entities existing in a closed and static system. While to a greater extent they are indeed vitally linked to a unitary core of worldviews owned by a defined group of Abboic community, nonetheless, they are also diverse and dynamic, as the SAR itself is dynamic.

In closing this Chapter, I have tried to provide a general overview of the geography of Wonsho sacred sites situating them in global, national, and regional historical, ethnogenetic and social organization context. In the next Chapter, I will examine the important question of why and how sacred sites have been maintained. To this end, the Chapter will discuss Wonsho Sidama traditional conservation conceptions, botanical beliefs and knowledge systems underlying sacred sites and trees. Important rituals and socio-cultural institutions that both support and require sacred sites and trees will also be examined.

Chapter 5. Traditional Beliefs, Knowledge and Practices Relating to SNS, Trees & Conservation

This Chapter addresses the question of why and how Wonsho sacred sites have been maintained. To this end, the chapter examines Wonsho-Sidama traditional conservation ethic, ethnobotanical beliefs, knowledge and practices underlying sacred sites. Its primary aim is to account for why and how sacred forests exist and are maintained, and how the mutual relationship is important for both culture and biodiversity.

The Chapter is divided into four sections. Section one provides an overview of traditional concepts of biodiversity, environment and conservation, while section two discusses ethnobotanical knowledge, attitudes, and behaviors concerning sacred forest sites and woody trees, the values and beliefs about which locals hold are described in section three. Tree-supporting and dependent practices and institutions are presented in section four. Section five provides a summary and concluding discussion.

5.1 Overview of traditional conceptions of conservation and the environment

It has been noted in foregoing chapters that traditional people across the world maintain conservation beliefs, knowledge and institutions defined and shaped by a range of factors including local and global ecological dynamics, historical conditions, social-political systems, and livelihood engagements, among others. Ethiopia and Wonsho-Sidama form part of these wider and global processes. Discussions will follow in subsequent sections; I will for the moment focus on and begin with findings from Wonsho, Sidama and Ethiopia at large. What follows is then a presentation of reviews of traditional conceptions of biodiversity and conservation as evidenced in the divergent communities of Ethiopia.

5.1.1 Concepts of biodiversity and conservation in Ethiopia

In Ethiopia and SNNPRS, there are diverse conceptions and practices which these people possess as part of their traditional lifeways, livelihoods and worldviews that pertain to biodiversity and natural resources, and the way of conserving, managing, protecting and utilizing them. As reviewed in the foregoing chapters, these traditional social systems,

livelihoods and worldviews have been shown to espouse positive notions and practices toward biodiversity and its conservation.

In the discourses of biodiversity, conservation and culture in modern Ethiopia, the notion of 'conservation' has generally come to take the technical, western-based meaning. A commonly observed instance of the conservation concept and practice in this discourse often relates to the environment and biodiversity, their erosion and degradation, the resultant effects on society and economy and the urgent need to reclaim and protect them. The national language of Ethiopia, Amharic, does not appear to have a unitary concept that directly translates into conservation. The phrase *ya akebabi ţibaqa* ('environmental protection') is often used to denote this. The term *ţibaqa* derives from a root word that may literally mean 'keeping', 'looking after', or 'keeping an eye on', as in looking after a baby or tending a cow. However, the substantive meaning is 'protection' and *akebabi* itself means the biophysical 'environment', which includes land, topography, water bodies, soil, plants, animals, etc. A more technical Amharic term is *bizeha hiywot ţibaqa*, which means 'protecting biodiversity'. *Bizeha hiywot* is a direct translation of 'biodiversity'.

In a country where diverse ethnic groups live in varying agro-ecological zones and geo-diversities with multiple subsistence systems, it can be assumed that there are many time-honoured traditional knowledge systems and practices relating to the environment and natural resource use and management. The wealth of the country's diverse livelihood, cultural and religious groups and their broadly biodiversity-friendly beliefs, practices and institutions are generally recognized in various national policy documents (MoCT, 1997; IBCR, 2005; FDRE-the CRGE Initiative, 2011; EBI, 2014). In addition, the Federal Rural Development Policy and Strategy Document (FDRE MoARD, 2002: 39) makes references to the accumulated repertoire of traditional concepts and practices pertaining to natural resource conservation, agronomical practices, ethno-veterinary medicine, livestock handling, terracing and irrigation: "This indigenous knowledge is not to be lightly regarded," the document asserts.

Traditional natural resource management, supporting relationships people have maintained with plants, wildlife, and the natural world, are positively recognized as important instruments whereby the country's rich biodiversity has been maintained. Favourable beliefs and practices pertaining to biodiversity have evolved benefiting both people and biodiversity. Traditional agronomic knowledge has, for example, enabled the preservation of endangered landraces. The National Herbarium and Institute of Biodiversity utilize indigenous knowledge, peoples and places for accessing and collecting endangered species (Officer, GBG, 2013; Director, BIE, 2013).

As noted in foregoing chapters, diverse religious worldviews and practices of peoples of Ethiopia are important assets and instruments for biodiversity conservation and environmental protection. Some of the country's UNESCO World Heritage Sites (See Figure 4.1) are linked to, directly or indirectly, these traditional concepts, beliefs and practices. It is noted that the ancient Christian ethic and practices espoused by Orthodox Christian churches of Ethiopia has enabled conservation of plant and animal species in what has come to be known as 'biodiversity islands', the remnant Church forests where otherwise endangered trees and wildlife are conserved (Eshete, 2007; Heide, 2012; Massey et al, 2014). I have also noted in Chapter Four how other religious traditions of the country, Islam and ancestor worship, led to the creation and preservation of sacred natural sites, estimated at tens of thousands, that also serve as biocultural diversity hotspots. These places and systems are governed by indigenous concepts of nature, biodiversity, environment and conservation.

It is perhaps important to point out that some traditional beliefs and practices may have disfavoured certain plants and animals. Others have been accountable for environmental degradation and deforestation that so characterize the landscape of the country. Such degradation may not necessarily be supported by cultural beliefs and practices, and instead may be explained by people's attempt to use environment and biodiversity as a last resort to support themselves in the wake of the disintegration of their traditional livelihoods and social institutions. On the other hand, donkeys, goats and dogs tend to be demeaned in many parts of Ethiopia, and there are those who would not think twice before killing a snake (Tilahun, 2004). Similar unfriendly beliefs and practices towards plants are less common. However, dietary beliefs and preferences in some cultures have discouraged the production of some crops. Where woody plant species are concerned, some species are favoured while others are not, leading to a relative decline in their abundance.

5.1.2 Wonsho concepts of biodiversity, environment and conservation

The Wonsho of Sidama use the concept *kalaqamu jirro* to signify natural resources. The idea of *jirro* stands for 'wealth' while *kalaqamu* is a key concept imbued with multiple meanings in relation to the values and nature of something that is of 'natural origin, which may signify both 'something that is original,' 'native in the land,' or 'that which is not manmade.' Nature itself may be conceptualized as *kalaqamu* and objects that qualify for *kalaqamu* are those that do exist of and by themselves in nature. According to one young male informant, whose view is typical of local understandings, Sidama culture regards natural resources as wealth. A related concept is *qarqarra,* which is a generic term for the physical environment. While *kalaqamu jirro* is

understood as comprising ‘all natural resources’, and *qarqarra* ‘environment’ in general, their salient elements are forests, trees, soil, water, animals, etc. These are resources all relevant to local livelihood. Thus, as a young man argued, “When we say, ‘our environment’, we mean the forest and trees in our area.”

The readily accessible botanical environment is particularly core to local ideas of environment. While *qarqarra agaroshe* signifies ‘caring for natural resources’ or environment in general, in a practical sense, it is often centred on forests, trees and soils. More specifically, informants understand and explain conservation in a way that directly or indirectly concerns trees or forests. For young men, for example, conservation is something synonymous with tree planting and care; “preserving trees for current use and future generation is an important, big tradition.” Thus, tree-maintaining traditions are seen as the heart of the meaning of conservation in Wonsho community.

It is difficult to separate the idea of conservation from people’s day to day beliefs and practices. Local people may not understand the technical meaning of conservation, but they “live and breathe” it. As another young farmer put it, “A man plants trees in front of his house. He may not know what conservation value his action entails for the tree itself. What he knows is that the trees he or his ancestors planted are practically used for shade and social gathering.”

A range of other recurrent conservation themes in local conversations include: the act of tree planting and care, the idea of such an act often done by males and old people, the fact of maintaining such trees in front yards as shade or for social needs, and the idea of transferring these trees as natural-cultural assets to future generations. The idea of conservation as something which ‘older persons’ are more likely to cherish is an important one. As one young man argued, “Most old men do not like when people cut trees. This shows an aspect of conservation in our community.” Implicit in such a statement is the understanding of rejecting the practice of indiscriminate cutting or irreverent dealings with trees, especially the native ones. This ‘do not cut trees’ attitude is thus a salient element in the Sidama concept of conservation. The habit of planting a tree in place of a cut one is further understood as an ancient one and, therefore, a manifestation of conservation in general and tree conservation in particular.

In general, the Wonsho worldview broadly engenders biodiversity-friendly concepts and the culture supports, and depends on, tree biodiversity, each thus contributing to the other’s resilience and preservation. A close affinity with the botanical world has further helped create a

rich body of knowledge of, and attitudes towards, various dimensions of trees and the botanical world in general. The following section deals with this.

5.2 Ethnobotanical knowledge, attitudes and preferences about sacred sites and woody trees

This section describes Wonsho understanding of plants in general, traditional classification of trees based on a range of local parameters, knowledge of certain biophysical characteristics or features of trees, and how such knowledge and attitude are shared along gender and age lines. This knowledge, and its variation, is seen as underpinning the practices that support trees in and around sacred sites in Sidama. The section also summarizes differential attitudes and preferences concerning the same.

5.2.1 Ethnobotanical classification and nomenclature

A term *murro* is used as a generic name for plants, and is further divided into *shimada murro* and *jajaba murro*, respectively, 'small' and 'big plants'. A more commonly used term, almost always in connection with conversations about trees or sacred forests, is *haqqa.* It particularly signifies a high-growing, or a grown up, mature tree or wood. Thus, bigger, woody trees are called *jajaba haqqa,* rather than *jajaba murro*. Very small plants that do not grow big, such as herbs, grass, and weeds are also identified as *manaada murro,* a term rarely applied in practical day to day life. These are either very small plants that do not grow big or plants at their seedling stage. Thus, a plant even if it grows to bigger sizes, may be called *shimada murro* in its youngest stage. Once it grows big, it is called *haqqa.*

Two or more trees, in a group with their spatial setting, are identified by a range of well-used concepts. For example, *harra* signifies 'sacred grove' where a forest (of varying size) is kept for ritual needs. 'Forest' itself, in its natural state, in general, without direct connotation of sacredness, is identified as *dubbu*. So, for example, wildlife is called *dubbu mo'echo,* a reference to a wild animal living in the forest as its shelter. *Gudumale* (see below for details) is also commonly used to refer to spatial scales with usually ritually important group of trees. Sometimes, a similar term, *danawa,* is used to refer to collectively owned or managed forest land that may be sacred or not. In the past, *danawwa* was also used as a common land resource owned by a clan and distributed for newlyweds and other community members that needed land.

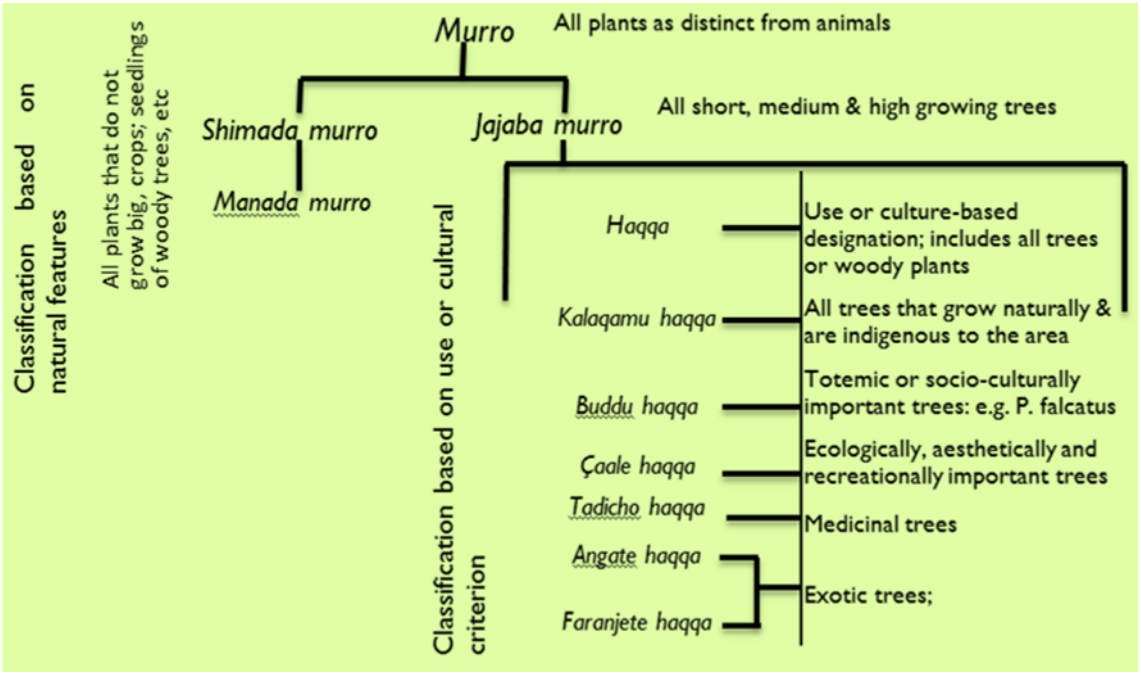


Figure 5-1 Wonsho-Sidama ethnobotanical classification and nomenclature, interviews and FGD, October 2012, Wonsho, Sidama, Ethiopia

Based on use categories, trees in a typical Wonsho locale may be categorized as follow. *Çaale haqqa*, literally 'shade tree' is a dominant conservation-relevant concept signifying shade and ornamental trees in home front-yards. While these categories are used as shade for humans and cattle, the concept also applies to trees purposefully planted as shade for farm crops and smaller cash trees in backyards. This latter use category of trees occupies a key place in Wonsho Sidama livelihood and ecology, contributing to tree conservation and sustainable management of soil and crop productivity (See Chapter Eight). *Kalaqamu haqqa* constitutes trees with definite native origin and multiple uses. They include trees in front yards, ancestral burials, collective ancestral spaces and social gathering. The cash and fruit trees include *buncho* (*Coffea arabica*), *çaate* (*Catha edulis*), *ţaddo* (*Rhamnus prinoides*), *afkadose* (*Persea americana*), *cokke* (*Prunus persica*) and *zaytoncho* (*Psidium guajava*) among others. These, particularly since the 1950s and 1960s, form the lifeline of local botanical environment and livelihood. Other less known categories, in terms of purposefully-planted management, include ornamental trees, live fences, boundary-markers and medicinal trees.

In terms of nativity, locals classify plants and trees into *kalaqamu haqqa* 'natural trees' and *faranjete zaafe*, 'exotic trees'. The latter are also called as *angate haqqa*, literally 'hand trees', signifying trees planted by (human) hand, but substantively mean 'introduced or modern' trees. The former are often thought of as 'natural', 'not planted by humans' and native to the locality. A related term is *budu haqqa*, literally 'culture trees', so named because they represent and embody ancestral traditions. The term is used to specifically address ritual or totemic trees, such as *Podocarpus falcatus. Kalaqamu haqqa* are embedded in the local spatial, temporal and

socio-cultural landscapes. The *kalaqamu haqqa*, in reality, are native trees that have either been in the area from time immemorial or have been introduced and have become completely adapted to the local ecology and culture.

Trees may also be classified as *di-aggare seeka haqqa,* those 'requiring no maintenance' and *aggare seeka haqqa,* those 'highly maintained'. Smaller trees, shrubs, herbs, vines, climbers and the like are naturally occurring and are called *shufurote haqqa (*those 'that grow by themselves') and require no attention and command no respect as such. Some term them *giraate haqqa,* 'worthless trees fit for firewood'. No plan and interest are involved in the planting and care of such groups of trees, although they are very useful in the local livelihood and medical system, as well as for soil conservation needs. Native and exotic trees of salient livelihood, agronomic, socio-cultural and ecological importance are highly cherished ones and command high respect.

The way people name trees itself, nomenclature, is an important ethnobotanical subject (Berlin, 1992). Plant naming in Wonsho appears to have some revealing patterns. Most trees have names composed of a single lexeme in Wonsho dialect; others have binomials, also in local language; other are clearly local versions of foreign names (generally for introduced species), such as *grawella* for *Gravillea robusta, afkaato* for the avocado, *Persea americana,* and *akasha* for *Acacia decurrens*. This naming pattern shares similar principle with Berlin's (ibid., pp. 27-28*)* 'primary and secondary plant and animal naming system' that characterizes ethnobiological nomenclature. The local nomenclature suggests the nature of trees, their nativity status and their overall livelihood and socio-cultural significance. Those bearing monomials appear to be the most significant trees and are more likely to be of native origin and more widespread. Native trees with binomial names are less likely to be of high economic or social importance, and they are generally *shimada murro.*

5.2.2 Knowledge of the age of sacred groves and woody trees

Local views and knowledge of the ages of sacred sites and trees is based on practical, matter-of-fact characteristics, and in some cases folktales are the source of such knowledge. Some custodians of household sacred groves reported exact ages, recalling precisely the years they were planted; while some date theirs based on genealogical references. Some major sacred sites were believed to be hundreds of years old. For example, AWSF, as an entity, was estimated at about 375 years old[5]. However, individual trees of the sacred forest may be categorized as first,

[5] Based on local genealogical accounts, which gives roughly 15 generations; calculation is based on taking average of 25 years for a generation (Hamer, 1976; Tremblay & Vézina, 2000; Lancaster, 2005; Anon, n.d.).

second, third and fourth generation trees. The first are "Abbo-era trees", those believed to have sprouted either when Abbo, the founding ancestor, was alive or following his death. Most of trees of this batch are believed to have died long ago. Of the highly regarded native trees, locals recognize *dagucho* (*Podocarpus falcatus*) and *seetame* (*Olea capensis spp.*) as the most enduring and long-living trees. Across surveyed sacred sites, visibly old trees were identified and they were believed to be "first batches" of trees at Abbo Wonsho.

Table 5-1 Folk estimate of ages of some sacred sites and totemic trees, interviews and FGD, 2012-2013, Wonsho, Ethiopia

Case	Type/ Scale of ownership	Estimated Age	Genealogy and other age indicative contexts
Abbo Wonsho sacred forest	Communal	15 generations	Lemma → Lelamo → Ki'e → Gada → Hamo → Botte Siricha → Buqato → Afiro → Tuno → Hoga → Abako Abaddo → Abbo
Wossago sacred site	Sub-clan burial	5 generations	Hasamo → Hailu → Hameso → Hargamu → Wosago
Daad'o Sacred Dagucho	Sub-clan ancestor memorial	9 generations	Harqa → Çakisso → Çançana → Shondo → Bakayo → Nesho → Guresso → Wadama → Daad'o
Manissa sacred grove	Parental graveyard	29 years old	Planted in 1987 in memory of deceased father
Qarafafa sacred grove	Household	Ca. 200 years	"The trees were like the same size when I was a child [85 years old at the time of interview] during the era of Emperor Haile Selassie I [1930-1974]"
Loggo Haqqa	Sub-clan	13 generations	Named after founding ancestor whose remains are found at the grove, claimed as the grandson of Abbo
Hasana Haqqa	Sub-clan	13 generations	"Garbicho was one of the sons of Abbo. Garbicho gave birth to five sons of whom Hasana is one"

Note: Genealogies refer to a random selection of local informants: AWSF supreme leader, a SAR practitioner and a young man.

Wonsho sacred groves in surveyed localities ranged from as recent as 29 years old to as old as 15 generations, roughly equivalent to about 375 years. While most of surveyed groves were very old, existence of a 29 years old grove is a demonstration of the dynamisms of sacred site institution. It is interesting to note that all of the surveyed sacred groves had a definite historical ecological context, at least on the basis of local reports. The identified SNS were cultural landscapes with rich histories. A common thread unifying all of the identified Wonsho SNS was that they were created intentionally for the purpose of remembering deceased ancestors. Thus, AWSF, for example, was, as local people narrate, 'willed into existence' by Abbo's spirit following his death. While further empirical historical ecological studies are needed to test such local narratives, currently existing forest areas in Wonsho Sidama in most instances are created and maintained through human agencies over the course of about 400 years.

5.2.3 Ethnobotanical knowledge, attitudes and preferences across social groups

Understanding current botanical awareness of younger persons through interviews and on-the-site inventories was assumed to be a key indicator of resilience of such knowledge and the role sacred forests play in promoting it. *Resilience* here relates to the way local knowledge about the names, characteristics and uses of trees persists despite existence of cultural erosions. In general, children, young persons, women and herbalists who participated in the assessment demonstrated rich understanding of their botanical environment. Their understanding of uses of sacred forests and trees was similarly assessed; commonly mentioned tree uses were firewood, poles, posts and beams for house building; fencing; medicine; timber; household furniture; and shade. Non-economic functions of trees were not readily recognized by children unless probed.

Generally, informants were likely to begin their enumeration with those trees that were salient in the community (in terms of their multiple uses) and part of their immediate botanical environment. Invariably, trees of broader significance with their current on-going presence in the botanical environment, namely, *dagucho* (*Podocarpus falcatus)*, *seetame* (*Olea capensis spp*.), *wadicho* (*Cordia africana*), *hengedicho* (*Milletia ferruginea*), *masincho* (*Croton macrostachyus)*, *bardaffe* (*Eucalypetus camaldulensis)*, *afkato* (*Americana Persea americana*) and *faranjete honcho* (*Cuprensis lusitanica*), among others were most likely to make it onto a list of trees known, mentioned or preferred.

Table 5-2 Extent and type of trees recalled or named by informants, interviews, FGD and inventories, Wonsho, 2012-2013

Selected local community members	Extent of trees recalled	Remark (major trees recalled or named)
Youth group 1, focus groups	37	*Podocarpus falcatus, Olea capensis spp., Yeshania alpina, Syzygium guineense, Milletia peruguinea, Cuprensis lusitanica, Eucalypetus camaldulensis*, etc.
A young herbalist, interview	27	*Olea capensis spp, Junniperus procera, Podocarpus falcatus* mentioned as first three native trees
A children's group, focus groups	17	Podocarpus falcatus*; Eucalypetus camaldulensis, Milletia peruguinea, Persea americana*, etc.
A child informant, male 1, inventory	50	This boy named all these trees at AWSF during a major inventory
A child informant, male 2, interview	16	All native except one; most woody, big tree; all currently existing ones; *Cuprensis lusitanica, Eucalypetus camaldulensis, Podocarpus falcatus, Croton macrostachyus, C. arabica*. were first mentioned
A child informant male 3, interview	13	All native trees; first mentioned: Podocarpus falcatus; all woody big trees except 3; all locally existing except two
A child informant, male 4, interview	15	*Podocarpus falcatusPodocarpus falcatus, Cordia africana, C. megaloplex, Erythrina abyssinica Lam. Ex. Dc., Ficus vasta,* except one all were tree proper; all native except two

Three herbalists, transect walk/ inventory	86	Three small plants were not named. Except 3, all were native.
A child informant, male 5, interview	10	*Eucalypetus camaldulensis, Persea americana, P. guajava, K. edulis and C. arabica* were first to be mentioned
A child informant, female 6 interview	10	*Cordia africana, Cuprensis lusitanica, Podocarpus falcatus, Eucalypetus camaldulensis, R. communis* first mentioned; All existing nearby except one.

Tree recall statistics above is meant to assess how well informants would recall or name tree species (particularly woody ones) during interviews, FGDs and field surveys. The total of number of species identified during our informal, partial surveys in the seven localities at different botanical contexts was 154. Against this reference, the number of tree recalled during interviews was not something impressive, although informants had to recall within short time frame, in which case, this is not bad. However, it was interesting that when informants were asked to identify a plant in the field setting, they could quite easily do so. Outside of actual botanical context, most informants, including children, could name between 10-15 woody tree species, while herbalists named as high as 37, within the space of 1-3 minutes during the interviews. On the actual field setting, in one of our major transect walks at AWSF, three local herbalists identified over 86 species within about two hours period, only about three of these being termed as 'those with no name'.

Some trees are preferred for their physical, aesthetic, aromatic and related qualities. Trees that combine multiple qualities are preferred the most, and it may be worth noting that no plant or tree is preferred apart from some form of use or role the community derives from it, be it livelihood, social, spiritual, or ecosystem service. Some of the tree species are widely preferred in a unanimous fashion across the socio-demographic spectrum. Trees that stand for the community' ethnohistorical and socio-cultural values and identities, have multiple livelihood uses, contribute immensely to local agriculture and provide cultural ecosystem services, and are currently present in the local botanical environment were more likely to be known, preferred and valued. Livelihood, agronomic and ecosystem service instrumentality of sacred sites and trees were more likely referred to as the basis of preference, whereas upon further probing, non-economic, socio-cultural and aesthetic uses were also invoked, though the elderly and SAR practitioners are more likely to invoke such reasons. Economic motives and preferences are now the driving forces, implying a growing change in values.

With respect to the attitudes local people maintain towards sacred sites and trees, while a comparably friendly and respectful attitude was displayed among the general public, such a posture was rather more intense and unique among women. Married women consider sacred groves and native trees, such as *Olea capensis spp., Podocarpus falcatus, Ekebergia capensis,*

Junniperus procera and *Croton macrostachyus*, as equivalent to their in-laws. As one woman told me, "we revere very much trees such as *podo* under whose shade respected male elders sit. It is not allowed even to look at that direction. We consider the place itself as our in-laws," (FGD-Women-1, 2012).

Their fear and respect is so much so that it is *balisha*. *Balisha* is a taboo system whereby Sidama women are prohibited from calling the names and terms for men, objects, places and events that directly or indirectly invoke these names as a show of deep fear and respect for their male-in-laws, living or deceased. To this end, women resort to *makariso*, an ingenious avoidance term, that replaces either the whole word or the first letter of the forbidden name. When travelling, and if perchance they approach a sacred grove (of their male in-laws), they are not supposed to walk past or near it, they will even cover their faces and eyes until they pass. It is believed that if a woman knowingly calls the forbidden name, "she would die or get mad" (FGD-Women-2, 2012). Similarly, women pay great homage to certain spatial and topographic entities that bear some ethnohistorical reference to ancestors. Some of the weightier, totemic trees and sacred landscapes have *balisha* names.

While such somber acts of reverence was often associated with times of close physical encounters with groves (especially those at male in-laws' graveyards) and grown totemic trees, women would nevertheless observe this ritual whenever they face a situation that demands calling the names of such taboo trees, animals or places. They would treat those entities with care. Whether, for example, a tabooed, *balisha*–worthy tree is a mature, towering individual or in its sapling stage, its name is never called or uttered without applying such *makariso* rule. Where it is about totemic trees, the practice is not just limited to specific, individual trees, but the species in general. The *balisha–makariso* institution is also found among other neighbouring ethnic groups. For example, the Wolayta women are similarly expected to practice such avoidance rules when dealing with the names and personalities of their in-laws (both feminine and masculine). However, the practice does not appear to have the solemnity of that of the Sidama.

Figure 5-2 A woman demonstrating the 'head and eye covering' practice, November 2012, Bokaso, Ethiopia

Table 5-3 Balisha ('taboo') names for some trees and other sacred entities of Wonsho, interviews and FGDs with women, Wonsho- Sidama, Ethiopia

Name of entity	Category description	*Balisha* name	Meaning	Interpretation
Gaţţa	AWSF	*Dikuwate*	Market	A market represents a plural entity; a deceased ancestor is like a plural entity
Wonsho	Place name	*Dunami/ Gonjowa*	"The water is full"	This signifies the fact that the name *Wonsho* means "something that is full"
Gulanta	Place name	*Somanta*	No substantive meaning	An open ritual space at AWSF where honey mead preparation ritual is held.
Haysho	River	*Mei'ço*	The act of washing or cleansing	A small river that forms part of Wonsho sacred landscape. Worshippers cleanse themselves and animals before entering the sacred site.
Gidawo	River	*Daffo*	No substantive meaning	This is a sacred river which some believe as a river that "came into being when Abbo's *woramo* (bull) dug the ground by his horn."
Woramo	A mythical bull believed to be a Abbo's spirit guide during their migration	*tulamo*	No substantive meaning	*Woramo* (bulls) are key elements in Wonsho sacred institution; they represent the honour of ancestors as sacrificial animals. Bulls are generally held in high respect.
Goat	Sacrificial animal	*Goççço*	No substantive meaning	A sacrificial animal in honour of ancestors
Bull	sacrificial animal	*jibicha*	No substantive meaning	Same as above
Seetame	*Olea capensis spp*. (Tree)	*Sunitate*	"One that has a good aroma"	*Olea capensis spp*. is a revered totemic tree, equivalent to Abbo himself for some; its aromatic nature forms the *balisha* name.
Homicho	*Juniperas procera* (Tree)	*Dururame*	No substantive meaning	The name *homicho* is similar [in its first letter] to the name of Hoollo clan.
Garbicho	*Ekebergia capensis* (Tree)	*Sarbicho*	No substantive meaning	Tree name is also name for the Garbicho clan. initial letter and sound *Gä* is changed to *Sä*
Wadicho	*Cordia africana* (Tree)	*wodeye*	No substantive meaning	The term *wadicho resonates with* the name of an in-law ancestor.
Masincho	*Croton macrostachyus* (Tree)	*Binçalcho*	No substantive meaning	Croton is a totemic and ritual tree. Its leaves are used as cover for honey mead pots during ancestral rituals.

5.3 Values and beliefs about trees and sacred sites

This section reviews salient beliefs and values people maintain with respect to sacred sites and trees.

5.3.1 Local beliefs about culture–trees link

According to local informants, the relationship between their culture and trees or forests is explained as something that displays an inextricable interdependence. An older male noted:

> It is only when trees/ forest exists that culture [is] possible. If there are no trees, there is no culture; if no culture, there are no trees. For people to exist culture is necessary; for culture to exist, forests are necessary. These two are tied. What makes a culture worthy is the presence of trees; [we cannot talk about Sidama culture without trees]. There is nothing more important than trees… (FGD-older men-1, 2012)

Locals believe that trees are important for the enactment of a range of cultural values, social institutions, communal affairs and rituals. A range of indigenous social institutions and rites of passage such as wedding, funerals, mourning and bereavement, circumcision, etc., employ trees as crucial instruments. Some of these institutions require trees and forests for mundane needs such as, for example, firewood, shade, shelter, etc., while others are more of non-economic or sacred nature, such as the requirements of totemic symbolization, as discussed below.

The idea of 'culture' as implied in local conversations is particularly a reference to those ancestral rituals that involve trees and forests for their enactment. Obviously, there are dimensions of culture in Wonsho that do not necessarily require trees or forest. However, ancestral values, social practices, rituals and various other dimensions find their fulfilment in the instrumentality of trees. This is what is meant specifically in such statements: "Trees are related to culture. Where culture is, trees exist. Where there are no trees, no cultural [sacred] site is designated" (FGD-Women-2, 2012). In this statement, specific reference is implied to the use of culture in ritual or sacred places. These special contexts where people engage in ancestral rituals or other communally important activities are, therefore, more likely to be botanically linked, and form key components of a sacred botanical environment. The sacred botanical environment, as contrasted with its mundane counterpart, is implicated in the use of the term 'culture', 'cultural places' or sacred sites. While the latter often comprise plants, trees or other aspects of the environment that are exploited for material, economic needs, the former are the archives of ancestral cultural values.

There is an important grain of truth in the locals' claim that without 'culture' trees or forest might not have existed. A salient reference in this belief is the fact of respect, care and protection that observation of ancestral cultural values offers to trees and forests. In view of the fact that the current Wonsho forest areas are largely composed of groves that were protected because of sacred rituals, it is, therefore, reasonable to argue that without culture trees do not exist. As discussed below, the important questions of why or how sacred sites are maintained or why they exist are intimately linked to such local understandings. The links between such ancestral values and trees reveals sacred sites as also cultural landscapes. As a result, the conservation instrumentality of such sacred botanical cultures and the ritual instrumentality of trees become mutually interdependent realities.

The conservation utility of ancestral culture for trees and the primacy of ancestral culture over trees and forests is often implied in the local idea of conservation and the debate on the culture-tree link. As in arguments such as this, "Culture is useful for trees; because [trees are planted and maintained] for cultural reasons; people are not allowed to cut trees. The trees have survived under the cultural practice," (FGD-young men-2, 2013). The trees and sacred forests exist and have survived because, either from the very start they were planted for cultural reasons, or they were converted into instruments of culture once they were planted for other purposes.

Despite the physicality of trees and forest, they also benefit from their 'enculturation' (whether they are planted for the express purpose of cultural needs or not), and also locals stress the fact that cultural values almost by default require forests. The beauty and aura of these sacred ancestral cultures are forests; under normal circumstances, unless conditions make it impossible, it is expected that such ancestral values will be enacted in botanical environments. This view was expressed by Kimo, an elderly informant, "The ritual place is always marked by forest. The ritual requires forest. This is known throughout Sidama. Wherever there is ancestral burial, there are [native woody] trees," (Interview, 2012). Forests, therefore, 'mark' ritual places, rituals 'require' forests, and one may safely argue that where there is a typical ancestral burial place, trees exist. Some informants claim, perhaps exaggerating a bit, that "The rituals are performed at forest areas only, and not elsewhere," (Interview, 2012), though I know that rituals may be performed in other landscapes such as rivers, mountains, etc. In this sense, there is therefore, a truly mutual benefit and interdependence between rituals and forests. Each is the other's instrument of survival and resilience.

There are, though, divergent views. While practitioners of ancestral religion are likely to claim or believe there exists a necessary link between forest and rituals, and attribute sacred, honorific

status to some native woody trees, there are others who reject this and emphasize pragmatic values and mundane uses of trees. As a closing note, the tree-culture link in Wonsho need not necessarily be framed in positive light. Certain traditional beliefs and practices have often sponsored biodiversity decline, a theme I discuss in chapters six and nine. Further, it is important to note that the ancestral institutions are not necessarily and inherently bound to trees; it is after all the human creativity and symbolism that proffers trees such exalted status. With changing conditions, human groups can carry on their institutions with equal power and validity of conferring sacredness to entities other than trees. Yet, as discussed below, no other entities are quite as powerful in capturing human imagination and trees do, a question with which scholars have grappled (Rival, 1998; Sponsel, 2012).

5.3.2 Local models of values of sacred sites and trees

A number of aphorisms emerged from interviews on how local people value sacred sites and woody trees. Trees, notably native ones, are regarded as 'life' itself: "*Haqqu heshote'e*!" The term '*heesho'* is literally rendered as 'life', so this is truly a powerful analogy for the way trees are valued. Related to the idea of 'trees as life' is the notion that considers sacred groves and trees as wealth. *"Haqqu jirote'e*!" is used to signify this, a model of natural and social capital that coheres in trees. In conversations on natural resources and wealth, forests are at the forefront. A key parameter in household and community wealth ranking is ownership of trees.

These values and beliefs are translated in tangible behaviours, attitude and practices vis-à-vis sacred sites and trees among some groups of people. An older informant recounted how an elderly man wept bitterly when some intruders felled trees from a sacred forest. The man was reportedly quoted as saying, "May my own neck be cut instead of the trees," (FGD-older men-1, 2012). A young man who manages an inherited sacred *dagucho* (*Podocarpus falcatus*), reportedly, of about nine generations old, which at the time of fieldwork faced the risk of being affected by local road construction, noted how he preferred the tree and emphasized he would not trade it for "even a hundred thousand Birrs[6]," saying "This sacred tree is a symbol by which we commemorate our ancestors," (Interview, 2012). Another old man who shared custodial responsibility for this same endangered tree noted how, he "would like his own home be bulldozed instead of this tree," (Interview, 2012). Conservative SAR practitioners and the *qaddo*s (ritual leaders) value sacred sites and trees as if they are 'humans'; trees planted or grown in sacred sites are considered as things "having their own lives", and "they see trees like their own children," (Officers, SCRBO, 2012). Custodians cherish sacred groves, "like their own souls" (FGD-older men-1, 2012b); and protect trees "like their own eye lenses,"(FGD-

[6] Birr is Ethiopian currency; a Birr is roughly equivalent to 0.03 GBP

young men-1, 2012); some SAR custodians "prefer their own death instead of cutting down a tree from sacred groves," (Head, WDCTCO, 2013).

Informants value sacred sites as "residues of the local history" and home front-yard shade trees as "a symbol of a great man." Clearly, trees of sacred places are not simply physical entities. They are carriers of past traditions, current values and future hopes; they are symbols of past generations of men. The trees of burial sites are "considered like the deceased person himself." A SAR practitioner claims, "We consider this sacred tree like a human being." A Protestant grove owner was more direct: "I see it as if it is my father himself." Ancestral rituals' meaning and vitality are ensured by sacred sites and native trees, with the latter the aura of the former. Locals say, *"Lohhu haqqi, lohuu manchi labishaati!"* which means 'a big tree is a symbol of a great man!' The term 'big tree' signifies charismatic, ritual trees, which may or may not be large in size. "Great men" may be existing custodians of a renowned sacred grove or a front yard shade tree, or deceased men in whose honour trees were planted on their graves, or who left such a grove as a heritage. More than any other local cultural model, this one generates an intense sense of awe and respect for sacred groves and native trees.

Greatly cherished values that locals attach to sacred sites and trees are also linked with the idea of beauty. This conception of botanic beauty is captured in a phrase, *Haqqo seesaho*! Or *Haqqu einfileheo*, which literally means 'trees are beauty'. Aphorisms like "a neighbourhood without trees is like a sick person," or "places without trees are not good to look at," or "the sacred forest is our beauty", are indicative of this local concept of botanic aesthetics. Sacred sites and ritual trees possess aesthetic aura that locals credit with high respect, and this is something different in its essence and approach from the modern way of maintaining ornamental trees. Among local communities, the traditional concept of botanic aesthetics coexists with the growing practice of planting ornamental trees. It is part of the cultural ecosystem services people generate from local biodiversity.

The idea of sacred sites and trees as beauty is associated also with the concept of *Haqqu çaaleho*, literally 'trees are shade.' These trees have from time immemorial been valued for their shade, recreational possibilities and temporary resting places, and so are maintained in home front yards. "Trees are shade and it is part of culture," noted an informant, "the culture demands sitting under tree shade. The rituals do not take place in places where there are no trees. They conduct rituals under shade trees," (Interview, 2012).

This ancient concept selectively values certain cultural keystone species chosen for both their physical looks and ancestral symbolizations. Certain trees are, therefore, "more beautiful to look

at" than others. "There is nothing more beautiful and preferred like podo," (Interview, 2012). The beauty, however, in this quintessential traditional sense does not merely adhere in the physical look of the tree alone; the social-historical value that the trees represent is also important. The most aesthetically and physically valued trees include *Podocarpus falcatus*, *Olea capensis spp*, *Junniperus procera*, *Syzygium guineense*, *Ficus vasta*, and *Olea europae*, among others. Some culturally valued ritual trees, though, do not belong to the 'beautiful' category due to their physical appearance.

To summarize key ideas presented in this section, Figure 5.3 depicts five salient aphorisms about sacred forests or trees, and exemplar quotes are included for each.

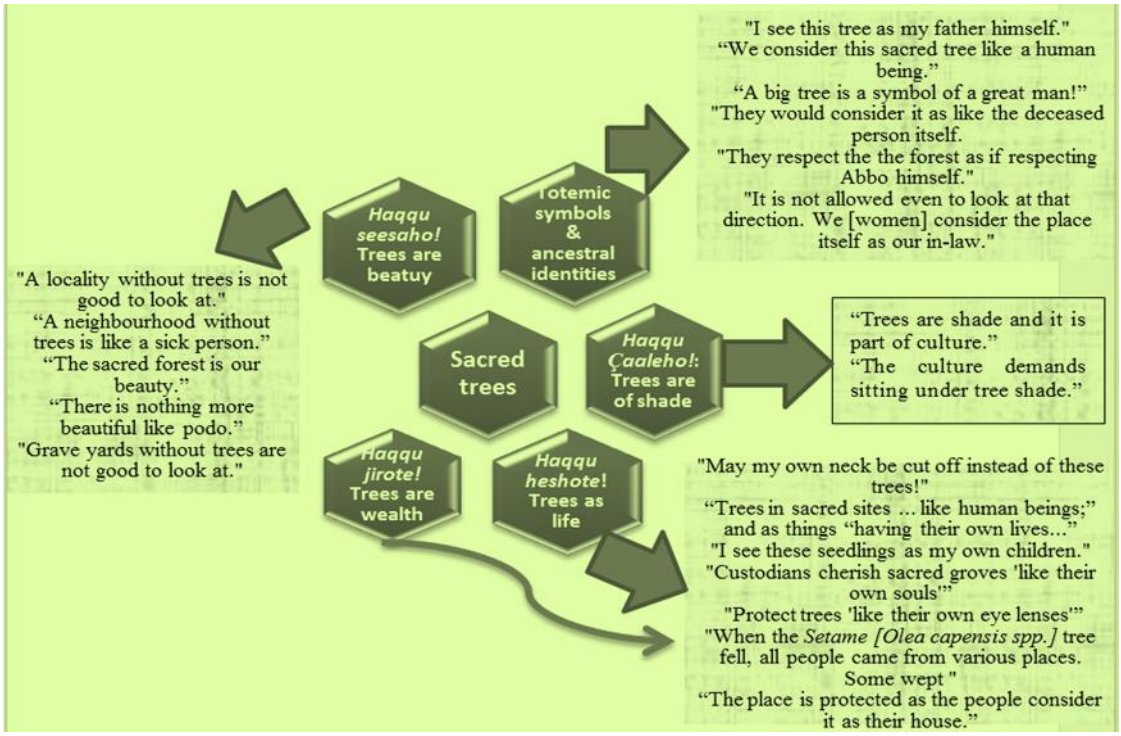


Figure 5-3 Local conceptions of the values of sacred groves and trees, interviews and FGDs, Wonsho, 2012, Ethiopia

Such reverential values locals attach to native trees and sacred forests are founded on their belief about the origins and roles ancestral spirits play in the causation and preservation of the former, a theme I present below.

5.3.3 Beliefs about origins of sacred forests and the role of ancestors

Local theories of origin and causation of sacred sites, such as Abbo Wonsho, are not uniform. A salient belief about the origin of sacred sites acknowledges the divine or ancestral spirit agency.

Locals often talk about the "fact" that "no human hand planted the trees of the sacred site." The more mystical SAR practitioners, for example, believe trees of AWSF were literally "willed into existence by Abbo's spirit." The Ganna opined, "The forests here did not sprout [by any human planting] but they sprang up by the will of Abbo." A SAR herbalist noted, "The forest emerged and was kept by the spirit of Abbo. No government planted it. Abbo's spirit issued order for the trees to sprout."

Kalaqamu or *budu haqqa* discussed above, notably *Podocarpus falcatus*, *Olea capensis spp*, *Syzygium guineense*, *Pouteria altissima*, *Ficus vasta*, *Croton macrostachyus* and *Ekebergia capensis* are believed to be part of these "Abboic trees", the very first trees that were 'willed into existence'. *Podocarpus falcatus* and *Olea capensis spp* particularly stand out among these, a belief often reflected during interviews with SAR practitioners. This may be regarded as the core set of trees that constitute Abbo Wonsho and other sacred forests.

There are divergences in the folk narrative, though. Views are divided between those that believe the first, core set of trees of AWSF sprouted when Abbo was alive. According to some informants, the oldest standing tree that fell in November 2012, an episode I witnessed, was the very tree which Abbo "used to lean on" and rest under its shade. Others believe the sacred site originated after the death of Abbo, who via his spirit "communicated to the ritual leaders that the first set of trees was about to spring up and that henceforth they should protect the area." This later view seems to be consistent with the way that Abbo still reportedly communicates with his delegate ritual leaders through dreams concerning the sacred site and its trees.

Figure 5-4 A view of debris from a fallen Olea capensis spp, believed to be the first tree "Abbo himself leaned on", SNS survey & observation, October 2012, Bokaso, Ethiopia

The most recent reported Abboic spirit agency in the causation of a stand of *Podocarpus falcatus* was in early 1970s. Many locals believe that Abbo's spirit caused an overnight drying up of a group of freshly planted exotic trees, *Cuprensis lusitanica,* by the then local government officials. As a show of his power, "Abbo's spirit was angry at such intrusion and he told the *qaddos* that he was going to cause the exotic trees dry up and in their stead cause springing up of a whole new batch of *dagucho.*" Today, this "third generation" "Abbo-caused trees" stand, at least for the local faithful, as a visible testimony, occupying a large cross-section of AWSF. This and other related folk tales are anthropologically crucial, as they add high value to the cultural capital that constitutes their site protection and tree management framework (Chapter 9). However, in closing, it should be noted that this divine causation theory is not monolithically held among all local people. Diverse views exist, with some skeptical, others outright rejecting such notions.

5.3.4 Beliefs about certain totemic trees

Certain beliefs exist concerning various dimensions of ritually important trees. These beliefs may concern ages, gender, the way trees may be addressed and approached by women, how and who may touch or use them, by whom and when they may be felled, etc. There are a number of salient useful, friendly taboos with regard to people's relationship and behaviour respecting

sacred sites and ritually important trees. Many of these taboos emanate from the belief that these sites and trees represent ancestors (see Case 5.1 below).

Certain ritual trees are accorded special recognition by locals and there are well-established beliefs about them. Of these *Olea capensis spp.* *Podocarpus falcatus*, *Syzygium guineense*, *Junniperus procera*, and *Croton macrostachyus* occupy key places. They are different from other trees in their ontological being in that they, as noted above, are believed to have sprouted by special divine order. *Angate haqqa* (exotic and other less important native trees) are ordinary and not worthy of any such respect, while *Budu haqqa* are respected as they are imputed with supernatural origins. Case 5.1 below illustrates two of the most respected trees because of their overall significance and their place in local plant lore.

Case 5.1: *Dagucho* (*Podocarpus falcatus*) and *Seetame* (*Olea capensis spp.*)

While so-called "Abbo era" *kalaqamu haqqa* mentioned above are all respected and valued, two of these stand out conspicuously in terms of widespread and deep community respect they garner. These are *Podocarpus falcatus* and *Olea capensis spp*. In a sense, these trees embody deceased ancestors. Of the two, *Podocarpus falcatus* continues to dominate current sacred landscapes due to its comparative advantages over *Olea capensis spp* in such areas as its relative ease of manageability, more graceful canopy and shade it provides, etc. The latter is rapidly declining as people find it difficult to replace through propagation. Existing current *Olea capensis spp* are, therefore, very aged and the dying ones in sacred places.

Locals hold a range of beliefs and preferential attitudes towards these trees. *Podocarpus falcatus* on ancestral graves are seen as "as if it is my father himself." It is a highly valued social status indicator for its owner. Households who maintain them are singled out as highly esteemed. Local people's statements such as "This tree is a great sacred tree;" "It is *budu haqicho*; we give it respect. It is related to the Sidama culture;" "It has *atoote* [blessing];" all indicate special values attached to this sacred tree. A SAR custodian of a ring of 12 sacred *podos* on his parent's grave adds further aesthetic and physical qualities of the tree and ecosystem services it provides: "People sit under its shade and can conduct meetings. The ancestors chose it as a symbol of blessing. It provides cool air during dry season… There is nothing more beautiful and preferred like *podo*. Trees such as *afkato* [*Persea americana*] are good for food. Other trees shed their leaves in dry season. But *podo* does not, winter or summer," (Interview, 2012).

Olea capensis spp, on the other hand, continues to occupy a great place in people's memory, although its physical existence is ever getting challenged, as noted above. The locals note its totemic value, "beautiful nature", its suitability for shade, relative rarity, aromatic nature and

high suitability for firewood. Wherever it occurs at present, owners are regarded in high respect; where people see it, it is respected. *Olea capensis spp* is referenced in a number of botanical tales. Abbo was said to have "leaned over one of *seetame*"; women married to Hoollo-Garbchio clan consider the tree and its name as a *balisha*, using an alternative name, *suninate* to address it; in rituals of vows, blessing, cursing and prayer, the tree is invoked. One common saying, "*Sekko Setame agareho*," means 'may he that makes *seetame* beautiful and good keep you.' In prayer, people would say, "*Magano*, you who made *seetame* tree help us!"

Such beliefs help preserve botanical memory about the tree. Existing trees may benefit from such friendly beliefs; at present, however, the tree's cultural stature is much more robust than its biological viability.

5.4 Institutions supporting and dependent on maintenance of SNS

So far, findings on concepts, knowledge, attitudes, preferences, beliefs and values vis-à-vis sacred forests and trees have been presented. These findings recognized both uniformities and differences in these realms across social groups. In the remainder of this chapter, I summarize findings on core ancestral rituals and their significance for biocultural diversity. Examination of these institutions will particularly help to address the question of why and how sacred forests are maintained.

To reiterate, traditions, institutions, and events that support and depend on sacred forests and trees have existed in Sidama for an unknown, but presumably long time. Ancestral rituals occupy a major place in the sacred site complex, without which sites are stripped of their sacredness. On the other hand, the desire to honour, placate, and commemorate ancestors is an overriding element in rituals. Conduct of ancestral rituals within the spatial contexts where trees take central stage is one salient reason that necessitates sacred sites and their maintenance. A range of related but distinct rituals that use trees and sacred sites as important objects take place centring around ancestors and bringing clan and community members together through communal participation in these rituals. The rituals are important symbols of respect and recognition for ancestors and the belief in their continuing presence among the people.

Native trees are required by culture for ritual instrumentality and locals think it unimaginable to utilize exotic trees for ritual purposes. Despite their fast decline, local shifts from native to exotic trees for ritual needs were not yet observed or reported, and if it were to happen it would require a strong cultural paradigm shift, as the entire Abboic ethnohistory and culture hinges on native trees. As one informant notes, "No ritual killing is done under the exotic trees."

However, given the syncretism taking place in other areas and the capacity of ancestral institutions to absorb and incorporate new elements, there is no reason to project a fixed, static view of this.

The following sections describe institutionalized values and practices that support, and depend on, sacred forests and trees, serving as organizing principles for Wonsho community's form and sense of family, kinship, identity, community organization, politics, religion and education.

5.4.1 Totemic trees: institution of ancestor symbolization and identity reinforcement

As noted, totemization of sacred forests and trees is one of the core institutions of Wonsho serving as an organizing principle for the maintenance of sacred sites, apart from its manifest, preeminent purpose of validating the community's sense of origin, identity, kinship ties and social organization. In a specific, practical sense, having native trees present in household burial sites, front yards, *songo harra, gudumale* and other related places is regarded as reminders of ancestral roots, reinforce family ties and kinship networks.

It is an institutionalized duty of sons to honour and commemorate their deceased ancestors by either planting or taking care of already planted trees, usually Podocarpus, as the very embodiment of their ancestors. As a male youth noted, "When a man who planted a tree dies, he leaves a testament to his children that they should not cut the trees and should respect the testament…" (FGD-young men-1, 2012). Sacred trees planted or grown on graveyards and shade trees at front yards are points of contact between ancestors and progeny. Trees standing in the front yards are as used as *adbars* ('mediums of guardian spirits'). Some informants believed ancestral spirits inhabit big trees. Sacred groves are "places where spirits of ancestors live" so they "fear and respect them."

In view of this, then, using these trees of sacred sites for any mundane needs is anathema. According to informants, it is like "cutting one's own flesh" when one dares to cut such trees. Even branches of dried, fallen totemic trees are never used for any household needs "because the trees are symbols of our ancestors." A young man further elaborates this:

> Since people think that the trees are symbols of deceased ancestors, cutting the trees and using them as firewood would mean like burning the flesh of the ancestor himself. So any person that is member of a consanguine of the ancestor would never use the trees for any mundane needs. When sacred trees fall down by reason of age, non-consanguines would be invited to use them.

Such norms, as discussed in Chapter Nine, constitute important elements in traditional sacred forest governance, as the institution, based on values and beliefs of totemism, engenders certain protectionist behaviours towards trees. Combined with other related rituals (presented below) they serve as important foundation for maintenance of forests, sites and a broad range of ancestral traditions.

5.4.2 Trees, burials and bereavements

Burial sites have been major biodiversity protection contexts in Wonsho. They are a key interface between trees and ancestral rituals; they make a salient locus for interdependence between ancestral culture and trees. The practice and trees mutually need each other. Forests are important, firstly, in that deceased people are "buried inside forest" (FGD-Women-2, 2012). This is particularly a cultural requirement when elderly, "big" men die; "they are not buried just in the field" (FGD-young men-2, 2013). Burial sites that are devoid of trees are unseemly to look at, an aesthetic reason bolstering the cultural logic already in place. In this sense, trees or forest already existing, either prior-planted for such purpose or for other non-sacred purposes, provide a necessary and aesthetically appropriate physical context for burial practice. Secondly, they provide a locational identification for burial places. Burial places are easily identifiable spatially. They are planted as an enclosure and mark for the graveyard since no stone structure is placed as a mark in the traditional Sidama burials. Thirdly, trees provide physical demarcation whereby burial plots are separated from other spatial contexts, barring them from any mundane intrusions. Fourthly, trees serve as live fences and protection devices for burial plots providing both social and physical enclosure.

A typical burial plot for a deceased male ancestor is one that is marked off with a raised earth mound, often with Podocarpus trees planted in commemoration. As a SAR practitioner maintaining a ring of 12 mature and growing *Podocarpus falcatus* on his parent's burial place noted, building a mound of raised earth represents the core of the grave. The earth mound is maintained and regularly refurbished as it is affected by the elements. Trees are then planted encircling the grave mound. However, over centuries, these mounds lose their shape and disappear leaving some vestiges, and hence the role of trees planted serving as memorials, as these reproduce when old ones die of age (Hamer, 1976).

Figure 5-5 A ring of sacred, totemic podos growing on a family grave, SNS survey & observation, November 2012, Wonsho, Ethiopia

A related practice is the *dore'e* ritual, the use of a tree effigy for accompanying mourning and the bereavement ritual when renowned men die. A pole from Podocarpus tree (as a first preference) is carved, painted with red coloured mud and erected at the centre of a funeral ceremony (Hamer, 1976). People believe the effigy represents the deceased person (Head, WDCTCO, 2013). The *doree* pole is a symbol of the greatness of the deceased. This ritual and the carved pole itself are "as a symbol of respect for the deceased," (FGD-older men-1, 2012). When podo trees are absent alternative trees are used. The second most preferred tree is *Junniperus procera*. When both of these trees are hard to find, other native trees will do. Such ritually motivated use of native trees may not be salutary for tree biodiversity; however, such a ritual is not performed for every deceased person. It is reserved for very renowned people such as ritual, clan and community leaders, and that for males only. Children and young people are also excluded.

Beliefs and rituals associated with death, bereavement and burial sites management are important tree-dependent, as well as, supporting systems; as informants argued, trees that exist today along burial sites are protected because using such trees for any mundane purpose is regarded as a great trespass to the ancestral spirit and violators are believed to face severe retributions from the spirits (FGD-young men-1, 2012).

5.4.3 Trees, sites and ancestor worship

The use of sacred groves or woody trees as temples derives from belief in the imbuement of such physical places or entities with ancestral spirits. In most instances, the bodies of ancestors

are present at the groves and in other instances they may be absent. Households, clansmen and other concerned community members use sacred groves as valued temples where ancestral rituals of placation, commemoration and thanks-giving are conducted. Not all native trees are eligible for such ritual enactments. Different trees are used in various aspects of the ritual process. Some of them mentioned above take central stage and are preferred for such rituals. Depending on their availability and local variation, shade of any one of these may be used as temples. However, *Podocarpus* stands out as the most valued and honoured of all, defining the sacredness of most of the existing sacred groves. "In Sidama culture, *Dagucho* is planted around burial sites; the *ţorosho [ancestor placation ritual]* is conducted under shade of *dagucho* at the burial site. They use the burial sites and *dagucho* trees as a form of temple."

Trees such as *Podocarpus* are believed to host the guardian, ancestral spirits and it is common for the SAR practitioners to invoke these spirits through instrumentality of trees or sites. *Olea capensis spp*. is another key ritual tree central to SAR. Despite being relatively in more rapid decline, the "spirit" and the name of the tree, as it were, continue to be invoked in ancestral rituals of *ţorosho* and *dasho*, and it pervades other cultural domains as well. Names of some known sacred places are also invoked as tools of blessing, cursing and prayer. For example, in the locality of Loggo sacred forest (a major sacred forest sampled in our survey), people might say, "*Loggi elohe*", meaning, 'May Loggo sacred place help you!' AWSF as a major one is generally a key reference, invoked by SAR adherents in vows, blessings, cursing, prayers and promise keeping. Other native trees are also relevant to similar rituals. The leaves of *Croton macrostachyus* are used for covering a honey mead pot (Dare'e, Interview, 2012). Crutches from *alpine Yeshania alpina* are used as ritual walking aid, and as tool handles for ritual spears, used for slaughtering sacrificial animals.

A number of institutionalized practices exist as salient aspects of SAR. One of these is the *ţorosho or kakalo* ritual. This ritual involves the offering of honey mead, milk and meat often to one's immediate ancestral spirits. In most instances, *malawo* (honey mead) is mentioned as a common sacrificial material in relation to this ritual. The ritual takes place at sacred sites or in the shade of a tree or trees. It is unthinkable to enact such rituals where there are no native, ritual trees. Household heads conduct this ritual in memory or placation of deceased ancestors. The ritual may be occasioned by certain conditions such as when misfortunes befall households; or as a regular annual or seasonal worship act. When such rituals take place, the sacrificial materials are placed on the ancestral grave, with a solemn belief that the spirits "receive" the offering.

A more solemn, large-scale ritual is known as the *dasho* (discussed in Chapter Four) which involves the killing of multitudes of bulls (reportedly, sometimes in the hundreds) at clan-wide sacred forests, and this ritual is attended by all clan members congregating from all over the district and beyond.

In sum, sacred sites and trees serve as key mediums of ancestral religious expressions. Their agency in such rituals, while of necessity in helping preserve and enact ancestral traditions, also generates conservational outcomes for them as they benefit from taboos of care and protection (see Chapter 6).

5.4.4 The institutions of *gudumale* and *songo harra: public life, peace building and social order*

A key interface between culture and trees is the use of the latter as seating or meeting places where important community issues are dealt with. Conflict resolution and peace building deliberations are said to require tree shade. The shade of trees serves as "a traditional meeting place" from time immemorial. As informants argued, ritual leaders do not sit in a place devoid of trees (FGD-older men-1, 2012). They use these as 'tents', (Officers, SCRBO, 2012). Very serious and important community meetings and discussions are conducted at such venues, not inside homes. Similarly, *Fiche-Çambalala,* New Year's, celebration of dancing and singing takes place at such venues.

Such meeting places are named interchangeably as *danawa, songo harra* and *gudumale.* The concept of *danawa*, as noted above, refers to a collectively owned space where trees are protected. Such spaces may be sacred or non-sacred. They may include land with or without trees. *Songo harra* and *gudumale* are sacred places. The former are specifically places for conducting ritual meetings, while the latter serve as places for community meetings, celebratory events, rituals, recreational centres, playfields and other engagements. In a sense, they may be considered as 'multipurpose' open meadows situated at the centre of a number of clan-linked households or vast open meadows belonging to a large section of inter-clan congregations.

Tree biodiversity relevance of such cultural spaces is evident. *Gudumale* are characterized by presence of trees. Such places and trees therein are respected and protected. It is a taboo to cut trees (Officer, SZ-CTD, 2013). "No one is allowed to dig or cultivate the land in *gudumale"* (FGD-older men-1, 2012). Trees are left untouched until they grow old and die. "They may grow and stay [for] generations," (FGD-older men-1, 2012) .

One salient ritual enacted at *songo harra* is what may be termed as an alternative justice dispensing system, whereby ritual leaders and clan elders grapple with local cases, to find truth, provide justice to victims, and pass ritual judgments on offenders. They are used as alternative courts, or tribunals, where ritual leaders sit and see various knotty cases ranging from interpersonal disputes, denials of borrowed money or property, theft and other similar matters that have proved difficult to deal with in formal legal courts. The tribunal ensures that the participants, the litigants and offenders, are all under the watchful presence of the ancestral spirits. It is believed that this is a place where *halale (*'truth') prevails and must be honoured. Due to this, Abbo's grave or AWSF is sometimes considered as *halale darga (*'holy place of truth') (Hamer, 1976). According to informants, it is expected that one cannot lie when in the presence of ritual leaders, as it is believed that the offender will draw the wrath of the ancestors. This service is so important that one of the major sacred forests now has its formal name recognized by the government as "Abbo Wonsho Cultural Justice Dispensing Centre." This point is discussed further in Chapter 8 from a different perspective

In general, *gudumale* and *songo harra* institutions establish an important connection between trees, culture and sacred sites. Both *gudumale* and *songo harra* are forest protection contexts. They are entwined with trees, fostering conservation of the latter and the cultural values attached to them.

5.4.5 The institution of *mancho luwaa*

Mancho, also called *woyyo,* is a place where *luwaa* rites take place. They are forested initiation grounds. *Luwaa*, as noted in Chapter Four, is one of the key organizing principles of the Sidama socio-cultural and political system, and is characterized by a rite of passage that prepares Sidama males for social, cultural and political positions and responsibilities. A group of males (of varying ages) take part in a *luwaa* ritual and upon completion of the rite, which takes three months of camping away from home in the forests, they become ritually competent members of the community. A latent social function also exists whereby the class of a year's entrants to the ritual are considered friends and form strong social bonds among them.

The *Luwaa* institution employs biodiversity in a number of ways. Forests provide a necessary environmental context for the enactment of the ritual. On the other hand, certain plant and animal species are used as cultural requirements. A ritual stick which also serves as a dancing aid is fashioned from *alpine Yeshania alpina* and other native shrubs are used as well (for example, they would use different shrubs, climbers, fibres, etc for making their ritual huts; they would collect firewood to make bonfires for lighting and heating, etc). As noted elsewhere, the

initiates are circumcised following their participation in *luwaa* and this must be accomplished before another class of *luwaa* entrants replace them. The circumcision ritual involves botanical elements in a range of ways; for instance, the initiate must sit on a special stool prepared for this purpose called *barçma* made of *odako* (*Ficus vasta),* the logic of which is shrouded in mystery; interesting enough, the same term is used for both this stool and the act of circumcision. The circumcision ritual should take place under the shade of *wesse* (*Ensete ventricosom*) in the backyards.

Figure 5-6 A partial view of some Podocarpus falcatus at a major mancho luwaa, situated in a high place in Kinante, SNS survey, January 2013, Wonsho, Ethiopia

While in a major sense the *luwaa* institution promotes (tree) biodiversity conservation, in another sense, it may have an unfriendly outcome for certain species, for example, in the practice of killing a bird known as *wolima (Tauraco ruspolii)* whose colourful feathers are used as an adornment in the hair of the initiates.

5.4.6 Institution of socio-economic ranking and wealth

Ownership of a sacred forest land or a bunch of grown trees may be considered as a factor that determines differences in socio-economic status and an important indicator of a household's good social standing in the community (Hakansson & Brokensha, 1981). Sacred groves and shade trees are maintained, among other reasons, for generation and maintenance of one's

"good name" and social standing. Those who maintain "big" trees are regarded as "big men" in their communities. Conversely, a household head that does not maintain a shade tree is not regarded as a "big man." The desire to seal one's name and greatness in the community and for generations to come is a key motivation for maintaining shade trees. As an elderly man noted, owning sacred groves "provides us with a sense of respectability."

Shade trees are particularly regarded as heritable assets, not simply in an economic sense, but as cultural and social capital. It is a taboo to cut such trees for other uses. As one informant noted, such trees are planted and cared for "the future." A valuable inheritance from father to son is, therefore, a sacred shade tree in their home front yard. A son does not fell a shade tree planted by his father, as it is his invaluable inheritance. On the other hand, one who owns many and diverse "big" trees is regarded as wealthy. According to informants, a man's wealth ranking may be measured by considering trees they maintain (in terms of scale, diverse species and grown, bigger ones). The more a man owns mature, grown-up trees, the greater his wealth ranking.

These institutions, in general, are tree-biodiversity-friendly and tree-dependent at the same time and, therefore, are key indications of biocultural diversity. Sacred sites are maintained and native trees, even at the expense of economic needs, are cared for to ensure important social systems and valued ancestral traditions are preserved, thereby creating favourable conservation outcomes for otherwise threatened species (Chapter 6).

5.5 Discussion, summary and conclusion

5.5.1 Discussion

Indigenous peoples around the world, numbering more than 370 million in some 90 countries, and local communities in general, hold traditional knowledge systems that continue to serve as an "invaluable source of ingenuity" (UN-DESA, 2009; Toledo, 2013a). They maintain environmental and biodiversity ethics that are broadly friendly, despite the pressures of environmental and political marginality that can lead to conflict and discord. Their close affinity to nature has helped them to develop a repertoire of knowledge on bio-diversity, the environment, behaviours of fauna and flora, the diverse ways in which resources can be put to use, the ways in which appropriate balance need to be made between people and natural resources, and culturally mediated means of managing and conserving natural resources, etc. (Durning, 1995; Bodley, 1996; Prain et al., 1999; Berkes, 1999; Toledo, 2013a).

Traditional conceptions of plants, animals and environment in general are best understood as what scholars call an *eco-centric* view of nature. Biodiversity and the natural world in general are part of the holistic web of animate and inanimate life that comprises all living forms, as well as the insentient natural world (Ingold, 1992). As largely a traditional society, Ethiopia and its multitudes of indigenous peoples and local communities share such eco-centric views of the natural world with other peoples of East, Sub-Saharan Africa and the developing world in general. The country's over 85 distinct ethnic groups maintain age-old, albeit changing, environmental and biodiversity knowledge systems and institutions (Kanshie, 2002; FDRE MoARD, 2002; Hundera, 2007; SNNPRS, Council of Nationalities, 2008; Kibrework, 2011) These systems and concepts are generally reflections of the broader frameworks of the people's conceptions of nature and the place of humans in it.

Wonsho conservation and biodiversity concepts presented above are best understood in these broader contexts. The Wonsho community belongs to the core of Ethiopia's ethno-cultural groups that have maintained diverse beliefs and practices serving as important bases for biocultural diversity conservation, through home gardens, agroforestry practices and sacred groves (Asfaw, 2003; Asfaw & Ågren, 2007; Abebe et al., 2010; Desissa, 2009; Woldu, 2009).

Nested in, and emanating from, the broader worldviews and concepts of natural resources and earth-care, Wonsho traditional knowledge and belief systems relating to sacred forests and tree biodiversity tend to be richer, intimate and dynamic, as the foregoing findings show. Underlying motives for why and how cultural landscapes such as sacred forests and biodiversity elements such as trees are maintained are intimately tied to, and supported by, such knowledge systems, beliefs and attitudes. While romanticization and essentialism regarding the place, role and nature of traditional knowledge and indigenous peoples are now rejected (Sheridan, 2008), yet anthropological and ethnobotanical studies have shown this to be true across time and space. Indigenous people and traditional communities have direct and close links to and dependence on plants in their everyday lives (Balick & Cox, 1996; Cunningham, 2001). This in turn enables such communities to possess intimate and rich knowledge of the environment and the botanical world (Bodley, 1996; Nelson, 1998).

In Wonsho, it has been shown that botanical knowledge and attitudes relating to names, uses, physical features and ecological aspects of sacred forests and trees display certain uniformity and commonality among age, gender, religious and other demographic groups. On the other hand, due in part to the existence of nature-friendly traditions and sacred forests, such knowledge and beliefs, despite facing challenges, are robust in the community; even the very young tend to possess rich and intimate botanical and environmental information. Wonsho

conceptions and classification of plants and trees indicates how a range of classificatory and definitional parameters are utilized that are manifestations of local ecological, livelihood, botanical and historical contexts. As Ellen (2006b) argued for ethnobiological knowledge and classificatory schemes in general, Wonsho conceptions of the botanical world and their knowledge systems are best understood in a context of dynamic and competing multiple realties, espoused by heterogamous groups.

Variations exist in the amount and depth of botanical knowledge and attitudes held among social groups across socio-demographic backgrounds. An interesting finding is the gendered relationship to sacred groves, such that women hold a uniquely reverent and highly fear-enriched posture vis-à-vis sacred forests and totemic trees in Wonsho. Women's high respect and fear of ancestors and living male in-laws, crystalized in the institution of *balisha* and *makariso* presented above, is a manifestation of a traditional society that values a paternalistic, gerontocratic form of social organization (Stanley, 1966; Hamer, 1970, 2007; Hamer & Hamer, 1998; Hoteso, 1990; Kumo, 2009b) Thus, women's reverential botanical beliefs and attitudes are a replica of the same for these male figures. Sacred forests and trees on ancestral graveyards thus receive such high forms of worshipful attitude. Women among many other traditional societies are excluded from the masculine-oriented institutions of sacred forests, something understood in the context of beliefs that portray women, especially those in certain states, such as menstruation, as polluting (Herbert, 1994; Pedersen, 2002; Anon, 2014a).

Similar phenomena exist in other traditional communities across the world, where maintenance and continuity of ancestral traditions support, and depend on, the botanical world in general and certain tree (and sometimes animal) species in particular. These serve as favourable contexts for experiential learning and in-the-field botanical socialization. Extractive conservation and important means of maintenance, distribution and transmission of knowledge and beliefs about nature, forests and trees also take place in such contexts. However, such conceptions and contexts are also dynamic and often full of apparent contradictions. The issue of dynamism calls attention to the fact that both traditional knowledge and belief systems and the relationship between these and the local environment are not static (Bicker et al, 2004; Anon, n.d.); contradiction is also evident in that local communities may espouse belief systems and practices that may not always be salutary for the promotion of mutually supporting relationship between culture and biodiversity (Parkes et al., 2004; Sillitoe, 2007; Heckler, 2009; Verschuuren et al.,eds. , 2014).

Intimate connections exist between traditional values, practices and institutions on the one hand and forests on the other. Mutual, preservative outcomes generated from, and benefiting, both

systems, as shown in Wonsho, form the basis for understanding why sacred sites and endangered tree biodiversity with associated ancestral traditions still exist. They also explain what motivates local communities in their persistent engagements with their sacred traditions and cultural landscapes. The Wonsho study above demonstrates sacred groves and trees of ritual importance symbolize ancestors, concretize ethnic-social identities and validate ethnohistorical origins. They also provide a reason for understanding, controlling and grappling with present livelihood and environmental challenges and hopes for their cultural and ecological future.

As discussed in Chapter Four, sacred forests present us with a very concrete and immediate prism of understanding why such landscapes and associated institutions are important. A salient dimension of this is sacred forest as a totemic representation of ancestors. Sacred forests in Wonsho are embodiments of deceased ancestors. Totemic trees are ingrained into ethnogenetic perception, ethnohistorical narratives, and a psycho-social sense of the Abboic community.

Totemic symbolization of trees and animal species from time immemorial has been an important aspect of cultures in Ethiopia, and across the world. In Wonsho and among other ethnic groups in the SNNPRS and the nation at large, a range of native tree species such as *Olea europae, Olea capensis spp. Podocarpus falcatus*, *Cordia africana,* and *Ficus vasta*, among others, play key roles in ritual representations and contacts with the spirit world (Negash, 2010). Across time and space, this is evident in a work Rival (1998) edited wherein contributors attempt to address various theoretical and empirical dimensions of the 'social lives' of trees and "the extent to which trees serve as symbols of trans-generational continuity" in different societies and cultures (Mathewson, 2000: 247). Trees form the basis and mediums for meditation, worship, mysticism and related engagements among Amazonian Indians (Schultes & Raffauf, 1992; Nabhan et al, 1996; Freedman, 2010), Mayans (Anderson, 2002), indigenous peoples of the Indian sub-continent (Shiva, 1998; Rao, 2002) and China (Hsu, 2010), to name but a few. In short, as Rival (1998) argues, trees occupy a key place in symbolism with somewhat near-universal relevance across time and space.

Wonsho consideration of key ritual trees as very embodiments of ancestors is an instance of how traditional communities, custodians of sacred groves, owners of totemic trees, shamans and herbalists in general, approach trees as anthropomorphic beings (Schultes & Raffauf, 1992), as those that connect humans to gods and the spirit world (Pennacchio et al, 2010). Traditional people hold a view of nature infused with the soul of itself, giving non-human life the capacity to be embodied and capable of possessing moral codes (Ellen, 1996b, 1996c; Ellen & Fukui, 1996). Such a view provides animals and plants human dispositions and behaviours (Descola,

1996). This idea is echoed in what Árthem (1996) calls 'eco-cosmology', which he argues is a concept that best captures the traditional model of human-environment relationship.

There exist mutual linkages between sacred forests and trees and these local communities' ancestral religion and social institutions. Findings from the Wonsho study on the way key ancestral rituals and socio-cultural institutions of *songo-harra*, *gudumale, luwaa*, maintenance of *çaale-haqqa* and enactments of ancestor placation rituals of *ţorosho* and *dasho*, all demonstrate the necessary link that creates a dynamic and persistent give-and take mechanisms between cultural and biological diversity. Intricate systems of botanical taboos are part of the maintenance of these rich institutions that are both tree-supporting and tree-dependent.

Of particular importance, and supported by findings from Wonsho, is the centrality of certain tree species and sacred forests as a spatial entity in concretizing ancestral religion. SAR is based on the ethos that takes veneration of deceased ancestors as its core value. The religious system is nature-based and puts trees and other sacred landscapes at its centre, where deceased ancestral spirits are believed to reside. Ancestor-honouring rituals take place in the sacred sites, sacred trees regarded as the temples where the spirits of the deceased ancestors manifest themselves (Hamer, 1976, 2002; Brøgger, 1986; Teshome, 2009a; Tekile et al., 2012; Wansamo, 2014). As such, trees such as *Podocarpus*, *Olea europae*, *Ficus vasta* and *Croton macrostachyus*, as noted above, have been important religious mediums in Ethiopia (Negash, 2010), as well as throughout the history of humanity. Trees have had important place in the classical world; in cult and myth, many of the gods of the classical world are associated with particular trees and other plants (Ruck, 1995). They make central themes in the religious and socio-cultural beliefs of many cultures (Rival, 1998; Minnis, 2000). Further, various other mainstream religions of the world attach importance to trees (Dafni, 2007a). For example, Islam, Hinduism and Buddhism all consider fig trees such as *Ficus vasta* as sacred. Buddha was said to have achieved enlightenment sitting under the Bodhi tree, *Ficus religiosa* (Negash, 2010; Sponsel, 2012).

The tree-biodiversity and sacred forest protection outcomes of all these values, beliefs and institutions constitutes the creation of complex systems of taboos and forest governance norms that equate sacred landscapes and individual totemic species with ancestors and clan or group identity (Chapter 9). This inadvertently generates good biodiversity conservation outcomes (as discussed in Chapters 6 & 7). The devout view of their ancestors, whose identities—past, present and future—are all wrapped up and immortalized in these sacred landscapes and living biodiversity elements, is a view that engenders a powerful instrument for maintenance and preservation of sites, trees and traditions.

Before I close this Chapter, there is a need to make some important remarks. The evidence presented above is primarily meant to answer the question of 'why sacred sites exist or are maintained. This is done by touching on the foundational, ontological, scale of issues. The data presented are examined primarily as evidence for their relevance in demonstrating the mutual interdependence and relationship between 'culture' (the conservation concepts, beliefs, values, knowledge, behaviours, attitudes, rituals and institutions pertaining to sacred sites) and 'biodiversity' (the plants, native trees, forests, animals and other biophysical elements).

While the materials presented above accounted for the raison-*d'etre* of sacred forest maintenance and persistence of culture and biodiversity in Wonsho-Sidama, uniquely providing the basic anthropological framework for why sacred forests are owned/ maintained or managed, there is another key question that needs to be addressed: How does the mutual relationship actually work to conserve biodiversity and under what circumstances does it break down? It is important to indicate that the ontological base for 'how such a relationship actually works to conserve biodiversity' is contained in the structures and enactments of the 'elements' of the culture described above. For the biodiversity conservation outcomes to happen, they have to be situated within the contexts covered in this chapter. One important unstated argument is how the enactment of rituals is the basis for, and actually works towards, conserving tree biodiversity. Ritual enactments and sacred site maintenance conserve tree biodiversity through creating effective use norms, engendering tree supporting and respecting values, behaviours and beliefs in the community of believers (Chapter 9). As noted, this question will be addressed in different ways in the foll owing chapters in some detail.

5.5.2 Summary and conclusion

This Chapter has outlined findings from Wonsho attempting to answer core questions of why or how sacred forest sites and trees with associated ancestral traditions are maintained. It explored findings on foundational conservation conceptions, beliefs, attitudes, knowledge and institutions that are produced and reproduced in the context of sacred forests. The mutual instrumentality between tree biodiversity and sacred forests, on the one hand, and ancestral traditions, on the other (which are both supportive of, and dependent on, such entities) were presented and discussed. The current state of botanical knowledge, beliefs, preferences and attitudes across social categories in the community were discussed, outlining both uniformities and variation, and explaining how such systems underpin both the cultural use and maintenance of sacred forests in the community. Finally, the Chapter presented and discussed a range of core ancestral rituals and institutions that have supported maintenance of sacred sites and trees and required the same for their vitality and continuity, thereby generating biodiversity conservation

outcomes, highlighting specific native trees which have been accorded utmost primacy in these institutions.

Based on the forgoing presentations, it may be concluded that traditional conservation concepts, beliefs, knowledge, rituals and institutions have evolved in dynamic relationship with forests and trees. Rituals are maintained fundamentally as local identity expression and reinforcement markers. Furthermore, they are necessary to placate and commemorate deceased ancestors. Rituals and institutions that take place in these important biocultural landscapes provide a sense of origin, ethnohistorical narrative, territorial attachment and social-cultural identity for the present generation.

Further, sacred forests provide important spiritual and spatial context for rituals and institutions. On the other hand, the consideration of these cultural landscapes and trees as sacred has proven to be very crucial for protection of sites and conservation of biodiversity and maintenance of sacred sites. Rituals emanating from an ancestral-religious worldview required native trees such as *Podocarpus falcatus* for their symbolic values.

In sum, the maintenance of ancestral values motivates maintenance of SNS and biodiversity conservation. Chapters 6 and 7 will show how the mutual relationship between culture and biodiversity has worked to conserve the latter, especially native trees, and 'what' types of biodiversity are conserved and to what extent. Part of this question is also addressed in Chapter 9 where I examine, among other issues, the traditional governance and management norms and principles that actually help or work towards conserving biodiversity, and the circumstances and factors that cause the weakening and breakdown of the salutary mutual relationship.

Chapter 6. Biodiversity Conservation Role of Wonsho Sacred Sites

In Chapter Five, the question of why and how sacred forest sites and ancestral traditions are maintained was addressed, concluding that traditional conservation beliefs, knowledge, and institutions have existed in dynamic relationship with forests and trees and that the maintenance of ancestral values motivates protection of forests. While Chapter Five primarily examined the *raison de'être* of mutual relationship between culture and biodiversity, it also addressed the question of how such a relationship actually works to conserve biodiversity. In this Chapter, I continue to address this question by examining the consequence of the mutual relationship, i.e., contribution to the conservation of biodiversity, particularly woody tree species and the extent conserved.

The Chapter presents the findings in three sections. Section one examines the role of sacred sites in conserving biodiversity in Ethiopia. Section two reviews the types and extent of biodiversity conserved in the sacred groves and other informal areas in Wonsho, Sidama. Section three contextualizes the findings in comparative literature and concludes that sacred sites and other informal protection areas play critical, though not consciously intended, roles in biodiversity conservation in Wonsho, Sidama.

6.1 Biodiversity conservation role of sacred natural sites in Ethiopia

In Ethiopia, at the present, governmental, NGO and other actors recognize, albeit belatedly, the role sacred natural sites play in biocultural diversity conservation. At the national scale, the current understanding is that SNS fall within the framework of protected areas and park systems (Director, BIE, 2013). Their potential and actual profile in terms of biodiversity harboured therein is not yet systematically mapped, a gap that all governmental actors, from national down to local district level, acknowledge. However, informal observations and piecemeal studies have shown how SNS and similar landscapes have harboured many endangered plant and animal species. Of particular note is how SNS have served as refuges for many endangered native trees, some endemic mammals and birds.

Some of the endangered trees are reported to be now found only at these and similar other places. Their losses at other non-sacred areas are generally known. Officers at all governmental

scales, for example, noted that such trees include *Olea europae*, *Pouteria altissima*, *Syzygium guineense*, *Podocarpus falcatus*, *Olea capensis spp*, and many more are increasingly getting lost. They are "escaping" to sacred places and other informal protection areas. Addis Ababa Botanical Garden has so far managed to collect about specimens for 500 of the country's 6500 to 7000 plant species. According to an officer, "We recognize that these places serve as natural seed gene banks for the disappearing and locally lost native trees," (Officer, GBG, 2013).

Similarly, SNNPRS, Sidama and Wonsho District governmental organizations, according to interviews with representatives, reported sacred sites of the Region, the Zone and the District as important harbours for otherwise threatened plant and animal species. According to SNNPRS biodiversity experts at the Bureau of Natural Resources and Conservation, the Region's two UNESCO-registered biocultural diversity hot-spots include Kaffa and Shaka Biosphere Reserve; Gedeo agro- forestry systems; sacred forests of Gammo Goffa, Sidama and many others. Many of ancient EOTC-owned forests and Islamic faith-based biocultural sites are known to have harboured many and endangered species (Experts, SNNPRS-BDC, 2013; Forestry expert, SNNPRS-BABR, 2013; Officer, SNNPRS-BoCT, 2013). As noted above, studies on the actual extent of plant and animal species harboured in the Region's sacred forests and other informal protection areas are fragmentary and only nascent.

In Sidama Zone and Wonsho District, sacred forest areas are important components of the zonal and district forest cover (Chapter Four). However, both the zonal and district offices have not yet undertaken actual profiles of these sacred forests. As an officer at Sidama Zone (SZ-ANRD, 2013) noted, "We have not studied well their nature, their systems, their dynamics, etc. [but we know that] the ritual leaders are doing great work." The biodiversity conservation roles of sacred sites of Wonsho, while awaiting further comprehensive survey, are presented below.

6.2 Biodiversity conservation role of Wonsho sacred forests and other 'non-sacred' landscapes

'Biodiversity' in this study, unless specified, concerns the species richness of plants (especially of woody trees), and a 'profile' combines species richness with data on the abundance, distribution and ethnobotany of key species. As noted in the description of the methods followed, I used transect walks and ethnobotanical methods to document local names and uses of species found in surveyed sacred sites; as of the writing of this thesis, however, not all these local taxa have been identified to scientific taxa. The survey data was confirmed and supplemented with the assistance of local forestry and botany experts, and the available literature on (tree) biodiversity of Ethiopia (See Chapter One & Chapter Three).

Annex III provides a list of all plants we identified at selected areas, with their local and scientific names, where determined, and their major characteristics, uses and provenances. Before discussing this 'profile', I first present my findings on the way local people perceive the role of sacred forests in conserving biodiversity.

6.2.1 The mechanisms of biodiversity conservation and local peoples' views of sacred sites' role

According to local understandings, sacred sites exist due to ancestral traditions and biodiversity such as woody trees are visible emblems of these sites. Enactment and observations of these traditions embody the principles and mechanism that work towards conserving biodiversity (Chapter 9). Expressions like "Culture is useful for trees" resonate in local conversations about the utility of culture for trees. Trees planted or grown at sacred places such as burials and for shade needs are, as a matter of cultural necessity, left as long as they live and thus they benefit from such ritual and pragmatic needs. This purposeful act of 'leaving the trees alone', is an important norm that plays a key role in actually making biodiversity conservation workable. Extractive and 'ritual' conservation enabled thriving of certain important trees. These are, as discussed in some detail in Chapters 8 and 9, the two major forms of conservation and help us understand the actual mechanisms and processes of biodiversity conservation in Wonsho, Sidama. In the case of the former, certain native (and these days adapted exotic) tree species are selectively planted and maintained while at the same time providing important agronomic and environmental services (as discussed in Chapter 8). This mainly concerns tree conservation as a component of agroforestry, aesthetic preferences and other livelihood practices. The latter, 'ritual' conservation, mainly explains the existence of remnant forests in the locality. How the custodians protect and conserve trees for ritual purposes and what governance and management norms they employ are examined in Chapter 9.

*Gudumale (*wooded public assembly spaces*)* and *songo harra* (sacred groves) in Wonsho, Sidama, as noted in Chapter 5, require trees for their shade as well as their ancestor symbolism, and since it is taboo to do any cultivation in such places and cutting trees is an anathema, many otherwise lost or severely endangered native trees have survived. "No one is allowed to dig or cultivate the land in *gudumale*. Seeds fall down beneath and seedlings emerge" (FGD-older men-1, 2012b). Informants similarly recognize tree conservation role of *mancho luwaa (*initiation grounds*)* (discussed in Chapter 5). *Luwaa* rituals are conducted at forest areas and they contain shade trees, whose mundane use is tabooed (Officers, SCRBO, 2012). *Luwaa* sites are generally under the communal ownership and protection regime and the various norms

associated with protecting the site are observed by community members. Community elders, clan and ritual leaders and parents all share the responsibility of inculcating the values and norms in the young and enforcing them.

A range of local aphorisms exist showing how the community understands the biodiversity conservation role of sacred forests and how the ancestral traditions actually work to conserve biodiversity. One such aphorism makes implicit and explicit reference to how otherwise endangered plants and wildlife are conserved in such places. It is embodied in such illustrative saying as "*Zafochu sheshtew wodaza gebtewal*", as noted by an informant in a local educated individuals' focus group, when talking about how native trees found shelter at sacred sites. This literally meant, 'The trees have fled to those places.' It is a model that captures the grim reality of native woody trees, like human refugees, 'fleeing' to safe havens. The direction of flight is from household lands, non-sacred communal areas and other places to sacred places and other informally protected areas. The 'sacred sites-as-safe-havens' aphorism is, therefore, a powerful way that locals express the role such places play in conserving otherwise endangered species. The imagery demonstrates the fact that while such trees are over-utilized to grim decline and in some cases outright local extinction elsewhere, the same trees continue to exist in sacred sites. One herbalist informant thus noted: "we find plants and trees [at sacred forests] we cannot find elsewhere."

Another aphorism makes reference to the fact of sacred sites serving as a 'house' or a 'home' to wildlife. Allusion is made to a number of locally disappearing wildlife harboured in sacred forests. The 'sacred sites-as-a-home' model further entails local understandings of how threatened wildlife finds not only their shelter but also their food in sacred forests. As a woman noted, "There are those that perch on big trees, there are those live under thick bushes, there are those that live under the ground and all find their food there," (Participant, FGD-Women-2, 2012). Bigger trees provide abundant berries for threatened wildlife such as *wen'echo* (*Colobus guerezza*) and varieties of birds. These trees further provide shelter and food to smaller wildlife, such as small carnivores (Table 6.6) and insects.

A related local model is the role sacred sites play as natural 'seed banks' for otherwise lost or endangered native tree species. This is a fact recognized by informants as well as experts at relevant government institutions. An expert at Sidama Zone Department of Agriculture and Natural Resources noted that many lost or endangered species are found at culture-protected forests and that these serve as seed banks for local farmers as well as for government tree propagation centres (SZ-BD Expert, 2013). Similarly, a local informant noted, "the seeds fall down from the tree serve as source for seedling." According to informants, some native trees are

more or less lost at household lands and the only place they obtain seeds of these trees is from sacred sites. "We gather seeds of *duwancho* [*Syzygium guineense*], *dugucho* [*Pouteria altissima*] and *masincho [Croton macrostachyus*] from sacred forest and plant them in our lands," noted one young boy.

Results from the household survey confirm these views as well. Household heads were asked about their agreement with statements on whether sacred sites such as Abbo Wonsho harboured some small plants, large trees and faunal wildlife that are not found elsewhere (Table 6.1 below). The overwhelming majority agreed that sacred forests have wildlife not found elsewhere; they also agree that sacred sites serve as sole havens for fauna and flora that are disappearing or lost in other places due to over-utilization and habitat loss.

Table 6-1 Households' views of sacred forests as havens for endangered flora and fauna in Wonsho, HHS, Wonsho-Sidama, September 2012, Ethiopia

Statement	Response	Count	Percent
Presence of fauna in AWSF not found elsewhere	Disagree	4	2
	Agree	188	94
	Not sure	8	4
Presence of small plants in AWSF not found elsewhere	Disagree	3	1.5
	Agree	185	92.5
	Not sure	12	6
Presence of big trees in AWSF not found elsewhere	Disagree	7	3.5
	Agree	178	89
	Not sure	15	7.5

In sum, these local models demonstrate practical observations they have about these roles. Sacred sites as safe havens, homes, food sources, and seed banks convey important imagery on the continuing important role of sacred forests in biodiversity conservation.

6.2.2 Biodiversity of various informal protection areas

I now summarize findings on conserved species at various informal protection areas in Wonsho and other nearby areas in Sidama. By *informal protection areas (IPAs)* I mean those areas other than the sacred sites proper, including home gardens, church yards and school grounds.

6.2.2.1 Wonsho household botanical environments: trees of front-yards, agroforests and graveyards

Household extractive conservation and traditional tree conserving practices discussed in Chapter Five are important instruments of conservation. According to Wonsho District Agriculture Office, the agro-forests accounts for about 320 ha (56.7 %) of the known extent of the existing forest cover (Head, WDAO, 2012). The forest cover is a share of the estimate of the total known forest land (564 hectare) in the District up to the year 2012. The remainder is what the District Apiculture Office calls 'the natural forest land,' which includes all forests and tree areas maintained as sacred. Surveys of household agroforests, burial sites, and front-yard shade trees demonstrated preservation of endangered tree species from elsewhere. Two of most commonly observed native trees are *wadicho* (*Cordia africana*) and *hengedicho* (*Milletia ferruginea*). Many other native as well as exotic trees are similarly conserved (Table 6.2).

The household agro-forest depends on fragile and growing conditions that may work against trees, as households resort to more and more overexploitation of trees to meet their growing livelihood needs. Thus, households are increasingly abandoning such traditions due to increasing resource shortages and other factors (see also Chapter 9).

Table 6-2 Commonly protected woody tree species of informal protected areas, interviews, FGDs, inventories and observations, Wonsho, Ethiopia

Local Name	Scientific Name	Protection context	Current observed/locally reported conservation status
Dagucho	*Podocarpus falcatus*	"Shade tree"; family sacred grove	Many observed are ageing and limited new planting activities; however, field surveys show relative abundance
Seetame	*Olea capensis spp.*	Front yard meadows	Highly vulnerable as locals consider it as "un productive"; existing one are old; little or no new plantings. Very rare sighting
Sidnacho honcho	*Juniperas procera*	Front yards	Reported as very endangered and fast disappearing; field surveys resulted in few sightings
Duwancho	*Syzygium guineense*	Front yards	Reported as fast disappearing; few field observations
Masincho	*Croton macrostachyus*	Front yard; meadows; Backyard farms	Abundant; commonly observed
Garbicho	*Ekebergia capensis*	Backyard farms	Locally reported as rare; rare sighting
Wadicho	*Cordia africana*	Backyard farms	Most commonly observed and reported
Gidincho	*Ehretia cymosa*	Backyard farms/front-yard	Rare; limited sighting
Shohicho	*Ocotea kenyensis*	Backyard farms/front-yard	Rare; limited sighting
Hengede	*Milletia ferruginea*	Backyard farms	Notable agroforest tree; despite declining observed and reported frequently
Lemicho	*Yushania alpina*	Backyard farms	Declining; limited sighting
Saaticho	*Borassus aethiopum*	Front-yards/ graveyards	Limited sighting
Bardaffe	*Eucalyptus camaldulensis*	Front yards; other household lands;	A ubiquitous nativised exotic tree dominating the landscape.

Local Name	Scientific Name	Protection context	Current observed/locally reported conservation status
Grawella	*Gravillea robusta*	Front-yards	Rapidly expanding exotic tree; now planted and protected by households for multiple extractive needs.
Afkato	*Persea americana*	Front-yards/ backyards	A ubiquitous exotic fruit tree protected for multiple other uses
Godicho	*Fagaropsis angolensis*	Backyard farms	A declining native tree; limited sighting
Faranjete masincho	*Croton megalocarpus*	Front yards	Recently introduced and expanding exotic tree
Faranjete honcho	*Cuprensis lusitanica*	Front yards; live-fence	A nativised exotic tree commonly found abundantly

During informal surveys of agro-forests, some exemplary households were discovered where their botanical lands (backyards, front-yards and graveyards) harboured surprisingly high tree species diversity. Table 6.3 summarizes these households. It should be noted here that this inventory focused on higher, woody species, although in certain cases smaller plants were also inventoried. Furthermore, in some of these cases, the area inventoried covered only the limited space of a grove, which in many instances amounted to not more than few square meters.

Table 6-3 Some woody tree species conserved at household botanical contexts, interviews, FGDs, inventories and observations, Wonsho, Ethiopia, 2012

Households	No. of species	*Main species conserved*	Conservation mechanism & motive
Mr. Tilahun Garsamo family grave and *gudumale*	20	*Podocarpus falcatus; Cordia africana; Syzygium guineense; Fagaropsis angolensis; Cuprensis lusitanica; Bataraqicho; Euphorbia ampliphylla, Olea capensis spp., Ficus vasta, Bersama abyssinica, Prunus africana, Eucalyptus camaldulensis, Gravillea robusta, Croton macrostachyus, Ocotea kenyensis, Azandracha indica, Psidium guajava, Lactuca inermis Forssk, Toddolia asiatica, Vernonia auriculifera*	Livelihood, shade, ritual
Mr. Latamo Gadano sacred grove	5	*Podocarpus falcatus, Ficus vasta, Croton macrostachyus, Cuprensis lusitanica Cordia africana*	Livelihood , shade, social
Mr. Argata Qamiso sacred grove	9	*Podocarpus falcatus, Fagaropsis angolensis; Junniperus procera; Eucalypetus camaldulensis, Ekebergia capensis; Bersamma abyssinica; Cuprensis lusitanica, Cordia africana, Euphorbia ampliphylla Pox.*	Livelihood , social, medicinal
Mr Kedir Tira's farmyard	15	*Okotea kenyensis, Cordia africana, Podocarpus falcatus, Calpurnia aurea Calpurnia aurea, Vernonia auriculifera , Fagaropsis angolensis, Junniperus procera, Cuprensis lusitanica, Rhus glutinosa A. Rich, Maesa lancemia, Hagenia abyssinica; Psydrax schimperiana, Croton macrostachyus*	Livelihood, social, medicinal

Households	No. of species	*Main species conserved*	Conservation mechanism & motive
Mr. Manissa Marassa family graveyard	13	*Ficus sur, Gravillea robusta, Persea americana, Mangi ferain, Fagaropsis angolensis, Croton megalocarpus, Cuprensis lusitanica, Casimiroa edulis, Cordia africana, Ekebergia capensis, Carica papaya, Juniperus procera, Acacia abyssinica.*	Livelihood, ritual, shade
Mr. Lankamo Netto, Herbalist, famryard	17	*Cordia africana, Persea americana, Croton macrostachyus, Calpurina aurea (Lam.) benth], Ficus sur, Milletia ferruginea, Ekebergia capensis, Yushania alpine, Bersama abyssinica, Ehretia cymosa, Caesalpina spectabilis, Annona senegalensis, Eucalyptus camaldulensis, Maytenus arbutifolia (A. Rich.) Wilczeck, Cuprensis lusitanica, Podocarpus falcatus, Erythrin aabyssinica*	Livelihood, ritual, medicinal
Mr. Kedir Husien, farmyard	15	*Cordia africana, Podocarpus falcatus, Olea capensis spp , Berssama abyssinica, Junniperus procera, Eucalypetus camaldulensis, Milletia ferruginea, Ficus vasta, Erythrina abyssinica Lam. Ex. Dc., Ekebergia capensis, Prunus africana, Maesa lancemia, Vernonia amygdalina, Vernonia auriculifera, Croton macrostachyus .*	Livelihood; shade; live fence; ornamental
Mr. Gujamo farmyard and graveyard	19	*Acokanthera schimperi, Juniperas procera, Eucalyptus globulus, Eucalyptus camaldulensis, Podocarpus falactus, Ekebergia capensis, Cuprensis lusitanica, Croton macrostachyus, malancho, Acacia decurrens, Gravillea robusta, Cordia africana, Psidium guajava L, Acacia decurrens, Dracaenea steudneri, Psydraz schimpeirna, Rhus glutinosa, Prunus Africana, Gravillea robusta,*	Livelihood, ritual, medicinal, ornamental, shade; live fence

Note: Some species, being unable to determine their scientific names, are given only in the vernacular.

6.2.2.2 Trees conserved at songo-harra (groves), gudumale (assembly meadows) and luwaa (initiation grounds)

Trees conserved at communally managed sacred landscapes are generally similar in terms of their types, with slight differences, as household botanical milieus are more likely to contain exotic trees while these are generally absent at the former. However, sacred sites are more likely to harbour many trees that are absent from household botanical environments. This may be due, partly, to the relatively vast areas they cover, as in AWSF. These places' relative solemnity in terms of protection (both ritual and state apparatus) provided for them also contributes to the existence of some trees that are disappearing or lost on household farms. Wonsho household botanical environments thus display rich arrays of important and useful tree species

As noted in Chapter Four, many of the extant sacred groves identified in this study were communally or clan-owned. Wonsho-wide extent of these sacred landscapes needs large-scale surveys to appreciate the significance and scale of tree conservation in these areas. From the present study, however, I was able to demonstrate how such places continue to serve as havens for trees. AWSF, the largest 'flagship' *songo harra* in Wonsho and entire Sidama, is a haven for

multitudes of flora and fauna (See case study below). While a number of *gudumale* are reported, one major place, managed by a household custodian, was studied and it was noted as a haven for about 20 major woody species, *Podocarpus falcatus* existing relatively more abundance *(See Figure 6.1)*.

Figure 6-1 A notable household managed gudumale at Ferro, Wonsho SNS survey, September 2012, Wonsho, Ethiopia

As for *mancho luwaa*, informants noted these were abundant in the past. According to Sidama Zone Culture and Tourism Department, it is estimated that some fourteen major *mancho luwaa* exist in Sidama and all these places are principally characterized now as places of protected forest (Officer, SZ-CTD, 2013). At the time of fieldwork, two such places existed in Wonsho of which one was studied. The Kinante *mancho luwaa* (pictured in Chapter Five) harboured about nine woody tree species, dominated by *Podocarpus falcatus*. Based on the inventory, there were about 75 grown *Podocarpus falcatus*, a single *Olea europae*, a single *Olea capensis spp*, a single *Ficus vasta*, about five *Borassus aethiopum*, one *Junniperus procera*, few *Croton macrostachyus* and numerous smaller shrubs such as *ţeberako* (*Bersama abyssinica*), *tontoncho* (*Plectranthus igniarius*), *haţabicho* (*Brucea antidysentrica*), and other herbs.

A summary of the extent of sacred groves with conserved trees is found in Table 6.4. The cases are mostly ritual-based areas and communally owned, but some are private. Selection of these cases draws attention to the on-going tree conservation role of these informal protection areas, and how the culture-tree mutual relationship actually works to conserve tree biodiversity. The

Table also highlights types of native trees that are, based on local reports and parameters, facing varying degrees of endangerment. In general, the mutual interdependence that exists between culture and (tree) biodiversity, discussed in Chapter Five actually generates such biodiversity conservation outcomes through these traditional agroforestry management and ritual protection mechanisms.

Table 6-4 Major woody tree species conserved at selected sacred groves of Wonsho, from interviews, FGDs, inventories and observations, 2012-2013, Ethiopia

Case	Description	Endangered[7] trees dominantly conserved	*Mechanism & motive of conservation*
AWSFS, Bokaso	"Flagship" sacred forest of Wonsho-Sidama, over 133 species informally identified and hundreds more other un-identified flora and fauna are conserved	*Podocarpus falcatus; Pouteria altissima, Syzygium guineense,* and most of other endangered ones	*Ritual; identity preservation, tourism attraction*
Mancho Luwaa, Kinante	Rite of passage site; nine major native species	Dominantly *Podocarpus falcatus* (about 75 individuals counted), *O. africana, Ficus vasta, Junniperus procera* and few other native shrubs	*Ritual- rite of passage*
Ganna Saticho, Kinante	Named after about 30 sacred old saticho (*Borassus aethiopum*) at a sub-clan level	*Borassus aethiopum*	*Ritual*
Ganna Ke'e's residential home	Front yards of the Ganna's home (Current supreme ritual leader of Abbo Wonsho sacred forest)	*Cuprensis lusitanica, Junniperus procera, Podocarpus falcatus, Cordia africana, Erythrina abyssinica Lam. Ex. Dc., Croton macrostachyus. Acacia decurrens, Gravillea robusta, Persea americana, Ekebergia capensis, Euphorbia ampliphylla Pox.*	*Ritual, shade, ornamental, live-fence*
Loggo Haqqa	A major clan burial place named after the founding ancestor whose remains are reported to be found at the sacred grove, was claimed to be the grandson of Abbo; about 15 different tree/ plant species were protected	*Podocarpus falcatus, Croton macrostachyus, Milletia ferruginea, Yeshania alpina, Cordia africana, Syzygium guineense, Pouteria aningeria, Bersama abyssinica , Calpurnia aurea, Psydrax schimperiana*	*Ritual, identity preservation*
Wonsho Abbo's "Original" place	A small-scale sacred grove believed to be the first spot where Abbo the founding ancestor first landed at. Now ageing species of 35 (podo) and few other native species exist.	*Podocarpus falcatusPodocarpus falcatus, Syzygium guineense, Croton macrostachyus, Berssama abyssinica*	*Ritual, identity preservation*
Hasana Haqqa	A major clan burial place of about 2-3 hectare, hosting mostly ageing native trees of about 14 main species	*Podocarpus falcatusPodocarpus falcatus, Syzygium guineense, Celtis africana Burm. F. Jacq, Croton macrostachyus, Pouteria altissima, Milletia ferruginea, Ficus thonningii B, Albizzia gummifera, Euphorbia ampliphylla Pox.*	*Ritual, identity preservation*
Olona Garbe	A sacred ancestral burial place with over 200 mature podo trees	*Podocarpus falcatus*	*Ritual*

[7]Endangerment is understood as according to local reports; however, the reports often reflect the situation at national scale (as in, for example, national list of native woody species requiring priority in conservation). In this study, unless otherwise specified, 'endangerment' is meant generally to refer to local perceptions and parameters.

Case	Description	Endangered[7] trees dominantly conserved	*Mechanism & motive of conservation*
Manissa Marrasa sacred grove	A household burial grove currently active, with a ring of twelve growing (28 years old) podo trees	*Podocarpus falcatus*	*Ritual*
Muluneh Musso family grove	A household-based grove with mature podo trees	*Podocarpus falcatus*	*Social, hereditary, shade*

6.2.2.3 Trees conserved at organizational settings

'Organizational settings', in this context, include mainstream religious institutions, schools, private business establishments, government office yards, etc. Such places are important but informal tree conservation areas. Organizational actors have in recent years increased their efforts in planting and caring for many of exotic trees on their premises. As one informant sharply observes, "now trees have escaped" to schools, church yards, and ritual places (Officers, SCRBO, 2012). Courtyards of EOTC are known to have harboured biodiversity (Yadav & Mekonnen, 2014), a fact mentioned often in the foregoing chapters. The Sidama area is generally dominated by Protestant Christian churches, however, the few EOTC courtyards visited were shown to have key native trees being protected in them (Figure 6.2).

While mainstream religious organizational settings are important tree diversity conservation areas where many otherwise endangered trees exist, other organizational contexts also play important roles. Some establishments such as schools were found to be built on places that were originally traditional tree protection areas, and have fortunately remained as havens for keystone native trees that have been in existence for hundreds of years.

Figure 6-2 Locally reported endangered trees at an EOTC at Ferro, October 2012, tree survey, Wonsho, Ethiopia

Table 6-5 Some woody tree species protected at organizational settings, interviews, FGDs, inventories & observations, Wonsho-Sidama, 2012-2013, Ethiopia

Informal organizational protection setting	Some major species & observed counts, where possible	Protection motives
Bokaso Elementary School	*Junniperus procera; Podocarpus falcatus* (5), *Cuprensis lusitanica* (44 grownups), *Hagenia abyssinica* (250 freshly planted), *Milletia ferruginea, Eucalypetus camaldulensis, Gravillea robusta* (about 600) and many smaller shrubs	Extractive (all exotic species); non-extractive (mainly native species); shade, social and soil fertility management
Bokaso High School	*Podocarpus falcatus, Cuprensis lusitanica, Gravillea robusta, Eucalypetus camaldulensis*	Ornamental; shade; income source; conservation
Yirgalem High School	*Podocarpus falcatus* (35), *Cordia africana* (5), Cuprensis lusitanica, *Spathodea campanulata* (4); *Casuarina equisetifolia; Gravillea robusta; Acacia melanoxylon; Acacia decurrens; Eucalypetus camaldulensis; Olea europae;* and others	Shade, income source, recreational, ornamental, conservation
Furra Institue of Development & Education	*Podocarpus falcatus, Ficus vasta, Junniperus procera, Cordia africana, Ekebergia capensis,, Okotea kenyensis, Dracaena steudneri, Catalpa speciosa , Callistemon citirinus, Casuarina equistefolia, Persea americana, Pinus pachula, Gravillea robusta, Spathodea campanulata , Acacia decurrens* and many more exotic species	shade and ornamental; cultural
Aregash Ecotourism Lodge	*Olea europae, Pouteria altissima, Hagenia abyssinica* and many more native and exotic species	Tourism; in-situ conservation, shade aesthetic use.
Ferro Ethiopian Orthodox Church	*Podocarpus falcatus, Olea europae, Croton macrostachyus, Ficus vasta, Junniperus procera, Cuprensis lusitanica, Gravillea robusta, Psidium guajava L.* & many more smaller specie	Shade, extractive, religious
Wonsho District Administration court	A total of 11 species; *Syzygium guineense , Rhus glutinosa A. Rich , Podocarpus falcatus, Gravillea robusta, Dracaena steudneri , Milletia ferrugunie , Cordia africana; Albizia schimperiana; Persea americana; Erythrina abyssinica; Croton macrostachyus*	Ornamental, recreational, shade, cultural, agro-forestry

The counts registered for some woody species above signify some important facts. For example, 35 native species of *Podocarpus falcatus* at Yirgalem High School are an indication of how key native woody species with cultural significance often continue receiving protection in school and similar settings even after the land is transformed to other use type. They represent remnants of former sacred forest areas. On the other hand, the higher number of exotic trees (e.g. Bokaso High School) reflects a growing local dynamics whereby exotics are having growing acceptance in the community.

All in all, over the course of the fieldwork, I surveyed the premises of three schools, four eco-tourism hotels or related establishments, and scores of mainstream religions and government offices in Wonsho, Yirgalem and Hawassa, and found out that all of these places harboured a number of otherwise endangered native trees; some of them also had endemic wildlife and birds. Table 6.5 is a summary of major trees protected in these settings.

Figure 6-3 An agroforest at Bokaso High School, tree survey, November 2012, Wonsho, Ethiopia

6.2.3 Faunal wildlife of sacred sites

The fieldwork did encompass some interviews and observations that yielded important information on Wonsho, Sidama accounts of *dubbu moe'cho* ('beasts of the forest') and the role sacred as well as non-sacred landscapes play in harbouring these fauna.

In Chapter Five, Wonsho, Sidama beliefs and practices that engendered friendly dealings and relationships with fauna of the sacred forests was introduced. Ancestral traditions in particular espoused wildlife-friendly beliefs and practices. While native trees are highly regarded in totemic symbolism, certain wild animals are also accorded respect through totemic relationships, as "ones in the family tree of a clan." Charismatic animals like leopards were considered as totemic among some clans and are treated with worshipful attitude; "even if the animal gets into their home, they do not chase it; they worship it and it goes away without harming anyone." Others such as hyena are believed to be omen bearers; a component of SAR ritual is preparing certain food and leave at some places "for hyenas to eat." Ritual leaders are believed to possess skills of communicating with them and decoding their cries (Officer, SZ-CTD, 2013). However, it is perhaps worth mentioning here the existence, past and present, of some beliefs and practices that might have negatively contributed to animal species decline in Wonsho, Sidama through cultural, recreational, and bush-meat driven hunting, as well as retaliatory killings for destroying crops and preying on home animals (See Chapter Nine for details).

While informants generally noted the fact of progressive decline in many of traditionally known wildlife in their areas over the last several decades, they are also grateful about the way sacred forests have continued to harbour fauna, some of which now are reported as existing in sacred forests only. Earlier, I described local models of 'sacred forests as home of fauna' as an important indication of a conservation role. In former centuries, informants note, the whole landscape teemed with wildlife. Now, only a handful of wildlife are reportedly harboured in the remnant sacred forests, while some have fled to remote lowlands.

During biodiversity surveys, attempts were made to determine all wild animals (mainly mammals) that existed in the past or currently (at the time of fieldwork) in sacred forests and other botanical environment. The predominant means was through interviewing, whereby informants were asked to enumerate wildlife they knew that existed in sacred forests. This generated long lists of animals. Showing informants colour pictures of wildlife believed to have been present in the area helped to some extent, as informants recalled existence or lack thereof of these in their locale. There was a large gap, however, between reported and actually seen or reported sightings of wildlife during the fieldwork; evidence for the actual existence of most reported wildlife was difficult to come by. It was possible to search for indicators or tell-tale signs, such as faeces, footprints, caves, dug-out earth mounds, pieces of body parts (such as porcupine quills) to confirm indirectly the existence of some wildlife such as hyena, aardvark, moles, bears, and porcupines. All in all, these various means yielded a total of 33 fauna (mostly mammals) that were either reported or actually confirmed as existing in sacred forest (past and present), especially AWFS and other botanical areas in Wonsho.

Invariably the most commonly reported wildlife harboured in surveyed sacred forests included wen'echo, the mantled *guereza* (*Colobus guereza*), hyena, gazelle, hare, fox, porcupine, aardvark, leopard[8], giant moles, and varieties of other smaller carnivores species. A range of bird species, reptiles, and insects also were reported, and some observed to exist. The guereza was the most commonly reported and observed animal. This colobus monkey is an endemic species that used to exist in abundance when the land teemed with forests in the past, but is now limited to these informal protection areas in Wonsho, Sidama and other parts of the country.

[8] Locals invariably reported about a animal of presumably cat family living at AWSF; however, it was not possible during the fieldwork to determine the veracity of this information and what exactly this cat family was. The local term was *daguncho*, which educated informants invariably translated as *nebir* (national language term for a type of tiger). This is one of issues requiring further investigation.

Figure 6-4 Wen'echo (Colobus guereza), on a duwancho (Syzygium guineense), January 2013, Wonsho SNS survey, AWSF, Bokaso, Ethiopia

Table 6-6 Reported and observed existence of some fauna in Wonsho botanical landscapes, from interviews, FGDs, BD survey and observations, 2012-3013, Wonsho, Ethiopia

Local Name	English Name	Scientific Name	Observed/ Actually witnessed	Reported	Confirmed by researcher
Bulicha	Common duckier	*Sylvicapra grimmia*	Yes	Yes	No
Daguncho	African Leopard	*Panthera pardus pardus*	Yes	Yes	No
Amboma	Spotted hyena	*Crocuta crocuta*	Yes	Yes	Yes (Tell-tale)
Yeedala	Common jackal	*Canis aureus*	Yes	Yes	Yes
Arajicho	African civet	*Civettictis civetta*	Yes	Yes	No
Goshoshma	Egyptian mongoose	*Herpestes ichneumon*	Yes	Yes	No
Adukka	Honey badger	*Mellivora capensis*	No	Yes	No
Awwalla	Aardvark	*Orycteropus afer*	Yes	Yes	Yes (Tell-tale)
Futaako	Giant mole rat	*Tachyoryctes macrocephalus*	Yes	Yes	No
Wenicho	Mantled *Guereza*	*Colobus guereza*	Yes	Yes	Yes (pictured)
Rarate	Bat	*Rhinopoma mycrophylum*	Yes	Yes	No
Outaamo	Porcupine	*Hystricomorph hystricidae*	Yes	Yes	Yes (Tell-tale)
Worabicho	Oryx	*Oryx gazelle beisa*	No	Yes	No
Ro'e	Hippopotamus	*Hippopotamus amphibius*	No	Yes	No
Qorke	Giraffe	*Girafa cameloparadlis*	No	Yes	No
Tawu haricho	Common zebra	*Equuss burchelli*	No	Yes	No
Dobicho	Lion	*Panthera leo*	No	Yes	No
Hiyeye	African wild dog	*Lycaon pictus*	No	Yes	No
Darafisa	Groundhog	*Marmota monax*	Yes	Yes	No
Wecece	Squirrel	*Sciurus carolinensis*	Yes	Yes	Yes
Gedimo	Bushbuck	*Traglaphus scriptus*	Yes	Yes	No
Manchame	Wild pig/ boar	*Sus scrofa*	Yes	Yes	No
Qamalcho	Velvet monkey	*Cercopithecus aethiopis*	Yes	Yes	Yes
Hamashu	Snake	--	Yes	Yes	No
Galasho	Olive baboon	*Papyo Anubis*	Yes	Yes	No
Racha	Frog	--	Yes	Yes	Yes
Gandae'cho	Lizard	--	Yes	Yes	Yes
Kanchafare	Grasshopper	-	Yes	Yes	Yes
Wolima	Prince Ruspoil's Turaco	*Tauraco ruspoli*	Yes	Yes	Yes
Bilacha	Butterfly	--	Yes	Yes	Yes
Heyako	Patridge	*Perdix perdix*	Yes	Yes	No
Sulcho	Weasel	*Mustela nivalis*	Yes	Yes	No
Shercho	Hyrax	*Procavia capensis*	Yes	Yes	Yes

6.2.4 Case study

In the following paragraphs, I summarize findings focusing on one selected case with an exemplary role in conserving endangered trees and wildlife in Wonsho, Sidama. The case highlights how a sacred forest site may serve as an important model, and basis for scaling up similar, not necessarily ideologically identical, areas of biodiversity protection. The foundational ideological infusion that feeds this sacred landscape is hard to replicate or manipulate in any bureaucratic, mechanical way. It should, however, at least serve as a springboard for more recognition of these places and thereby garner increasing support and protection for them.

6.2.4.1 Biodiversity of AWSF

With ca. 90.6 ha, AWSF occupies highest spatial, organizational and socio-cultural scale in Wonsho, Sidama. It serves as epicenter for entire conglomerates of clansmen descending from the founding ancestor, Abbo. As noted in chapters 4 and 5, ancestral placation rituals such as *dasho* attracts hundreds of worshippers and other customers to this site. A ritual leadership headed by the *Ganna*, the supreme ritual leader, provides socio-cultural-spiritual protection and run day to day ancestor-placating rituals at the temple located at the centre of the sacred site. The temple and the ritual running places serve as epicentres for the social, religious and other clan identity reinforcing and community affairs. The more formal political administration and legal protection is provided by collaborative arrangements between the ritual leadership and local government.

AWSF is a haven for many now locally endangered native trees which are of multi-purpose importance in local livelihood, culture and ecology. *Dagucho* (*Podocarpus falcatus*) is the most dominant species found here. Most of the 154 species (from smallest herbs and climbers to the massive Pouteria) were found in this place (Annex III & V).

Figure 6-5 Surveying plant biodiversity at AWSF, part of an FGD with male youth, January 2013, Bokaso, Ethiopia

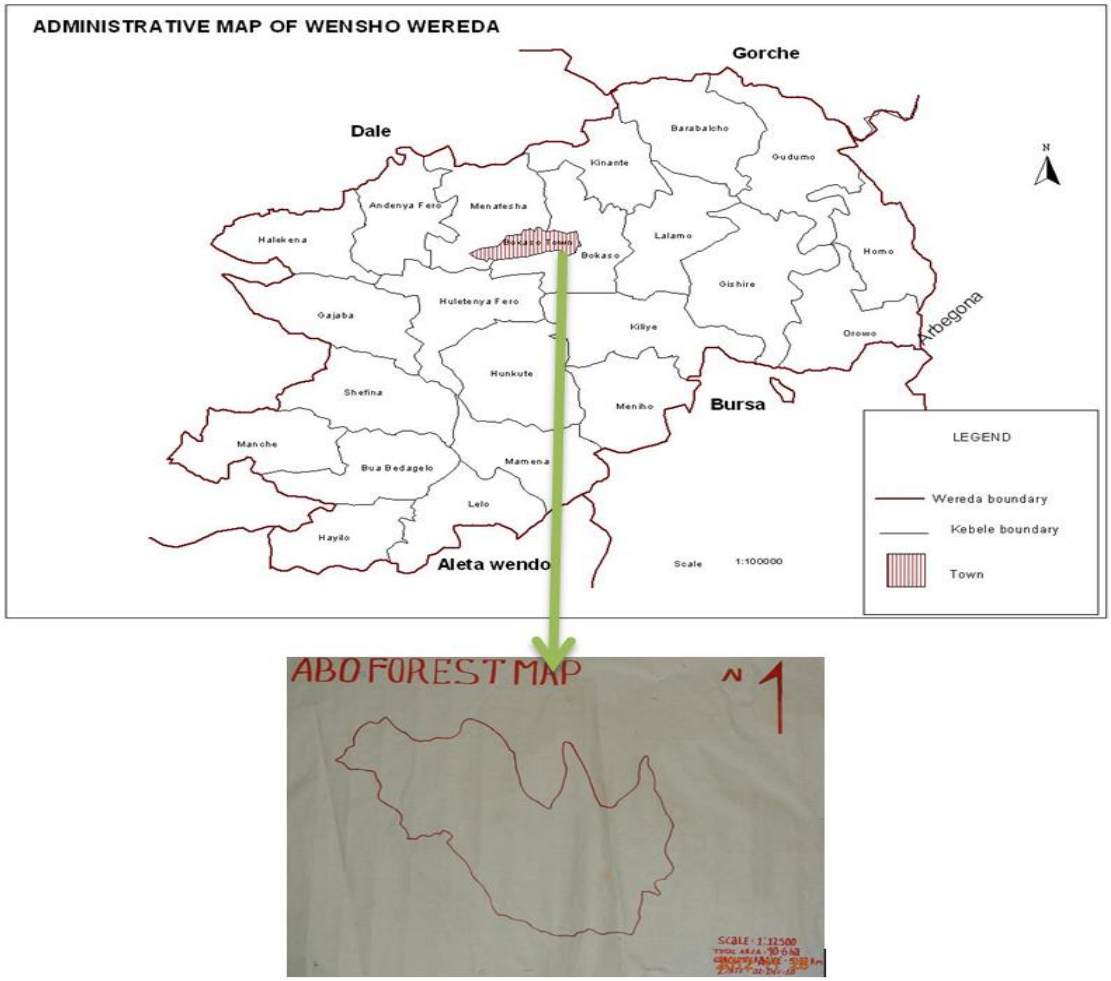


Figure 6-6 Wonsho District, its PAs and AWSF, October 2012, Bokaso, Ethiopia
(Green circles represent a rough estimate of the PAs which the 90.5 hectare forest borders. The bigger the circle, the bigger the PAs that host the sacred forest.
Base map source: SNNPRS, BoFED; sketched map of AWSF from Wonsho District Agriculture Office, 2012)

Composition of indigenous tree species in AWSF is explained by local people in terms of botanical lore as discussed in Chapter Five. Informants report that some of native trees already lost in farm plots are now found only at AWSF. In view of this fact, then, the sacred forest may be regarded as a natural, living botanical garden for such trees. On the other hand, there were some trees reported as not found at AWSF while existing at other places in the locale. In this case, some of such trees were introduced by farmers from other agro-ecological areas.

The sacred forest also harbours a number of wildlife that are locally reported as disappearing or lost elsewhere. All of wildlife presented in Table 6.6 and indefinite number of other unidentified species exist in AWSF.

Table 6-7 Locally reported most endangered native woody tree species protected at AWSF, interviews, FGDs, SNS surveys and observations, 2012, Bokaso, Ethiopia

Local name	Scientific name	Locally reported conservation status	Observed frequency of occurrence
Dagucho	*Podocarpus falcatus*	Declining	Most observed and dominant at the sacred forest and other places
Seetame	*Olea capensis spp.*	Highly endangered	Observed rarely
Duwancho	*Syzygium guineense*	Highly endangered	Observed rarely
Garbicho	*Ocotea kenyensis*	Declining	Observed rarely
Oloncho	*Psydrax schimperiana*	Declining	Observed rarely
Dugucho	*Pouteria altissima*	Highly endangered	Extremely rare
Sidancho honcho	*Juniperas procera*	Highly endangered	Observed rarely
Ţonţoloma	*Lepidotrichilia volkensii*	Highly endangered; lost in other places	Not observed
Worarícho	*Syzygium guineense (Wild.) DC.*	Highly endangered; lost in other places	Observed (only once)
Koqqo	*Drynaria volkensii*	Highly endangered; lost in other places	Observed rarely
Falako	*Macaraga kilimandsharica Pax*	Highly endangered; lost in other places	Not observed
Çuço	*Maytenus arbutifolia*	Highly endangered; lost in other places	Observed rarely
Bulancho	*Withania somnifera*	Not known, reported as found only at AWSF	Not observed
Shohicho	*Ocotea kenyensis*	Rapidly declining	Observed rarely
Godicho	*Fagaropsis angolensis*	Endangered	Observed (rarely)

6.3 Discussion, summary and conclusion

6.3.1 Discussion

Sacred natural sites are increasingly considered showcases for the conservation of biological diversity, such as trees, and preservation of useful ancestral traditions (discussed in Chapter 8), because their strong cultural importance derives from, and requires maintenance of, biodiversity (Sponsel, 2008, 2013; McIvor et al., 2008; Dudley et al., 2009; Verschuuren et al., 2010; Maffi, 2012).) Research interest in sacred sites and their roles in conservation have been increasing since the 1960s (Sponsel, 2008) and their conservation significance is increasingly recognized on the World stage (McIvor et al., 2008; IUCN & UNESCO, 2008; Sobrevila, 2008; Mallarach & Papayannis, 2009), following the introduction of the concept of biocultural diversity into conservation debate, in the early 1990s.

Empirical studies documenting biodiversity conservation role of sacred natural sites are emerging. Studies conducted in Kenya (Nyamweru et al, 2008; Metcalfe et al., 2009; Githitho, n.d.; GVI Kenya, n.d.), Siera Leone Lebbie & Gurries, 2008), Uganda (Banana et al, 2008), Moroco (Deil et al, 2008), Ethiopia (Hundera, 2007; Woldu, 2009; Desissa, 2009), Tibet (Anderson et al., 2005; Salick et al., 2007; Shen et al., 2012), Borneo (Salick, et al, 1999), India (Gadgil & Vartak, 1976; Rao, 2002; Bhagwat, 2009; Bhagwat et al., 2005; Bhagwat & Rutte, 2006; Ormsby & Bhagwat, 2010; Singh et al., 2011; Godole et al., 2014), Zimbabwe (Byers et al., 2001), Benin (Orphée & Bienvenu, 2012), West Africa (Decher, 1997), West Kalimantan, Indonesia (Wadley & Colfer, 2004), Madagascar (Tengö et al., 2007; Horning, 2008), Tanzaina (Mgumia & Oba, 2003), and so on, have demonstrated this. In Ethiopia, sacred natural sites and supporting relationships people have maintained with plants, animals and the natural world are recognized as important instruments whereby the country's biodiversity have been maintained for millennia, long before any conventional form of conservation began. Diverse religious worldviews and institutions embedded in sacred forest areas have a particularly crucial role for biodiversity conservation (IBCR, 2009).

The findings from this Wonsho study on biodiversity conservation consequences of maintaining sacred forests and other traditional botanical landscapes are understood as part of this broader national as well as global discussion on the relevance of SNS. Local peoples' understanding of their own ancestral institutions and sacred forests in preserving otherwise endangered flora and fauna, particularly the highly threatened native woody trees, compares with the way traditional peoples around the world view the role of SNS. The Wonsho models of sacred forests as 'homes for fauna', 'havens for troubled trees', 'seed banks' etc., as presented above, are the kinds of indigenous models of sacred natural sites that scholars call 'the navels of the world'(Schultes &

Raffauf, 1992; Johnston, 2006; Sponsel, 2008). As 'navels', these landscapes are viewed by locals as the centre of the world, where people, fauna and flora co-exist; all benefit from this interdependence and local people structure their views of the world through sacred natural sites' prisms.

Wonsho conceptions of sacred forests as 'refuges', 'havens', 'homes' and 'seed banks' for threatened biodiversity are also reflected and recognized generally in the national and regional discourses on how such places contribute to biodiversity conservation in Ethiopia. The National Botanical Garden and Biodiversity Institute of Ethiopia recognize the biodiversity conservation role such places play, for example, as places for accessing and collecting seed of endangered trees (Director, BIE, 2013). While national networks of protected areas and parks have created, induced and coerced outcomes of biodiversity conservation, the preservation of many of Ethiopia's native landraces, trees, mammals, birds and other biodiversity have benefited from the spontaneous, ancient systems enshrined in these sacred landscapes. Ethiopia's UNESCO World Heritage Areas and Man and Biosphere Reserves are, by and large, supported by these traditional systems and many of them may be considered as 'navels', 'havens', 'seed banks' and 'homes' for people, plants, and animals.

'Less sacred'[9] botanical landscapes of Wonsho household agroforests constitute important extractive (sustainable use) forms for biodiversity conservation. In communities across SNNPRS and Sidama, an extractive form of conservation has been a key factor in the protection of forests and native trees, through agro-forestry and home-gardening activities (Kanshie, 2002; Asfaw, 2003; Asfaw et al., 2007; Woldu, 2009a; Abebe et al., 2010; Ewuketu et al., 2014). The exemplary Gedeo agroforestry, mentioned in foregoing chapters, has been particularly touted as a natural botanical garden wherein otherwise and elsewhere endangered or lost native species are conserved (Kanshie, 2002). So is the Konso traditional soil and biodiversity conservation in a dry and hot environmental context in southwest Ethiopia recognized as a UNESCO World Heritage site in 2011, known for its biodiversity conservation value (Kiros, 1993; UNESCO's World Heritage List, 2011; UNESCO World Heritage Centre, 2011). Extractive practices are part of local livelihood needs. They utilize trees that are planted in backyards and on farms for windbreaks, soil fertility improvement, water conservation, shade for fragile crops and trees, and also for fuel and construction purposes (Chapter 8). At the same time, they contribute towards conservation of trees and other biodiversity. Furthermore, indigenous tree species

[9] In a broader sense, all landscapes in Wonsho Sidama, in an Abboic community context, are sacred. The degree of sacredness varies across entities, though. Certain landscapes, groves, trees or other entities may be more sacred than others. The degree of sacredness people ascribe to entities also vary depending on various factors. A certain entity (e.g. a grove, a totemic tree, a specific landscape, etc.) may be more sacred than others to a specific group or locality. Further, certain entities may enjoy highest degree of sacredness across wider areas and groups. Thus, AWSF is the most sacred of all for entire Abboic community as its sacredness derives from Abbo the founding ancestor.

conserved thus are also considered links to the past vast natural forest systems as well as the current sacred forest areas; they form the interface for tree species composition in sacred forest areas and the agroforestry (Zebene, 2012, Personal Communication).

While sacred sites in Wonsho, Sidama provide the lion's share of conservation for threatened biodiversity, the related, supplementary role other informal protection areas play may also be noteworthy. As Negash (2010) noted, from among the limited places where certain threatened or lost native trees may be found, schools, especially those with long years of history and occupying vast areas, are important. Premises in schools, mainstream churches, lodges, government and private organizational establishments, etc. harbour many of the threatened biodiversity, particularly native trees. What Hiede (2012) calls as "biodiversity islands", the EOTC yards, as noted above, are such informal protection areas. Similar cases documented in Wonsho, where some important native trees were conserved, form part of such "biodiversity islands", and of the network of over 34,000 EOTC yards found all over Ethiopia (Wasie, 2007; Berhanie-Selassie, 2008; Yadav & Mekonnen, 2014). In the Wonsho case, it is important to note that many of current 'non-sacred' informal protection areas are also carryovers from the past, having definite link to ex-sites. While in many instances sacred forest areas were completely or partially transformed into schools, office blocks, market venues or other similar 'development' areas, in some cases, native trees of former sacred sites continue to be protected after they are converted into such non-sacred areas. Protected native tree species surveyed in such places are, therefore, important links that connect up various other biodiversity islands creating a widespread historical and cultural landscape for biodiversity conservation.

In Wonsho, there are a range of sacred cultural landscapes where biodiversity conservation for both ritual and non-ritual motives takes place. The findings described *songo harra*, *gudumale*, ancestral burial places, *mancho luwaa* and home front-yards as salient components. These constitute an important network of the sacred forest landscape. As noted in Chapter 3, the 245 ha (in 2012) of sacred forest areas is about 2.5 km^2, making it close to 1.3 per cent of the total land mass of the district (about 200 km^2). This in an important sense demonstrates the significance of these areas as biodiversity hotspots in Wonsho, although it is of limited scale compared to the total area of the district. Their important strength, compared to other informal biodiversity conservation areas mentioned above, is that they still continue to benefit from a strong set of institutionalized values and rules that promote respect, and sometimes fear, for the biodiversity they harbour. Biodiversity in other organizational settings do not benefit from this very crucial force, lacking the spiritual-socio-cultural dimension that is so central to the survival of culture-protected areas more generally (Sponsel, 2008).

Most of the 154 plant species and some of the 33 animal species at selected sacred sites and other botanical environments presented above, were either observed or reported in Wonsho's remnant sacred forests at the time of fieldwork. The conservation of many of the native trees in these places may be argued to be a direct outcome of the spiritual and cultural values attached to the sacred landscapes as well as the SAR's instrumental values of some of the tree (and in few cases animal) species. Such values are similarly important to conservation of flora and fauna in other communities in Ethiopia and the world at large. Since these landscapes and individual species of trees and animals are considered key totems and mediums of spiritual power, many communities in Ethiopia, particularly the more animistic southwest, have protected these places, with salutary conservation outcomes.

Thus, among the Baskeś, Ţambaro (Doffana, 2010a, 2011), Gammo (Desisa, 2009) and Hamer and other neighbouring communities of the far southwest (Woldu, 2009), sacred forests are accountable for the conservation of many plant and animal species. Across the world in many traditional societies, as noted in foregoing chapters, the spiritual values underpinning sacred natural sites, notably forests, have engendered such biodiversity conservation outcomes. I have noted earlier that in India about twenty-five major tree species were protected through tree folklore and mythology in sacred landscapes serving as religious instruments (Shiva, 1998; Rao, 2002). Metcalfe et al (2009) have documented that over 121 species of flora and over forty-six species of fauna were conserved in *kaya* (sacred groves) of Kenyan coastal communities. Similar to Wonsho, the consideration of ancestors' spirit entities representable through trees as mediums has contributed to tree conservation in the Maya community of Central America (Anderson, 2002). In short, trees have functioned "to humanize nature and naturalize humans" (Sponsel, 2012); cultures and religions across time and space have conserved trees by recognizing them as sacred symbols of life, abundance, permanence and beauty (Ibid. p.1; Rival, 1998).

While the focus for the Wonsho study has been the conservation of flora, particularly large, native trees, the findings above have also showed how Wonsho sacred forest landscapes have served as 'refuges' for endangered wildlife. Local views of endangered species, the latter currently being harboured in sacred forests area in their communities, and the constant challenges the wildlife face are generally a regional as well as national concern in Ethiopia. Much attention is paid to the plight of the fauna of the country and existing conservation measures understandably emphasize fauna (IBDR, 2009; IBE, 2014). The sixteen or so national parks in the country, covering about 15 percent of the country's around 1.3 million km^2 area, (Young, n.d; Biodiversity Indicators Development National Task Force, 2010) generally work toward safeguarding these endangered species some of which such as Ethiopian wolf (*Canis*

simiensis), Walia ibex (*Capra walie*), Liben lark (*Heteromirafra sidamoensis*), Swayne's Hartebeest (*Alecephalus buselaphus swaynei*), and Grevy's zebra (*Equus grevyi*) etc. receive national priority in biodiversity conservation. Further, it is understood that many of the country's threatened wildlife, such as the *Guereza* (colobus monkey), endemic and rare bird species, and other smaller life forms, are harboured in the 'biodiversity islands' of sacred forests and mainstream church forests (Negash, 2010; Heide, 2012; Massey et al, 2014).

The "flagship" AWSF particularly was perceived of as not only as a local but also a regional and national asset; local and regional government representatives viewed it as important hotspot for endangered trees as well as wild animals. As noted above, more or less all of the currently endangered species exist in AWSF. Some of the animal wildlife reported, such as spotted hyena, foxes and many of the bird species teeming in the sacred forests, were not endangered, a conception which both locals and formal agencies recognize. However, some of the fauna such as *Colobus guereza* and *wolima* (*Tauraco ruspolii*), among others, are endangered species. Negash (2010) notes how the indiscriminate deforestation process has severely affected the country's endemic species, *Colobus guereza*, consigning it to limited places such as sacred forests. The decline of keystone, native trees on which this wildlife has depended for their shelter and food, have caused such problems (For details on this, see Chapter Nine). *Tauraco ruspolii* is documented locally as an important bird of great cultural importance in Wonsho-Sidama, and although its abundance has been reported as severely affected, it is one of the species existing in sacred forests. The bird is endemic to southern Ethiopia where it is threatened by habitat loss (Bird Life International, 2014).

In general, sacred forests and other biocultural diversity hotspots around the world, engendered through holistic, eco-centric views embedded in religions and institutions of communities across the world, have harboured biodiversity for millennia (Bhagwat et al, 2011); and traditional tree symbolisms and mythologies have been instrumental in their biodiversity conservation (Nabhan et al, 1996; Shiva, 1998; Riva, 1998; Cunningham, 2001; Sponsel, 2012).

While, as Wily (2008: 207) argues, "There is little doubt that socio-cultural values of forest have played an enormous role in the existence of forests today- a fact all too frequently witnessed in the lonely survival of a small but intact sacred forest within the midst of cleared fields," it is also important to point out that sacred groves of Wonsho, like the rest in Africa and beyond, should not be conceptualized as the modern equivalents of 'traditional conservation areas', in the sense of them being designed consciously for biodiversity conservation goals. As Siebert (2008: 174) argues, writing for sacred groves in Benin, "trees or forests in themselves were not conserved as sacred or that they were protected for their own sake…. It is not possible

to infer an ecological consciousness of motivation from the existence of protective norms around sacred forests.

6.3.2 Summary and conclusion

This Chapter has described biodiversity conservation outcomes of traditional knowledge systems, religions, sacred institutions and sites in Ethiopia. Local conceptions of sacred forest sites as refuges, shelters, and seed banks were discussed. Evidenced documentation of biodiversity protected in a range of informal protection contexts, such as schools, churchyards, government office blocks and, most importantly, sacred forests were presented and discussed, contextualizing the results in broader literature. Finally, the Chapter outlined the extent of tree and animal biodiversity protected in selected surveyed sacred landscapes and other botanical contexts, identifying those species that were locally as well as nationally recognized as crucially important and threatened and their current harbouring in sacred forests areas.

In conclusion, the study's documentation of over 154 plant and 33 animal species in Wonsho sacred landscapes and other informal protection areas shows the importance of these landscapes as biocultural diversity hotspots. The maintenance of rituals within sacred sites, necessary to placate ancestors and reinforce local identities, supports the preservation of sacred forest sites and inadvertently conserves threatened species. Several other endangered and reportedly lost tree and animal species owe their preservation to these sacred landscapes which in turn are bound up with enactment of ancestral rituals. The maintenance of an ancestral value system serves as a core motivation for conservation and, therefore, might be a useful tool for a process of establishing or promoting community-protected areas beyond formal protected areas.

In the following chapter, I present and discuss a specific case of biocultural diversity conservation in Wonsho sacred forests, namely the conservation of vital medicinal plants, preservation of herbal medicine and the role of SNS in community health & wellbeing.

Chapter 7. SNS, Herbal Medicine, Community Health, and the Conservation of Medicinal Plants in Wonsho

The foregoing Chapter described the types and extent of biodiversity conserved in Wonsho sacred forests and other informal protection areas, demonstrating how the mutual relationship between culture and biodiversity, necessitating the maintenance of sacred sites, has worked to conserve the latter. Chapter 7 looks more specifically into, primarily, the conservation significance of these landscapes for medicinal plants and herbal medicine, and, secondarily, whether and how presence of sacred forests promotes community health and wellbeing, although the presentation may not necessarily follow this order.

I present the Chapter in four sections, the first three dealing with findings and the last on discussion and conclusion. I begin the Chapter with a summary of results on background characteristics of Wonsho community's health context and herbal medicine, the state of herbal medicine and the distribution of its knowledge and use. In section two, I outline Wonsho sacred forests' broader health benefits, while conservation of medicinal plants and sacred forest sites' roles are presented in section three. The last section puts the findings in broader analytical and literature context, and concludes that medicinal plants, herbal medicine and community health fare better in communities where sacred natural sites exist.

7.1 SNS and herbal medicine in Wonsho, Sidama

Understanding the role sacred forest sites play in conserving medicinal plants and their associated botanical knowledge requires a brief description of the context and state of herbal medicine. The section examines this.

7.1.1 State of Wonsho herbal medicine

At the time of the fieldwork, renowned healers exist in some localities, catering for some health and para-medical needs of the community, especially those aspects that are perceived as not effectively handled by modern medicine. Certain factors encourage recourse to herbal medicine in the community, such as the lack of access to modern facilities due to geographical barriers, lack of money or other social-cultural barriers (FGD-young men-1, 2012). The most common situation is using it for first aid in emergency cases, until help from a modern medical facility is

obtained. This is a still popular option for households in Wonsho community. The idea that some diseases are better dealt by local healers is strong and people still buy this idea and continue to seek the help of local herbalists for such problems. As an informant noted, "Many people go for help to these healers especially for some kinds of diseases, as they believe that treatment with traditional medicine helps rapid cure as well as more satisfying, effective treatment and healing," (Interview, 2012). Veterinary medicinal needs were relatively more reliant on traditional herbal solutions compared to human health problems, and practicing local herbalists were relatively more at ease dealing with these cases at the present, since modern medicine is gradually dominating the realm of (human) health services.

This study shows herbal medicine overwhelmingly supports the community's health needs to address its human and animal health problems, compared to medicines of other sources. Some herbalists produced decoctions by mixing plant parts with salt and soil; there was no mention of the use of animal parts for medicinal decoctions currently. However, the use of parts sourced from killing some wild animals such as hyena, snakes, etc. was common in the past, as informants noted, but this ethno-zoological medicine appeared to be a dying tradition.

A survey of households on traditional herbal medicine, whether households currently described it as significant in their health care systems, indicates a generally robust system albeit facing erosion. Use of traditional medicine was an important healthcare option for the surveyed households, and plants formed a crucial base for that system (93 % each). Current actual use of plants as medicinal sources was equally robust (92.5 %) (*Table 7.1*).

Table 7-1 Significance of traditional medicine and medicinal plants in Wonsho, HHS, September 2012, Bokaso, Ethiopia

Measurement item	Response	Count	Per cent
Use of traditional medicine as an important healthcare	No	14	7
	Yes	186	93
The importance of plants as source of healthcare	No	14	7
	Yes	186	93
Use of plants for health care	No	15	7.5
	Yes	185	92.5

7.1.2 SNS and patterns of current herbal medicinal awareness

Understanding current herbal medicinal awareness and use among herbalists, children, young persons, and the community at large might help indicate the state of herbal medicine. While our informants were drawn from across all of society, children, young persons and herbalists were important sources of information during the fieldwork. As noted in the methodological section,

attempt was made to qualitatively assess their botanical awareness and current use, which were found to be resilient, which is understood in this context as the way traditional herbal medicine persists in dynamic interaction with modern medicine, changing and adapting to new situations while at the same time maintaining its core as an ancestral, traditional entity. Closer, daily engagements with their botanical environments, particularly sacred forest sites, contributed to the relative strength of such awareness in the community, especially among the young.

Maintenance of sacred forest sites is, therefore, an important factor in this *in-situ* learning, sharing and transmission of herbal medicinal knowledge in Wonsho. Living in a botanically rich rural environment, especially with better opportunities to learn of tradition-imbued native trees and having sacred forest site as all-rounded epicentre of community life deserves credit for such relatively strong knowledge. Ethnographic conversations with informants in nearby town of Yirgalem showed a shallower knowledge about plants, native trees and herbal medicine. The closer one was to sacred forest sites, the more likely a richer botanical awareness.

Figure 7-1 Two herbalists during a survey a AWSF, October 2012, Bokaso, Ethiopia (Debating about the identity of a plant)

Although there was widespread awareness of herbal medicine, there was variation. For example, understandably, herbalists had far wider knowledge about medicinal plants, knew many more names of trees, owned a greater number of tree species in their own backyards and were more likely to run purpose-planted medicinal gardens. They were also more likely to mention names of plants that were generally unknown to common people. They fared far better when it comes to identifying the names of very small tree species as they have closer and richer relationship

with the *shimada murro (*defined in Chapter Five*),* due to their reported higher medicinal relevance.

7.1.3 Medicinal plants of Wonsho

Informants generally believed that all plants have medicinal values, despite *shimada murro* serving as the most important medicinal role. *Shimada murro* include herbs, climbers, shrubs, grass and other small plants. These were invariably touted by informants as highly medicinal. Of about 86 plants that were identified during a first round transect walk at AWSF with three herbalists, more than half were such plants and most were understood as medicinal (*See Annex III).* The most widely noted use of this category of plants was medicinal, followed by their importance as firewood, animal fodder, and occasionally wild food sources. Practicing herbalists noted that the most commonly used source of decoctions in their pharmacopeia come from the leaves, seeds and roots of these plants.

Even so, it should not be deduced from this that medicinal plants were classified solely as *shimada murro*. Medicinal plants (referred to as *ţagicho haqqa* or *ţagicho murro*) were not given any specific standalone classification, except that the *shimada murro* were their most well-known category, a perception that was mainly entertained among practicing herbalists. 'Big trees' were also a useful category to which medicinal plants belonged. In connection with this, it is worthwhile to note that informants believed medicinal plants are found among all floras. The expression, "All the trees in our land are medicinal," (herbalist, 2012) is a common observation. In general, informants were of the opinion that all plants and trees in their locale were useful medicinally in one way or another for treating a range of human and cattle ailments.

As noted in Chapter Five, locals use different parameters to classify plants in general. Specifically, medicinal plants may be classified depending on how popular and widely known, the type of human or cattle ailments they treat, where they grow, how they facilitate or generate healing. Some medicinal plants were universally recognized by children, women and herbalist alike (*Table 7.2).*

The most popular of all, measured in terms of their current actual use as home-based self-medication remedies, abundance, and identification by the younger generation, were *çikicho (Justicia schimperiana)* and *binjile (Clutia abyssinica),* both small plants. During a young women's focus group at AWSF, when asked about which most commonly used medicinal plant today in their locality was, the girls responded in chorus "*Çikicho*!" This herb is used as a readily available emergency source for a decoction for treating tummy pain and varieties of

other human ailments. The widely known and used medicinal plants were generally regarded as important for health problems that did not require specialist skills and complex processing procedures.

Table 7-2 Widely known and used medicinal plants in Wonsho, interviews & FGDs Bokaso, 2012, Ethiopia

Local name	Scientific name	Description	Commonly treated health problem
Çikicho	*Justicia schimperiana*	Herb, native	Decoction from leaves drank for treating *dingeteñu* (sudden and emergency health problem causing diarrhea and vomiting; stomach ache)
Binjile	*Clutia abyssinica*	Herb, native	Decoction from leaves drank for treating *woranṭo*, a cow disease and *rarate*, liver disease
Dongicho	*Prunus africana*	Tree, native	Decoction from bark for treating *hammessa*, a commonly perceived infant tummy problem; considered as a necessary "vaccination" for infants.
Dadako	*Hagenia abyssinica*	Tree, native	Decoction from berry and leaves for treating worm infestation *hamashe (*'tapeworm')
Godicho	*Fagaropsis angolensis*	Tree, native	Berry eaten for treating *dingeteñu*
Haranjicho	*Phytolacca dodecandra*	Shrub, native	Leaves used as a detergent; decoction for leaves for treating *dingeteñu*
He'echo	*Vernonia amygdalina*	Tree, native	Decoction from leaves drank for stomach aches
Gobacho	*Maesa lanceolata*	Tree, native	Decoction drank for stomach ache; decoction rubbed for treating foot sores, wounds, etc.
Garbicho	*Ekebergia capensis*	Tree, native	Cattle disease; *dingeteñu*
wajo bardaffe	*Eucalyptus globules*	Tree, exotic	Decoction from leaves drank for stomach aches; leaves smoked for fumigating home

There were a number of species that were known only by practicing herbalists. The medicinal identity and efficacy of such plants were often claimed as revealed to the practitioners through dreams, which also coincide with what they claim as the origin of their skill. The revelations would include specific names of plants, their efficacy in treating specific human and veterinary health problems, where they would be harvested from, parts of the trees to be sourced, and decoction and administration procedures, etc. The trees may be commonly available in the locality known for their other uses but their medicinal significance is not recognized by the common people; or they may be harvested from wild, obscure sources. These plants were more likely to belong to climber, grassy and shrub groups, and their identification requires hard work and specialist knowledge, apart from claimed supernatural aid and cues. From the experts' point of view, some tree species whose medicinal properties were unknown by the general community were the most widely used sources of herbal decoctions. An herbalist informant, for example, mentioned *Gidincho (Ehretia cymosa)* as an important tree whose roots and barks are used as a mixing agent in most decoctions (Interview, 2012).

Figure 7-2 A girl holding Brucea antidysentrica, at AWSF, January 2013, Bokaso, Ethiopia (From young women's focus group at AWSF)

Classifying medicinal plants based on the types of health and paramedical problems they are employed to cure is also important. Some plants are known as all-rounded ones suited for generic and common health problems. Informants often talked about such plant categories being employed for *dingeteñu*. The *dingeteñu* is a generic term for a group of illnesses that may occur both in humans and animals and characterized by a set of symptoms including diarrhea, vomiting, tummy pain, head ache, fever, etc. These plants are generally those readily available and accessible in the backyards without the need for specialist trekking to the wild forests; they are used with minimal specialist herbal knowledge. For example, *çikicho (B. antidysentrica), binjile (C. abyssinica Jaub.), dongicho* (*Prunus africana*) and *wajo bardaffe* (*Eucalypetus globulus)* and many other herbs belong to this category.

Figure 7-3 A herbalist holding çaate (Katha edulis), SNS survey & tree inventory, October 2012, AWSF, Bokaso, Ethiopia

Some, on the other hand, are defined as best employed for dealing with the psycho-social and more mystical health problems. These include socially relevant recreational, psychoactive plants and those that are employed to deal with psychological problems, ward off evil influences and misfortunes. *Çaate (Katha edulis), buncho (Coffea arabica L)* and *ţaddo (Rhamnus prinoides)* may be cited as examples. While *araddo [Nicotiana tabacum]*, a traditional stimulant, is becoming more archaic, *çaate* is becoming a widespread psychoactive, recreational, drug plant, especially among youth and healers.

Further, there are plants for preventing or repelling snake and other insect bites (*e.g. araddo [Nicotiana tabacum]);*and treating specific health problems such as *hammessa*, a common infant health problem *(e.g. dongicho, Prunus africana);hamashe,* tape-worm *(e.g. dadako, Hagenia abyssinica);* and the like. Some medicinal plants were known and identified by their use for aromatic, tooth and oral hygiene needs. Some of these include *ejersa (Olea europea), nolle (Achyranthes aspera* L.*), had'essa (Lactuca inermis* Forssk*)* and *saticho (Borassus aethiopum)*. Traditional oral and tooth hygiene management using twigs carved out of branches, bark and roots of some trees is still important (See Annex IV).

Table 7-3 Locally important trees used as chewing sticks in Wonsho-Sidama, interviews & FGDs, 2012-2013, Bokaso, Ethiopia

Sidama Term	Scientific Term	Part Used
Had'essa	*Lactuca inermis*	Branch
ejersa	*Olea europaea africana*	Branch/Wood
Huuda	*Salvadora persica*	Root
Botoro	*Stereospermum kunthianum*	Bark; root
Bentelissa	*Clausena anisata*	Branch
Loomee	*Citrus aurantifolia*	Root
Nolle	*Achyranthes aspera*	Branch
Saaticho	*Borassus aethiopum*	Branch
Kincho	*unidentified*	Branch
He'echo	*Vernonia amygdalina*	Branch
Wacu	*Acacia nilotica*	Branch

Nativity or the indigenous status of plants is another local parameter employed to identify medicinal plants. Informants regarded the lion's share of species as "their own", and hence native; this shows the understandably key role of these species in their culture, livelihoods and traditional medicinal needs. Exotic species were also increasingly used as medicinal. According to herbalists, it was part of their duty to continuously experiment with plants to identify and extract medicinal qualities of plants in their localities. A renowned herbalist, for example, included the following exotic fruit trees as medicinal: *burtukane (Citrus sinensis), mimmee* (*Delonix regia*), *shiferaw (Moringa stenopetala), kokke (Prunus persica), zaytoncho (Psidium guajava),* and *appille (Malus domestica),* although he held it secret for what specific diseases they were employed *(*Interview, 2012). This is a demonstration of the resilience and dynamism of traditional herbal medicine in that while herbalists maintained core beliefs, they were open for experimenting new thins and incorporate them into their system.

7.2 Health and wellbeing benefits of sacred sites

There was a general awareness among informants about positive association between presence of sacred sites and perceived good community health. The conservation of a sacred forest site as a landscape may itself be considered as a key resource for the community in terms of meeting their general community health needs. In this broader sense, even without tangibly making reference to concrete medicinal plants as biodiversity components, sacred forest sites themselves are, according to locals, medicinal. In this important sense, then, for local people, sacred forests are medicinal in no less degree than specific plants or trees are. As informants noted, this is not only because they constitute within themselves plants that are of medicinal

benefits, but also because they generate a range of medicinal, health benefits and outcomes for the community.

Of multifarious benefits the community derives from sacred sites, recreational and aesthetic values were mentioned as important. Of the variety of reasons given for visiting sacred sites, particularly AWSF, informants talked about visiting and recreation at the sacred site as a way to help stressed people get relief. This phenomenon is evident in local opinion such as, "we felt healed, even if we may not have enough to eat, when we see sacred forests and their reassuring, soothing shades and beauties. It gives us mental serenity. Elsewhere people are stressful due to the lack of forests, but here we are happy and peaceful," (KI-AiO-RA, 2012). This broader psycho-social health outcome for the community is one important dimension of the "medicinal" quality of Wonsho sacred forests. Informants also note the importance of rituals that occur in the sacred sites that have medicinal, curative aspects. People come seeking help from the ritual leaders, directly or indirectly, with problems bearing on their health, in its broad sense. Although ritual leaders did not perform a direct healing ritual (especially for physical, naturalistic health problems), they, nonetheless, deal with many problems with health implications, problems affecting the mental and psycho-social wellbeing of the community.

A more concrete dimension to the medicinal quality of sacred forests is what informants call the "good climate and abundance of natural water springs" that are considered as important resources for maintenance of community health. As one informant noted, "we do not have here much problem with diseases like malaria whereas it is a real problem in other lowland Sidama areas; our waters are clean and they give us health," (youth herbalist, 2012). A similarly concrete dimension is the fact of existence of health service institutions at sacred forest sites. For instance, at AWSF, the institution of a 'holy' water spring named 'Abbo's spring' plays important role as a centre for harvesting allegedly healing waters for nominal prices. The Abbo holy spring, located at the centre of AWSF, has been running for the past four decades. It was established in the early 1970s by a "dream communication from Abbo's spirit to serve as healing water," (Guard, Interview, 2012). The spring is enclosed with live trees and dry wood as fences and unauthorized entry to fetch the water is prohibited. A guard is tasked with looking after it, permanently stationed there, living in a thatched bungalow nearby. Customers would come with their jerry cans and fill up the water and pay ten Ethiopian cents (c.a. 0.003p). Locals reported its allegedly curative roles in dealing with a range of health and para-medical problems. It is important to users of the service that sacred forests harbour alternative health services and that people continue to resort to it and generate health benefits, whether perceived or tangible. In Ethiopia, holy water, known as *šabal,* plays an important role in the health sector

and is a key part of the Ethiopian Orthodox Church's (EOTC) religious healing services (Pankhurst, 1991) .

Figure 7-4 Abbo Holy Spring, AWSF, SNS survey, October 2012, Bokaso, Ethiopia
(Nested figure is the close-up of the holy spring located right top behind the men and the sentinel's house)

One more dimension to the medicinal quality of sacred forests is the presence and utilization of medicinal plants themselves. Sacred forest sites are important sources for harvesting medicinal plants for sustaining traditional medical practices, which in turn sustains local ways of selective conservation of medicinal plants. In Ethiopia, with 80 per cent of the population dependent on traditional medicine, local communities turn to existing sacred forest areas to harvest medicinal plants. For many of the so-called mysterious and difficult-to-manage health problems, medicinal plants are more likely to be harvested from wild areas, including sacred forests, while for simple, common health problems plants in backyards often serve this need.

Access to and utilization of medicinal plants is one of the key community health benefits of sacred forests in Wonsho. According to informants, despite government controls and disapproval of open access to major sacred forests such as Abbo Wonsho in recent years, neighbourhoods and households in close proximity often harvest medicinal plants from these places. Actual observation at AWSF confirmed such use as trees of the forest bear marks of human activities such as bark removal. Barks of large native trees such as *Prunus africana*,

Podocarpus falcatus and *Syzygium guineense* are highly preferred for a range of human and veterinary health needs. While open de-barking or cutting of branches from woody trees was tabooed by ritual leadership as well as disapproved by local government, harvesting of small plants for medicinal needs is condoned. Local herbalist informants noted sacred forests were good sources for them to select and harvest herbs, climbers and other small plants that are not easily found elsewhere (a SAR herbalist, 2012).

Harvesting and use of medicinal plants from sacred forests such as AWSF was indicated as important for Wonsho households. Eighty-three percent (166) of the household survey respondents indicated they currently resorted to own gardens and other botanical environments to harvest medicinal plants (*Figure 7.5 below*). Sixty-two percent (124) reported using sacred forests for medicinal needs, which was slightly lower compared to those depending on their own gardens or other places, a phenomenon explained by the fact that in recent years local government, wanting to capitalize on the increasingly 'flagship' status of AWSF and contain increasing problems of encroachments, has beefed up its control and protection of the forest, outlawing heretofore freely accessed services. A range of other factors may also exist such as ease of harvesting medicinal plants from their own and nearby areas, while for some households AWSF was far away creating a geographical barrier.

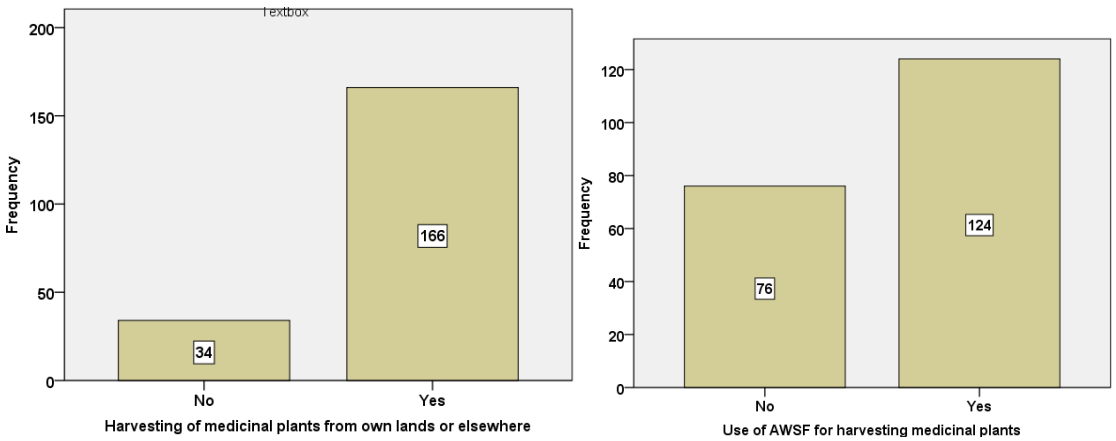


Figure 7-5 Households' use of sacred forests and other botanical areas for harvesting medicinal plants, HSS, September 2012, Wonsho, Ethiopia (N= 200)

7.3 Conservation of medicinal plants

Medicinal plants in Wonsho find refuge in a range of botanical environments. Below I analyze, firstly, how sacred forests provide crucial protection for medicinal plants and some critically

threatened native trees. The conservation, conscious or otherwise, of medicinal plants in other contexts such as farmers' backyards is presented subsequently.

7.3.1 Medicinal plants in sacred forests

Broadly speaking, the community sees their sacred forests as important havens for hundreds of plants, from the humblest *hayso (*common grass or herb*)* to the graceful *dagucho* (*Podocarpus falcatus*). In view of this, therefore, it is perhaps understandable that Wonsho sacred forests are repositories for medicinal plants.

As noted above, of a total of 154 plants were identified at Wonsho sacred forests and other botanical environments, 77 (51.3%) were reported as directly medicinal. This was the most important use of plants identified, followed by other livelihood uses. Of these plants and trees, except for some exotic species which by virtue of taboos were excluded and few native trees that do not adapt easily to studied sacred forest' micro-climate, all of the native species were harboured in sacred forests.

The cases of some trees that are locally reported as "fast disappearing" or "already lost" at other places being conserved at sacred forests is perhaps an interesting one. It is generally the view of the community, represented through interviews and household surveys, that sacred forests serve as havens for such trees. Through overutilization for medicinal and other livelihood needs, some woody native trees such as *dongicho (Prunus africana*) are reported as now found only in sacred sites. Some other native species of medicinal importance are also now believed to be found only at such places. In the household survey, 182 household heads (91%) agreed to the statement that sacred forests such as AWSF are sole havens for medicinal plants (*Figure 7.6*).

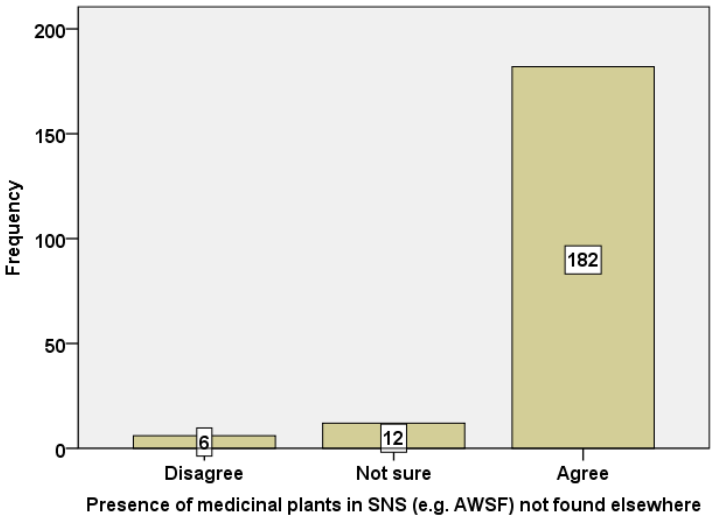


Figure 7-6 Household heads' opinions of sacred forests' role as sole havens for some medicinal trees not found elsewhere, Wonsho HHS, September 2012, Bokaso, Ethiopia

Sacred sites, therefore, along with the flora of the agroforests and other places, were perceived as important refuges for medicinal plants, from small, "humble" climbers such as *surrupṕa (Lagenaria siceraria*) to the dignified *duwancho (Syzygium guineense)* or *dongicho (Prunus africana).* Different herbs, shrubs, climbers and vines are important sources of wild foods, cattle fodder, wildlife food, firewood and, more importantly, preferred medicinal sources, and were both reported and observed as existing in Abbo Wonsho and other sacred sites.

Figure 7-7 An informant with medicinal L. siceraria, Loggo Sacred Site, 2012, SNS survey, Wonsho, Ethiopia

Table 7-4 "Disappearing" or "lost" medicinal trees found at sacred forests, Interviews & FGDs, 2012, Wonsho, Ethiopia

Local name	Scientific name	Where currently mostly found	Reason of decline
Dongicho	*Prunus africana*	AWSF	The most over-utilized medicinally through de-barking for dealing with "*hammessa", a commonly perceived* infantile ailment
Gidincho	*Ehretia cymosa*	AWSF	A native woody tree cherished as a popular medicinal source for most of the plant-based decoction; other livelihood pressures
Bulancho	*Withania somnifera*	AWSF	A major medicinal plant, reported as over utilized
Godicho	*Fagaropsis angolensis*	AWSF and other sacred groves	Livelihood overutilization
Gatame	*Commiphora schimperi*	AWSF and other sacred groves	Livelihood overutilization
Duwancho	*Syzygium guineense*	AWSF; rarely at some non-sacred settings	Livelihood overutilization (esp. char coal, construction material needs, etc.)
Ejersa	*Olea europae*	Some private home front yards	Medicinal, firewood, and construction need, aromatic
Dagucho	*Podocarpus falcatus*	AWSF and other sacred groves; other areas	Declining outside of sacred sites due to overutilization
Nolle	*Achyranthes aspera*	AWSF	Medicinal and livelihood overutilization

7.3.2 Medicinal plants in farmers' backyards

In earlier sections, it was noted how plants found in agro-forests and backyard plots in Wonsho are important links to the past extensive forests of the area, as well as the present day sacred forests. These form a broad mosaic landscape for medicinal plants. While sacred forests harbour many medicinal trees or plants that are otherwise lost in farm plots and other household lands, households, nevertheless, as noted above (*Figure 7.6*), usually rely on their backyards for harvesting medicinal plants.

A matter worth-noting is the conservation of some medicinal plants at such places by some households through what may be considered as conscious or intentional conservation. Some fragmented cases of conserving medicinal plants at household level were documented during fieldwork; a number of local informants, whose back- and front-yards were surveyed for plant/tree species, reported they had explicitly planted some species for medicinal purposes. One of informants, a budding young herbalist whose father was also a renowned healer, noted they had "about 38 medicinal plants that sprouted up…naturally. We have also seven medicinal plants which we have planted…collecting them from different areas of Sidama," (Interview 2012*).* Another practicing herbalist also indicated he had some medicinal plants in his backyard;

"some grassy; some grow naturally; I planted some and care for them…it is secret; other [people] are not aware of it" (Interview, 2012*)*. Other herbalist informants noted they did not engage in such forms of conservation, they rather gathered their medicinal plants from distant wild forests, lowlands and highland areas.

So far, profiles and potentials of sacred forests and other informal tree protection areas of local ecology in preserving medicinal plants have been summarized, with specific cases of such species harboured at major sacred forests such as AWSF. As for the formal attempts of zonal and district level medicinal plants conservation work, it may be stated this as a whole is nascent, at best. Similarly, conscious, direct conservation measures for the latter were not in place, at least up to the time of the fieldwork, although they are addressed as part of the broad protection and promotion actions for useful traditional values and institutions and considered as important national heritage by the government (MoH, 1993; TGE, 1993; WHO, 2001a; Kassaye et al., 2006).

Interviews with various officers and reviews of archives in Wonsho District show there was a general absence of targeted work on medicinal plant conservation. There were no projects to identify and document the status of traditional medicinal practice and the stock of medical plant species locally used from the sacred sites and other places.

7.4 Discussion, summary and conclusion

The foregoing paragraphs described major results on the role of sacred forests and other botanical environments in conserving medicinal plants, the broader use of these contexts for promotion of community health and wellbeing, and preservation of herbal medicinal knowledge. In the following paragraphs, I place the findings in broader national, global and ethnographic contexts.

7.4.1 Discussion

Conservation of medicinal plants in sacred forests and ethnobotanical traditions pertaining to health is garnering increased attention from scholars. Similar research and conservation interests and actions in Wonsho, Sidama and Ethiopia are generally at their nascent stage and contributions from studies like the present one may help to fill gaps in this area.

This Chapter began with presentation of results on broader contexts and characteristics of Wonsho, Sidama herbal medicine. On the one hand, there is an increasing erosion of local

communities' ability and right to use health care systems that suit their own local conditions, ecologies and knowledge systems in Ethiopia and across the world (Ruelle, 2014; Kassam, 2014). Furthermore, there is insufficient policy support and weak implementation provided for traditional herbal medicine (Bishaw, 1991; Girma, 2011; Cooper et al., 2013). On the other hand, there is yet a still resilient tradition of herbal medicine. Understood in this context, Wonsho, Sidama is an example of resilient and dynamic local communities across Ethiopia and the world that make active and mutually reinforcing recourse to their botanical world in general and their sacred forest landscapes specifically for meeting and dealing with their health and wellbeing needs. The resilience of traditional herbal medicine contributes to local communities' power and autonomy in relation to addressing their health needs based on their own ethnohistorical, ethnoecological and livelihood contexts (García & Vanessa, 2013; Kassam et al., 2010).

The results presented above indicate the ongoing importance of traditional medicine in the Wonsho-Sidama health care, a fact that demonstrates the current relevance of traditional medicine throughout the world and the values of plants and herbal medicine. This is a system that meets the needs of over three billion people for their primary health-care, recognized by the World Health Organization (WHO) not only as an alternative medical system, but also as the mainstay of healthcare delivery or a complement to it across the world (WHO, 2014). In view of this, the WHO Beijing Declaration call for member states to recognize the role traditional medicine plays in keeping populations healthy and to integrate it into national health systems is understandable (WHO, 2008). WHO has further launched its new strategy for traditional medicine for 2014-2023 (WHO, 2013).

In Wonsho-Sidama and Ethiopia in general, medicinal plants occupy a crucial place in the alternative health care system (Zewdu & Demissie, 2001; Fullas, 2007; Kibret, n.d.; McAlvay, 2013) and "all plants", as wisely observed by our Wonsho herbalist, possessed a form of medicinal utility and hundreds of species have been more specifically selected out and utilized for meeting a range of health and para-health needs of the community. While informants generally noted all plants of their community, from grass and herbs to big trees, were medicinal in one way or another, surveys yielded more specific, concrete demonstrations of the role of plants in community health. Although very limited in scale, more than 50 per cent of our identified 154 plants or trees were directly tagged as medicinal and most of these currently in use. From these, based on reports from a father-son herbalist team, about 68 distinct decoctions were in use for tackling 28 human and veterinary ailments. In a comparable study, Beyene (2001) reports 85 plant species used as cure for 61 ailments in Wondo Genet district of Sidama. A team of internship students from the University of Wisconsin also reported findings from

another district of Sidama, where the community used 47 plant species for dealing with 37 types of ailments (McAlvay, 2013). In a northern Ethiopian community Ruelle (2014), studying what he called "the healing agriculture", describes 142 plants his team had identified, of which 29 had medicinal uses.

This is understandable in the context of a country where, some reports estimate, about 80 per cent of the population utilizes traditional medicine that mainly depends on medicinal plants (WHO, 2001; Kassaye et al., 2006; BIE, 2014). Over 95 per cent of decoctions for folk drugs are sourced from medicinal plants (Abebe, 1986, cited in IBCR, 2009). About 887 plant species are used for medicinal purposes, constituting over ten per cent of vascular species of the country (Zewdu & Demissie, 2001; Bekele, 2007), of which 2.7 per cent are reported to be endemic to the country (IBCR, 2009). In recent years, studies from mainly biological science perspective on ethnomedical-botanical beliefs and practices among the various ethnic groups of Ethiopia show continuing relevance of plants in dealing with human and animal health problems (See, for example, Beyene, 2001; Leulkal et al., 2008; Bekalo et al., 2009; Biruktayet et al., 2010; Teklehaymanot & Giday, 2010; Leyew, 2011; Wassihun et al., 2014).

The continuing relevance of herbal medicine in Wonsho-Sidama and Ethiopia in general may help demonstrate the values of medicinal plants across time and space. Medicinal plants are at the centre of the growing pluralism of medicine in our contemporary world (Salick, et al, 2007; Geissler and Prince, 2010). Historically, for example, the *materia medica* of ancient Greek scholar Dioscorides documented over 500 medicinal plants (Balick and Cox, 1996). In China, documented sources indicate that there were about 12,807 species used in medicinal treatment, of which 1582 were animals, 11,146 were plants and 81 were minerals (Pei, 2002). Among the Baganda in Uganda, more than 200 plant species were used by herbal healers (Hamil, et al, 2002). The Dogon utilize some 200 plant species (Van et al, 1992), while over 130 plants were used by Samoans (Whistler, 2000). Moerman (1998) documents for 291 societies of Native Americans' use of 4029 kinds of plants for over 44,691 uses in five main categories of drug, food, fibre, dye and other. He writes, "Of the 44,691 usages, 24,945 are medicinal…," (Ibid. p. 8).

The Wonsho study identified that herbs, shrubs and climbers, compared to big trees, are highly valued medicinally. Of 78 or so specifically tagged medicinal species, about 48 were such plants. Some big trees, such as *Prunus africana*, *Hagenia abyssinica* and *Ehretia cymosa*, however, played important medicinal roles. At a national scale, too, the majority of medicinal plant species are herbs and shrubs. Over 271 herbs, 168 shrubs and 110 woody trees were identified as medicinal (IBCR, 2009). *Hagenia abyssinica* and *Prunus africana* have been

bigger woody species of classic and widespread medicinal importance in Ethiopia, for treating intestinal worm infestation, headaches, stomach-ache, and fever (Biruktayet et al., 2010; Negash, 2010).

As Voeks (2004) argues, this may not be quite surprising given the fact that (contrary to the widespread assumption that pristine, undisturbed primary forests are the most important repositories for medicinal plants) the preferred foraging places for many tropical rural groups are anthropogenic places of their own creation: "trails, kitchen gardens, swiddens, and forest fallows" (Voeks, 2004: 868), which are the places where smaller plants are more likely to abound. These 'disturbance pharmacopoeias' are easily accessible, relatively abundant and persistent even in anthropogenically 'disturbed' areas.

With respect to how herbal medicinal awareness is generally shared and transmitted among the community and between generations, local knowledge of certain medicinal plant species and their utilization was fairly widespread among all social categories, from children to herbalists, although specialist herbalist expertise was required to understand medicinal qualities of some trees and plants. Such realities in Wonsho-Sidama were manifestations of the community's broader socio-cultural contexts; the existence of rich botanical environments and traditions as embedded in sacred forests is a key ingredient. Medicinal botanical awareness in Wonsho, as is the case in other traditional communities, is a product of on-the-ground, lived–in botanical socialization, whereby trees, sacred forests and other botanical environments exert pervasive influence on the entire fabric of community life. It is also a demonstration of the fact that traditional societies have utilized oral means of preserving, communicating and transmitting plant-based medical knowledge. Gaining medicinal botanical knowledge through day-to-day activities in sacred forests and other botanical environments in Wonsho is what scholars describe as learning, sharing and transmission that are embedded in intimately shared everyday life (Schultes & Raffauf, 1992; Freedman, 2010; Geissler & Prince, 2010). It is an *in situ* transmission of knowledge (Shepherd, Jr., 2002; Toledo, 2002). Such herbal medicinal socialization and learning also take place in dynamic, highly situational social fields (Hsu, 2010).

Related to this is, as shown in the findings above, how local people perceive, identify and classify medicinal plants. Key local parameters in doing this were generally related to specific types of human or cattle diseases that were dealt with decoctions from a specific plant part or a mix of parts from different plants, a practice which is widely common across traditional societies (Balick & Cox, 1996). For instance, the case of plants/trees used as 'chewing sticks'—for oral and tooth hygiene is an interesting one. About seven species, as noted above, were

utilized for such needs in studied communities in Wonsho. The practice is time-honored and still common in Ethiopia where many plant species are employed for such needs (Azene & Tengnäs, 1993; Araya, 2007; Bekele, 2012) and many parts of the world (Al Sadhan, 1999).

In the Wonsho context, medicinal plants may be identified as native or exotic, the majority being the former; some may be identified as most commonly used and recognized others secretive; in terms of their provenance of harvesting they may be home-grown or wild sourced, etc. It is argued that the rationality behind the way local communities use and manage plants in their daily lives, including for their medicinal purposes, is highly influenced by their sociocultural belief systems (Brush, 1992; Ingold, 1992; Alexiades, 1999; Berkes, 1999; Balée, 2013) and best understood within the framework of the 'knowledge-belief-practice' (Berkes, 1999) or 'cosmos-corpus-praxis' interface of the ethnoecology of local communities (Toledo, 2002, 2013a, 2013b; Toledo, et al., 2010). Furthermore, contributions that medicinal plants make to people's lives in terms of health support, financial income, cultural identity and livelihood security are also important factors (Hamilton, 2004). Understanding this system is essential for the proper interpretation of the manners people use and make decisions in the management of plant resources such as medicinal plants (Balick & Cox, 1996; Atleo, 2005).

An important point raised above in section two is the broader role of sacred forest sites and related local ecological contexts in aiding community health and wellbeing. The section summarized the fact of community awareness about the significant health and well-being benefits people derive from their sacred forests and related landscapes. In Ethiopia, health and general psycho-social relevance of sacred sites has long been recognized by local communities. Traditional medicine among diverse cultural groups in the country have utilized holy springs, sacred natural and man-made sites as key alternative health service centres (Pankhurst, 1991; Kloos, 1998; Lauren, 2007; Jordan, 2012). People would visit these diverse sacred landscapes seeking solutions for varieties of medical, paramedical and other broader psycho-social problems. Ritual leaders of sacred sites use medicinal plants, particularly the psychotropic ones, as key instruments in officiating their rituals and as conduits to the spirit world, unlocking guidance and solutions to the health problems.

Çaate (*Catha edulis*), for example, is a key psychotropic plant, highly employed by ritual leaders for conducting healing and sacred among certain communities of the country. The mild stimulant leaf *khat* derived from the plant is chewed both as part of socializing events and some ritual occasions, especially among certain Muslim groups. It is widely grown in Ethiopia where it has been a major export item and also grown in other Horn of Africa countries (Wabe & Mohammed, 2011; Csete, 2014). Similarly, other plants such as *Coffea arabica L* and *Nicotiana*

tabacum also play important roles as part of the sacred rituals meant to address health and wellbeing problems. Coffee rituals form the very core of religious and related ceremonies among most Ethiopian communities, having relevant, perceived psycho-social and health benefits (Anon, 2013; Burhardt, 2013). Such plants are held in high regard. Leaders of various spirit possession cults and healers, working in the context of sacred rituals and places, held immense power and their characteristic feature among other things is extensive knowledge of the secrets of medicinal and magical powers of the flora (Abebe, 1986; Fullas, 2001; Fassil, 2005; Birhan et al., 2011). Elsewhere among traditional societies, the psychoactive and sedative powers of certain plants and the special charisma of the shamans have been known (Schultes & Raffauf, 1992; Weckerle et al, 2010).

Furthermore, literature shows wellbeing, health and healing in their broad sense are understandably salient aspects of current discourse on sacred natural sites (Sponel, 2001, 2012; Johnston, 2006; Dafni, 2007; Dudley et al., 2009; Verschuuren et al, 2014).). Sacred sites, as defined elsewhere, are 'navels' of a local community, a term used to indicate the way local people use and see sacred sites as a centre of their world. Here in the physical landscape and social-spiritual context of sacred sites, among other things, broader health needs of the local community are met. As Sponsel (2008: web page) argues, "Individuals may experience a sacred place in different ways as a site of…connectedness…[and] healing…" Ritual leaders are tasked with dealing with these medical and paramedical needs of the community. Sacred sites are reported as being chosen venues, as eco-tourism hotspots and places of alternative, holistic healing for not only the local communities, but also many outsiders. They are places of healing in its fullest, holistic sense.

The World Food and Agriculture Organization (FAO) promotes the health and well-being benefits of forests and researches in the field of environmental psychology also show the values, perceived or otherwise, people derive from experiencing contact with the natural world, especially trees and forests (See, for example, Kaplan, 1995; Ouellette et al., 2005; O'Brien & Perlis, 2006; Abraham et al., 2010; Irvine et al., 2013). The "holistic healing", allegedly derived from such environments in general and rituals and shamans at renowned sacred sites of the world in particular, accounts for increasing health-tourism to such places (Morgenstern, n.d.; Johnston, 2006). In relation to the discussion of health and wellbeing in the context of biocultural landscapes, sacred landscapes and understanding their local custodian communities have about the meaning of happiness and wellbeing are helping to redefine what it means to live well and who are living well. Verschuuren et al. (2014) argue, with examples from diverse geographical and cultural contexts, that health and community wellbeing should be best understood in a socio-ecological context that take into account spiritual, social and material

dimensions of life; they also show how sacred biocultural landscapes help communities live well.

Section three above outlined findings on the role sacred forest sites and other informal tree protection areas play in Wonsho in conserving medicinal plants. It also summarized the informal as well as formal attempts at caring for medicinal plants in the area. The data show how these places harbour many medicinal plant species. These data do indicate, primarily, presence of plant species, endangered or not, in the sacred places, some of which not found elsewhere. They also show some abundance and distribution patterns. For example, the 78 medicinal plants are both reported and some of them inventoried, at sacred sites. Some medicinal species such as *bulancho (Withania somnifera)* are reported to be found only in sacred sites. Such are, however, unconfirmed piecemeal cases and more conventional plant species surveys at the sacred site might further reveal the number and abundance of plants with medicinal values that are solely protected in sacred sites. Species such as *binjile (Clutia abyssinica), he'echo (Vernonia amygdalina), masincho (Croton macrostachyus), rejicho (Vernonia auriculifera), çikicho (Justicia schimperiana), çekata (Calpurnia aurea), akirsa (Aloe vera) and hançululicho (Kalanchoe petitiana)* are both reported and observed to be abundant and distributed well over the landscape, both at sacred sites and in other botanical areas.

In general, such results clearly demonstrate that in Wonsho, the maintenance of sacred forest sites and other informal tree conservation areas has some veritable, tangible conservation outcomes for medicinal plants. Local people also recognize this, indicating the fact that while relentless deforestation processes and other tree-biodiversity-harming factors have caused decline of tree species, existing sacred forests and some other informal protection contexts have proved to be key repositories for medicinal plants, endangered or not. Except for a handful of trees which were found elsewhere such as in private household lands or in other areas, all of the tree species from the sample inventoried were harboured in sacred forest sites. Those absent from sacred forests were exotic species, native species imported from other areas or, according to an official in the District Administration and my key informant, those lacking ability to adapt to sacred site micro-climates (Head, WDCTCO, 2013; KI-AiO-RA, 2012).

In Ethiopia, studies documenting the role of SNS in conserving medicinal plants are emerging. These studies indicate that SNS, especially forest areas where ancestral religious traditions are maintained, are important refuges for the flora of the country. It is also generally expected, and reported, that the hundreds of forests in Ethiopia owned by EOTC (Berhanie-Selassie, 2008; Massey et al, 2014), are also havens for hundreds of medicinal plants. These places are most cherished ones for local medicinal plant harvesting (Officer, SNNPRS-BoCT, 2013). It is

understood that multiple functions exist in natural forest areas, especially sacred natural sites, provide to the local communities, and that medicinal plants are harvested from these places while at the same time getting shelter (IBCR, 2009). Bekele (2007) documented the actual situation of medicinal plants in the country, on the basis of which the IBCR commissioned a national project aiming at their conservation, a Word Bank-funded project that ran from 2001 to 2007 (Zewdu & Demissie, 2001). The IBCR reports the outcomes of this project, among which included preliminary inventorying of medicinal plants in various agro-ecological zones, a number of experimental *in-situ and ex situ* conservation of medicinal plants were on going (EIB, 2014).

Globally, some studies generally show that SNS play positive roles in the conservation of medicinal plants and botanical knowledge. Voeks' (2013) study of spiritual medicinal and other uses of flora within the ancient sacred religious context maintained by African diaspora community in the Americas show how such sacred traditions and landscapes help preserve both plants and ethnobotanical belief and knowledge systems. Studies of sacred mountains as repositories for plants, including medicinal, in Tibet demonstrate this further, (Anderson et al., 2005; Salick et al., 2006, 2007). Junsongduang (2013) discussed the importance of swidden fallow fields and sacred forests as havens of medicinal plants among the Karen and Lawa people of Thailand where they document a total of 365 species of which 72 species were medicinal and most of these in sacred forests. Lebbie & Guries (1995) report the discovery of rare plants conserved in the sacred groves for their study of conservation value of such places among the Kappa Mende of Serra Leone. Other studies also show the role of sacred groves in conserving medicinal plants in various Indian indigenous communities (see for example, Rao, 2002; Kandari et al., 2014; Godole et al., 2014).

Furthermore, other places apart from sacred forests such as home gardens and/or agroforests and organized institutions also provide shelter for medicinal plants. These were observed and reported to be relatively abundant with plants that are managed as food-medicinals as well as for specific medical needs. In many other communities in Ethiopia, such places are known to be very rich with medicinal plants (Beyene, 2001; Bekalo et al., 2009; Ruelle, 2014; Wassihun et al., 2014) and the country's biodiversity conservation Institute pays attention to such places as locus for *in-situ* conservation (EBI, 2014). As the Wonsho study demonstrates the very fact that 45 plant species were selectively kept and conserved for medicinal needs by certain households shows the significance of such rare, but encouraging, efforts in Wonsho, Sidama.

In other parts of the country, traditional healers often gather them from wild settings, although there are some fragmented, individual attempts by herbalists (a nationally spotlighted case in

point may be cited, where a renowned herbalist managed to maintain a medicinal plants conservation farm where some 600 species of herbs, shrubs, grasses and trees having medicinal value and a total of 1,400 samples collected from all over the country were being conserved). According to the IBCR (2009), over 887 plant species were reported to have been used as medicinal sources of which about 24 were endemic in the wild. Further, about 89 plant species were cultivated by users, although not primarily for medicinal purposes, while over 357 species were wild. Globally, although literature shows that the 'wild' is a vital source for medical herbalists to harvest plants, that they are rarely planted and managed on farms (Cotton, 1996; Cunningham, 2001). However, the practice of purposefully planting and managing medicinal plant farms is common among some traditional societies. For example, Schultes & Raffauf (1992) noted, citing Amazonian Indians as example, that while much of the repertoire of medicinal plants are the wild forests, some of the more sacred plant species of hallucinogenic ones are often well managed and taken care of. The planting and care of such plants is often the prerogative of male medicinal healers. In general, as Voeks' (2004) study above shows, the value of subsistence-based places for maintenance and harvesting of medicinal plants should not be undermined.

Finally, it is perhaps worth pausing to state that medicinal plants and associated herbal knowledge of local communities need an organized and sustainable form of conservation (Plotkin, 1995; Cunningham, 2001), as supporting the local herbal medicinal tradition has conservation effects for medicinal plants (Brown, 1992). With the loss of medicinal plants, traditional management and conservation mechanisms, these plants face endangerment. Biocultural diversity loss affects medicinal plant species and its associated knowledge system. Factors such as deforestation endanger the centuries' old traditional medicinal-plant knowledge base, which in turn adversely affects the health and welfare needs of the local community who to a large degree depend on folk medicine rather than on professional healthcare (Cotton, 1996; Toldeo, 2013). It is now known that, as noted above, throughout the world, ancestral knowledge, such as those relating to medicinal plant use, is being lost as local communities are being integrated into the mainstream culture in their respective nation-states. Such erosion of traditional medical botanical knowledge and practice degrades local communities' rights and power to manage and address their health needs in culturally meaningful ways. Medicinal plant knowledge and use maintains such rights, power and needs, in which local peoples have meaningful options in their social, epistemological and ecological systems, and maintain their 'health sovereignty' (Hastwell, 2014; Ruelle, 2014; Hirch, 2011).

In Ethiopia, while there are relatively better works on identifying locally utilized medicinal plants, and cataloguing botanical beliefs and practices, efforts at conserving traditional herbal

medicine itself in planned ways are generally limited. Traditional medicinal botanical knowledge, although resilient due to the effect of sacred forests, is generally on the decline as a whole as modern medicine continues to make aggressive expansion and policies to support traditional medicine, although they exist on paper, are not translated into action in sustained, tangible ways (WHO, 2001a, 2005; Girma, 2011; Birhan et al., 2011; Kibret, n.d.).

In Wonsho, Sidama, Informants were uncertain about the future of their traditional medicinal knowledge and practice. Further, the rights of custodian communities to harvest medicinal plants from community protected areas and sacred sites seem to be limited by a number of legal conditions, although clandestine uses exist as noted above. Histories of repressive policies towards traditional healers and a tradition of 'archaic' patent protection among the herbalists themselves have created a sense of insecurity among traditional healers; a manifestation of this was evident during research as our herbalist informants were summarily suspicious, maintained strong secrecy and were unwilling to yield information, especially on those aspects they deemed as sensitive. Scholars argue that this form of suspicion and fear is a desire to protect their rights to their knowledge. This is considered as a traditional form of protecting their patent rights in a sense but it may lead to loss of vital medicinal botanical information. It appears that if a form of formal recognition and registering of the stock of medicinal botanical knowledge and local discoveries is adopted and those rights are protected, a system that does not currently exist in Ethiopia (Girama, 2011), herbalists might be more open to share their valuable knowledge, which in turn may enable its preservation and continued use.

7.4.2 Summary and conclusion

In the foregoing paragraphs, a range of issues were raised and discussed in three major thematic categories. Section one described the state and characteristics of Wonsho herbal medical system, the place of medicinal plants therein and the way awareness about these is shared and transmitted across the community and generations. Section two dealt with broader roles and relevance of sacred forest sites and other related botanical contexts in meeting community health, para-health and general wellbeing needs, and access and utilization of medicinal plants and other health service resources from these sacred landscapes. Finally, the role of such places in conserving medicinal plants was discussed, outlining types and extent of these in section three. The role of other non-sacred contexts such as agro-forests, managed field gene banks and experimental centres by concerned herbalists, showed how these limited efforts were also important.

Based on the foregoing findings and discussion, the following conclusions may be made. Firstly, on the one hand, in view of the changing social, economic, and political conditions and the aggressive expansion of modern health systems, and weak support mechanisms for traditional herbal medicine, the latter faces endangerment in Wonsho, Sidama, as is generally the case elsewhere in the country and this leads to weakening of the community's choices and independence in regards to manage and deal with local health problems in ways that fit their ancestral values. On the other hand, the presence and maintenance of sacred sites and the traditional herbal medical system's capacity to absorb and incorporate new elements through interaction with modern medicine contributes to resilience of the former and this in turn supports local power in terms of maintaining their own ancestral, culture and local specific health knowledge and needs.

Secondly, related to the above argument, sacred forest sites are repositories for the otherwise and elsewhere endangered medicinal plants species, ensuring their conservation while at the same time serving as places where local communities can turn to for their health needs. Ancestral traditions and sacred forest sites are resilient and are relevant for the conservation of medicinal plants. Sacred site communities, despite not being immune to the impacts of change, and more importantly, while accommodating changes in creative ways and dialectical relationships with modern medicine, have maintained a resilient tradition that is salutary for both medicinal plants and botanical traditions.

Therefore, maintenance of sacred forest sites promotes health and wellbeing, conservation of otherwise endangered medicinal plants and contributes to use and resilience of local herbal medicine as a traditional yet dynamically adaptive system. Community health, herbal medicine and medicinal plants fare better in conditions where sacred forest sites are maintained.

In the following chapter, I continue the analysis of the multifarious consequences of maintaining sacred forest sites by describing the broader socio-cultural, livelihood and ecosystem service provision roles.

Chapter 8. The Role of Sacred Sites in Local Livelihood, Environment and Culture

Reiterating the central aims of the preceding chapters (5-7) may help to situate this Chapter. In Chapter 5, the anthropological foundations for the mutual relationship between ancestral institutions and (tree) biodiversity were examined, explaining why sacred forest sites exist and were maintained, and providing preliminary answers to the question of how such mutual relationship actually works to conserve biodiversity. In Chapter 6, this latter issue was further examined, looking at how the relationship worked to conserve biodiversity in sacred landscapes and other informal protection areas, the types and extent of biodiversity conserved. Chapter 7 examined whether and to what extent medicinal plants, health and herbal medicine fared better in Wonsho-Sidama because of the maintenance of sacred sites.

These chapters did not, however, address well an important question of what roles sacred sites, trees and their maintenance play, beyond biodiversity conservation, in local culture, livelihoods and environment, albeit some preliminary intimations were made in Chapter 4 and 5. So in this Chapter, I examine this question in detail. I will present the findings in four sections with section one and two describing local conceptions of the roles of sacred forest sites beyond biodiversity conservation and overview of the roles in general; while sections three and four present in detail what these roles are and how they manifested in a range of realms. Section five situates the findings in broader ethnographic and historical context through discussion and concludes that maintenance of sacred forest sites plays an important role in supporting local socio-cultural and economic systems and providing cultural ecosystem services in Wonsho, Sidama.

8.1 Local conceptions of livelihood, socio-cultural and ecosystem service roles of sacred forest sites and trees

Wonsho, Sidama and other traditional communities of Ethiopia where sacred forests exist attach high values to a multiplicity of services these generate for them. The services so generated span a range of socio-cultural, livelihood, welfare, environmental, agronomical, aesthetic and other realms. As evidenced from Wonsho findings presented below, local people in Ethiopia are closely and experientially familiar with the roles their botanical environments and sacred forest landscapes play beyond biodiversity conservation.

The roles sacred forests play are manifested in a range of ways, attitudes, proverbial sayings and aphorisms locals make about them in Wonsho. The phrases are not exact renderings of local sayings; rather, they are attempts at capturing what people say about these various benefits of SNS and native trees. Local aphorisms behind these phrases are generated through interviews and FGDs. A Tag Cloud analysis of sixty-five frequent words in selected data sources attest to the fact of such multifaceted uses of SNS and native trees. As the figure below shows, some key uses are reflected in the way ancestors (e.g. 'Abbo', 'ancestral') are mentioned. The social and cultural uses are reflected in 'culture', 'cultural', 'rituals', 'religion', 'grave', etc. The various livelihood and ecosystem services are conveyed through the frequent talks about 'shades', 'soil', 'medicinal', 'firewood', 'water', etc.

Figure 8-1 Tag Clouds analysis of frequent words occurring in local conversations about the values and roles of SNS & trees, interviews, FGDs, October 2012, Wonsho, Ethiopia
(The bolder and bigger the term, the more frequent mention of it.)

The biodiversity conservation instrumentality of sacred forest areas and other informal contexts discussed in the foregoing chapters showed the nature of local understandings about these. It is noted in Chapter Six how locals conceptualized sacred forests and trees as homes, refuges, seed banks and food sources when explaining their biodiversity conservation services. Similarly, they understand the broader socio-cultural, livelihood and ecosystem services of sacred forests and

trees. As noted in Chapter Five, sacred forests and trees are homes, tents, and office spaces to conduct assemblies, meetings, meditations, etc. In agricultural realms, they are conceptualized as soil conservation instruments, fertility management aids and crop productivity boosting agents. In ecosystem service terms, people see them as weather and climate balancers, important hedges and buffers against powerful winds, flood and other natural hazards, reasons for abundance of rivers and springs, sources of their pride, aesthetics quest, overall wellbeing and happiness. In social and livelihood dimension, sacred forests and trees are perceived as hedge funds and capitals for the present and future, welfare and wealth redistribution tools, wealth-ranking indicators, food security supports, cash sources through tourism and other provision of forest products, and a range of other economic aids.

These and other related services and benefits from sacred forests and trees help explain what happens when sacred forests are maintained and how those foundational values, beliefs and institutions discussed in Chapter Five work to generate these roles and benefits to the society.

In the next sections, I examine in detail these roles of sacred forest sites and before going to such presentation, however, I will first summarize the uses local people derives from their trees in general, and put these in some rank orders based on use classifications provided for the 154 identified trees.

8.2 The roles of sacred forests and native trees in Wonsho, Sidama

The sheer number of uses of sacred forests and trees in local livelihood, life ways and environment is astounding. A comprehensive table of local uses of the 154 plants/trees is given in Annex III. The uses amounted to about 43, which are grouped into 14 major categories (*Table 8.1*). The use categorization is based on aggregating the uses of each tree in the list. The uses were further identified through inductive processes, not from some pre-existing literature; during interviews, tree surveys and discussions, informants were asked to enumerate all uses they knew associated with a particular tree or plant. As Annex III shows, all of the 154 identified plants were assigned such locally known uses. The frequency and percent distribution shows how many trees occur in the use category, in a way suggesting magnitude and order of significance trees command in local life. The role of sacred forest sites in this instance should be implicated in the context of its overall significance as a source for the plant/tree resources and in view of it's supporting these local livelihood, social, health and cultural ecosystem service needs.

The six most important uses of plants/trees, based on the sample are medicinal and para-health (50.6%), firewood and energy sources (47%), local construction materials needs (39.9%), fencing and boundary markers (26.9%), ritual and socio-cultural (24.8%) and soil fertility and agronomic management aids (22.9%). The role as sources of fodder (22.9 %), wild edibles and food security supplements (17.6 %) and cash or income earning (13 %) were also significant. Furthermore, although not among the high-ranking use categories here, cultural ecosystem services (e.g., aesthetics, tourism attraction, social welfare and wellbeing) are important.

Table 8-1 Major uses of selected trees (N=154) from Wonsho, interviews, FGDs, tree surveys and observations, 2012-2013, Bokaso, Ethiopia

Category of tree uses	Count	Percent	Specific types of uses
Medicinal and para-health	78	50.6	Treating a range of human and veterinary diseases, aromatic, detergent and cleaning, recreational-social drug substance, and tooth cleaning (chewing stick), etc
Firewood and energy source	72	47	Charcoal, firewood, lighting source, lubricating oil for bakery.
Construction & building material needs	61	39.9	Bridge building, posts and poles for house construction, timber, roof and wall cover, house wall and floor plastering, etc.
Fencing and boundary markers	41	26.8	Boundary marker, dry fencing, live fencing.
Ritual and socio-cultural	38	24.8	Ritual-social use, traditional games, totemic, walking club/aid, spears, shade-recreational.
Soil fertility and agronomic management aids	35	22.9	Soil conservation, soil fertility, shade for crops, and supportive poles for climber crop trees.
Fodder	35	22.9	Fodder for cattle, equines and small ruminants (especially goats).
Wild edibles and food security supplement	27	17.6	Food security source, wild edible plant.
Income source	20	13	Cash trees (e.g. *Khatha edulis*, *Coffea arabica L*, *Persea americana*, *Eucalypetus camaldulensis*, etc.).
Agricultural & rural livelihood and local technology	19	12.4	Beehive hoisting, beehive making, farm tools and tool handles, raw material for traditional hide processing.
Ornamental/ aesthetic	16	10.5	Beauty, ornamental, shade.
Ecosystem services	10	6.5	Wind break, erosion control, "attracts rain", spring sources, etc.
Wood art, furniture, household utensils and material culture	9	5.9	Basketry; fibre; household utensils
Wildlife food	7	4.6	Bee fodder, wild animal food

However, some caveat is in order here. The higher values registered for, say, medicinal plants and para-health use of trees in this case, should not be necessarily taken as evidence that this use is currently the most salient one in Wonsho, Sidama. Uses registered with lower values in this sample, or those even not mentioned at all here, may in actual community contexts be more important. These use rankings are for the set of the trees identified in the study. The 154 trees

and their uses were not selected from some pre-existing literature. They were the result of cumulative surveys and inventories over the fieldwork period. From the other fieldwork episodes, it was, however, readily observed and understood that the most widely reported uses of trees in current Wonsho, Sidama are for economic, agronomic and ecosystem service needs (*see details below in Section 8.3)*.

Economically and socio-culturally salient tree species had multipurpose uses, with some displaying more pronounced uses. Higher, *cultural keystone* trees (See Garibaldi & Turner, 2004) were the most valuable serving a range of community needs along livelihood, health, social, cultural, ecosystem service and ritual dimensions. Some plant species had, based on local reports, a unitary, specialist use in that, other than the salient use for which they are put, it appeared, they had no other local purposes. Such a unitary use may be ritual, social, or economic. Exotic trees such as *bardaffe* (*Eucalypetus camaldulensis*), *afkadose (Persea americana),* and many other fruit trees, serve as important income-earning species. Some locals equate *Persea americana* with the coffee tree, in view of its increasing role in earning cash. Native trees such as *lemicho* (*Yeshania alpina*), apart from their basic livelihood and socio-cultural services, play key roles in supporting household income status through sale of wooden and basketry products, firewood, posts and poles for construction. Small trees, climbers, herbs and shrubs also play important roles in the local livelihood serving the community as good sources of firewood, fencing, sticks, fodder for bees, home and wild animals, as key elements in varieties of socio-cultural and religious rituals, and traditional playing games.

In the foregoing chapters, it has been noted that some trees, mostly native and now increasingly exotic, occupy a salient place in Wonsho, Sidama by virtue of their multiple functions and that local preferences and attitudes to trees depend on such valuable services. It may be important here to reiterate this further that the range of uses and roles sacred forests and individual trees provide for local people hinge generally on a select number of important native and exotic trees. Table 8.2 shows selected trees and their varied roles. It will be demonstrably clear that some of native trees possess truly wide-ranging uses. Trees such as *Podocarpus falcatus, Y. alipna* and *Eucalypetus camaldulensis* may thus be considered as socio-economic keystone trees in Wonsho–Sidama.

Table 8-2 Major livelihood and socio-culturally important woody tree species, interviews, FGDs and observations, 2012-2013, Wonsho, Ethiopia

Local name	Scientific name	Uses
Dagucho	*Podocarpus falcatus*	Totemic, key ancestor symbol, cultural/ritual uses (for *doree* ritual), sitting and meeting venue, shade, ornamental and beauty, wind break, status symbol, timber, pole and post for construction, firewood, berry and bark medicinal, soil fertility, etc.
Seetame	*Olea capensis spp.*	Ritual/totemic, symbolic of ancestors, *balisha*-worthy, homonymic tree, pole for bridge, aromatic, ornamental, shade, firewood, etc.
Duwancho	*Syzygium guineense*	Ritual/cultural, totemic, pole and post for construction, cattle fodder, berry edible for humans, medicinal, charcoal, etc.
Masincho	*Croton macrostachyus*	Pole and post for house construction, firewood, timber, medicinal, totemic, toponymic and homonymic base, etc.
Honcho	*Junniperus procera*	Medicinal, post and pole, firewood, ritual/cultural (*doree ritual)*, cleanings household utensils, etc.
Garbicho	*Ekebergia capensis*	Medicinal, poisonous, firewood, totemic, homonymic, shade, firewood, etc.
Kobire	*Polyscias fulva*	Cultural, beehive, hoisting beehive, timber, fence, firewood, etc.
Wadicho	*Cordia africana*	Ritual/cultural/totemic, ancestral worship, pole and post for construction, timber, fence, cattle fodder, edible, medicinal, etc.
Dugucho	*Pouteria altissima*	Ritual, timber, pole and post, strong wood, for bridge making, etc.
Shohicho	*Okotea kenyensis*	Timber, cultural, leaves wall-plastering stuff for house, shade, etc.
Gatame	*Commiphora schimperi*	Beehive hosting, bee fodder, best quality honey produce, firewood, fencing, etc.
Lemicho	*Yeshania alpina.*	Multi-purpose tree: medicinal, pole and post for construction, house wall and floor plastering, ceiling paneling, embroidery, household utensils, fencing, bed, stools, shelf, baskets, cereal/coffee storage, cultural/ritual (tool handle for spears, fencing around grave yards), beehive making, and various household and farming utensils.
Saticho	*Borassus aethiopum*	Ritual (sacred tree), basketry, ornamental, shade, mats, medicinal, tooth cleaning, hats, etc.
Masincho	*Croton macrostachyus*	Ritual/ totemic (toponymic and homonymic use, leaves used in rituals), pole and post for house construction, firewood, timber, leaves serve as medicinal, shade, soil conservation, etc.
Çaricho	*Euphorbia ampliphylla Pox.*	Firewood, pole and post for house construction, fencing, timber, medicinal, goats' fodder, live and dry fencing, boundary marker, furniture, etc.
Grawella		Live fence and boundary marker, shade and ornamental, construction, fire wood, etc.
Welako	*Erythrina abyssinica Lam.*	Soil fertility maintenance and conservation, cattle fodder, household utensils, socio-cultural (trunk used for making caskets), etc.

A typical rural agroforest in Wonsho is, therefore, a 'natural botanical garden' where a multiplicity of tree species are maintained for such divergent economic, ecosystem service, medicinal and social uses. Having reviewed broader roles and uses of trees in Wonsho, Sidama, I now turn to further examination of the livelihood role of sacred forest sites and local community's dependence on the same for such needs.

8.3 Sacred sites and their roles in livelihoods and ecosystem services

Maintenance of sacred forests and trees generates a range of livelihoods and ecosystem services for local community. The salient ones of these are described below.

8.3.1 Firewood, pasture and wild edibles

Large scale sacred forests such as AWSF particularly meet local community's livelihood needs in such areas as firewood, fodder gathering, wild-honey production and collection, harvesting medicinal plants, wild edible and game collection, obtaining drinking water for humans and cattle, among others. Furthermore, households in closer proximity to such sacred forests also derive other services such as bathing in rivers and springs, washing clothes, conducting market exchanges, tethering or tending cattle, equines or small ruminants.

Figure 8-2 A man gathering dried sticks at AWSF, livelihood survey, October 2012, Bokaso, Ethiopia

Fruits, berries, leaves, roots, tubers and stalks of wild plants and trees from the forests have served as important supplemental food and cash sources for local communities. Some of the known ones are large trees, such as *duwancho* (*Syzygium guineense*), *ejersa* (*Olea europae*) and *lelcho* (*Diphasia dainellii Pichi-Sem*), are well known native trees whose berries have served as important sources of supplemental food and income as well as medicine. Smaller plants such as herbs, climbers and vines are also useful wild food sources in times of food shortage. The climber *surrupṕa* (*Lagenaria siceraria*), for example, is a wild edible with succulent fruit and also medicinal (Pictured in Chapter 7). The wild shrub *hoṕṕe* (*Passiflora edulis*) produces delicious fruits which are also sold at markets generating income for households with an

otherwise lean economic base. *Kire'e* (*Momordica boivinii*) and *sisgorra* (*Rubus apetalus Poir*) produce wild berries for children to enjoy during cattle tending. However, wild edibles have generally declined in their importance because the trees (e.g. *duwancho- Syzygium guineense and lelcho- Diphasia dainellii Pichi-Sem*) are highly decimated through deforestation in non-sacred areas, local community's increasing inclination towards exotic fruit trees in home gardening and also stigma attached to recourse to wild edibles (which is often regarded as a sign of poverty and low social status). A summary of wild edibles is given below (Table 8.3).

Table 8-3 Edible wild plants of Wonsho, interviews, FGDs, inventories & observations, 2012-2013, Bokaso, Ethiopia

Local name	Scientific name	Description	Edible part	Provenance
Marerra	*NA*	Grassy; herb; native	Berry; succulent	AWSF (observed)
Qociqomale	*NA*	Herb; native	Leaf was edible in the past; now obsolete	AWSF(observed)
Gorra	*Rubus apetalus Poir*	Climber; native	Berry	AWSF; farmyards; road sides; (observed)
Sinnolee	*NA*	Vine/climber; native	Berry	AWSF (observed)
Lelcho	*Diphasia dainellii Pichi-Sem*	Native; medium growing tree	Berry	AWSF (Reported);
Duwancho	*Syzygium guineense*	Native; large growing tree	Berry	AWSF; other sacred sites; organizational settings(observed)
Wadicho	*Cordia africana*	Native; large growing tree	Berry	AWSF; other sacred sites ; agroforestry yards; (observed)
Hoṕicho	*Passiflora edulis (Passion fruit)*	Shrub/climber	Berry/fruit; commercial scale- for local markets	AWSF; household back & front yard; (observed)
Surruṕṕa	*Lagenaria siceraria*	Climber/vine	Berry/ fruit; succulent	AWSF; Loggo Haqqa; (observed)
Bukibure	*NA*	Herb; grass	Root/tuber /famine time food (practice now obsolete)	AWSF; (observed)
Ţunayicho	*Solanum nigrum L*	Shrub	Leave/ root	AWSF(observed)
Luquţo	*Diospyros abyssinica (Hiern.) White*	Shrubs/climber	Berry	AWSF(Reported);

Honey production is a key element in traditional livelihood and the product itself is a major ingredient in the practice and continuity of the SAR. Conducting these practices without offering honey is unthinkable, as neglecting the periodical offering of honey mead sacrifices to the ancestors is considered a major dishonour. Sacred forests support local apiculture in important ways. Certain native trees, locals note, are preferred as bee fodder, for their good wood quality for fashioning beehives and for hosting beehives. According to informants, honey produced through use of these tree flowers is the choicest and most preferred. The sacred forest

sites are places where a number of important native tree species exist that serve as key sources of fodder for bees. What informants called '*gatame wojo malawo', ('*white honey from *gatame' [Commiphora schimperi]*) was reported, for example, as one such choice. Such trees are found in sacred forest while they are decimated elsewhere. *Godicho* (*Fagaropsis angolensis*), *gatame* (*Commiphora schimperi*), *kobricho* (*Polyscias fulva*), *had'essa* (*T. nobilis*) and *lemicho* (*Yeshania alpina*) are some of native species utilized considerably in the apiculture sector.

Figure 8-3 Polyscias fulva, a host of beehives, at a cross section of AWSF along with young stands of Podocarpus falcatus, Wonsho SNS & tree survey, November 2012, Bokaso, Ethiopia

8.3.2 Ecosystem services and agronomic roles

According to informants, the presence of sacred forests and native trees generates considerable ecosystem services and their roles in local agronomic practices are high. As informants understand it, Wonsho district in Sidama is among the few that enjoy what they view as a 'better' climate and weather conditions compared to other districts in lowland areas and those locales without sacred forests or other community-protected or natural forests. Cool air, a good and timely rainfall, low flood risks, and windbreaks are among the ecosystem services attributable to sacred forests and native trees. This role would almost always come to the fore during interviews and discussions with local people. Young and old, men and women all talked about this. Informants proudly noted "because of [sacred groves], our district is always green and it has good weather." Informants acknowledge key roles sacred sites play as windbreaks as well, a role highly appreciated. As a woman informant noted, "When a powerful wind blows, it cannot harm this community because [the forest serves as a windbreak]" (Interview, 2012). Thanks to sacred forest and native trees, powerful winds rarely harm homes, crops, and the soil.

A related ecosystem service of sacred sites that locals appreciate is presence and abundance of water sources and springs. Informants proudly talked about the many water springs and rivers that have their sources in the district and "drinking the clean water gives us health." Despite their reported decline over the last decades, Wonsho land continues to benefit from good water sources and this is generally attributed to presence of sacred forests. As an informant explains, "The existence of the forest helps to have good weather and good rain. When there is rain there is water. We have many water springs here … and this is due to the sacred forest. If we do not have the forests, we could not have these resources," (a youth informant, 2012). Wonsho district has many rivers of mid-range size that flow through the land, feeding the bigger rivers in Sidama which in turn become the tributaries of large river and lake systems in the Region.

Equally important is the role these play in agronomic and soil fertility management practices. As noted elsewhere, Wonsho, Sidama agronomic and agroforestry practices heavily depend on trees. Some species are purposely planted in backyard farms to serve as shade for fragile crops and 'cash' trees, and more importantly, as fertility boosting aids ("leaves falling down decompose, thereby converting to good fertilizing stuff for the soil"). Native trees that play crucial roles in these realms include *hengedicho* (*Milletia peruguinea*), *welako* (*Erythrina abyssinica*), *wadicho (Cordia africana)* and *masincho* (*Croton macrostachyus*), among others. Some exotic tree species such as *tansafina* (*Caesalpinia decapetala*), *afkadose* (*Persea americana*) have also an increasingly important role in this.

In general, the roles sacred forests play in Wonsho, Sidama livelihood, agronomy, and ecosystem services are considerable; local livelihood would suffer significantly without these, a fact which was evidenced by over 152 (76 per cent) of respondents in the household survey (Figure 8.3).

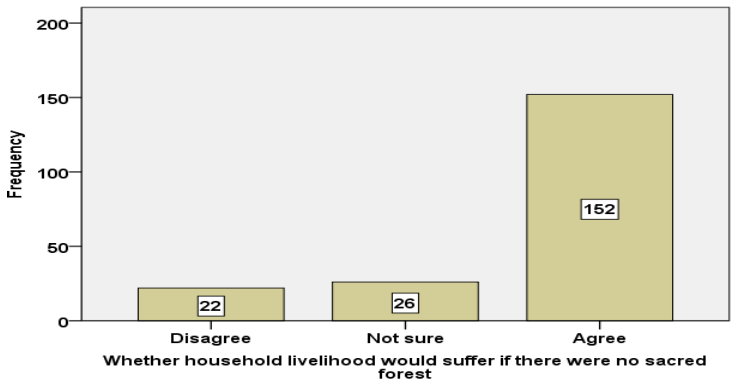


Figure 8-4 Household opinions of whether their livelihood would suffer if there were no sacred forests, HSS, September 2012, Bokaso, Ethiopia

8.3.3 Sacred sites as tourism attraction: supporting local income generation

Children and youth often spend much of their out of school time playing, or hanging out, in and around sacred forests, especially Abbo Wonsho. On special occasions, Sundays and large-scale celebratory events, Bokaso town and the sacred forests would witness many religious tourists and other visitors. Children and youth often act as amateur guides for these tourists, whereby they generate some monetary benefits. People generally cherish the idea that their sacred forests have put their locality in regional, national and even global spotlights. Material and monetary benefits their community derives from tourism are positively received. Many respondents to the household survey mentioned tourism in relation to sacred sites favourably. Asked whether they agreed with the statement ”Exposure of sacred sites to tourism has negative impacts”, 69.5 per cent of respondents (n=200) disagreed, indicating the value people currently attach to translating sacred sites into instruments of community livelihood improvement and income generation. There were no significant differences in opinions on this among religious groups. However, of those who agreed with the statement, those with no formal schooling were more likely to agree.

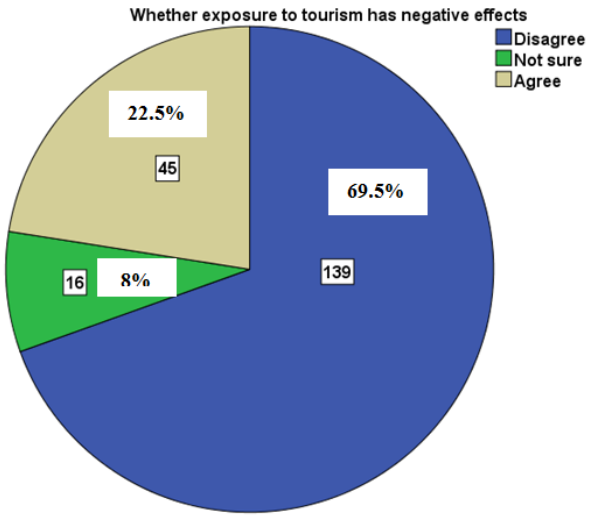


Figure 8-5 Households' opinions on impact of tourism on sacred forests, HSS, September 2012, Bokaso, Ethiopia

In recent years, AWSF has become one of the major tourist sites in SNNPRS. The allure of modern ways of life, increasingly exposed by the coming of tourists to the area with potential material and financial gains accruing to local community, seems to be growing, and there was, therefore, no apparent opposition to the possibility of commodification eroding ancestral values. Religious tourism is a significant aspect of this new economy, as tourists come with the express

purpose of seeking some spiritual guidance and solutions. As mentioned in Chapter Five, the alternative litigation and justice dispensing role of AWSF is known beyond Wonsho, Sidama, attracting customers "even from as far as Addis Ababa," the national capital. "Some known government officials sometimes come here clandestinely, seeking help," informants said. As informants further said, "even *ferenjis* (foreigners) come to Abbo Wonsho" as tourists. Some of the diaspora community also visit and provide material and financial support. This 'sacred sites as tourism attraction' is, therefore, considered as a positive role. Informants, however, noted problems of mismanagement and corruption when material and financial aid from such sources come. Private gains and aspirations, as matter of fact, tend to overshadow communal gains.

8.3.4 Role of sacred sites in community wellbeing and social welfare

One of the main economic and food security functions that are available for poor households is traditional social welfare and resource sharing practices. Sacred forest sites provide economic and social security functions in times of major ancestral ritual events such as *dasho,* where hundreds of cattle may be killed and the meat is made freely accessible to worshippers and other community members. Children, the youth and other poor people are particularly frequent beneficiaries. A youth informant observed:

> When cattle are killed, any willing person can go and participate in eating the meat. … It creates good opportunities for those poor people who otherwise do not have the resource or money to get meat to go there and eat meat freely. [For the community of believers,] this communal meat feasting is a very significant social-cultural value related to the sacred forest site.

Children are the most encountered during visits and surveys at sacred sites. Larger sacred sites such as Abbo Wonsho particularly serve as an important arena where children and young people spend time while tending cattle, gathering firewood or playing. Children also frequent sacred sites looking for possible income and food support from visitors to worship sites. They solicit for possible sources of income by volunteering to run errands, and serving as amateur guides and information providers for visitors. Particularly during major ritual events, they participate as helpers of their parents carrying items such as cooked food items, pots of milk, honey, etc. In a sense, sacred sites thus serve as important 'food banks' and 'wealth redistribution centres' and provide social welfare throughout the ritual calendar.

Figure 8-6 Children waiting on an AWSF visitor's motor bike, observation, October 2012, Bokaso, Ethiopia

8.4 Sacred forests and their roles in preserving local traditions

In Chapter Five, the mutual instrumentality of sacred rituals and (tree) biodiversity was discussed from the perspective of how maintenance of sacred sites serves as a foundation for biodiversity conservation. Here, I examine the role of maintaining sacred sites in preserving the sacred institutions and socio-cultural identities.

8.4.1 Sacred forest sites' role in local culture and identity

The role of sacred sites in defining ethnogenetic roots, reaffirming socio-cultural identities and meeting a range of community needs may be outlined as follows.

8.4.1.1 Totemic symbols and identity markers

The people recognize the important role sacred sites trees play to reinforce identities and promote them. Maintenance of sacred forests at burial sites and individual totemic or shade trees in household front yards today serve as natural devices for preserving a community's social and cultural order, also reinforcing knowledge of past histories and ethnic roots. Sacred sites bear the community's spatio-temporal information, their group identity, spatial landscapes and roots.

This totemization of sacred groves and some individual trees such as *Podocarpus falcatus* and *Olea capensis spp.* was a widespread one among all local informants, particularly the older and SAR practicing groups. The beliefs, knowledge and practices whereby this totemic symbolization is manifested are described in Chapter 5. Very illustrative local aphorisms such as "I see this tree as my father himself," "married women see that place [AWSF] as their in-law

himself," "cutting this tree is like cutting the flesh of ancestors," and so on, are important indications of such symbolization. In the affirmations, enactments and institutionalized protections of this 'belief-knowledge-practice' complex lie the principles whereby ancestral traditions persist. The mutual relationship between forests and individual trees and culture, therefore, contributes not only to the conservation of biodiversity but also to the resilience of local culture and ethnic identity in a dynamic social-ecological system.

8.4.1.2 Person and place identifiers

Botanical names are useful in expressing and immortalizing the community's history and the place of trees in local naming culture. *Garbicho (Ekebergia capensis)* is a totemic tree, for example. The term is also an identification name for the Garbicho clan that descends from Garbe, a son of Abbo. *Seetame (Olea capensis spp.)* is a ritual tree. The term is also a name for a mythical distant ancestor. *Masincho (Croton macrostachyus*) is a totemic tree. The name also identifies a locality. A sacred tree *shisho* (*Rumex abyssinicus Jacq*) identifies a place called Shero Shishame in one of the study localities. *Manissa* (*Trichocladus ellipticus)* is currently used as a personal name. There are many other plant names which serve as personal and place names. Notable sacred forests and massive totem trees are also used as locational reference points and meeting places.

While informants make explicit references to the totemic, religious and other social symbolizations and uses of sacred forests and individual trees, there was limited reference to their roles as place and person name identifiers. Despite this, such a role is important. It is one of the means whereby local people immortalize their memories of ancestral roots. It is also a manifestation of the importance of the biological world (such as trees and animals) in local culture.

8.4.1.3 Conduits of blessing

As noted in Chapter Five, sacred forest sites and some native trees play the role of 'conduits of blessings.' Taking part in social gatherings and rituals is perceived as a means of receiving the blessing of ancestors. As a veteran SAR practitioner noted, "[*Podocarpus falcatus*] has an *atote ['a blessing'],"* and when ones sits under the shade of such a tree or sacred forests to refresh oneself, it is a conduit of blessing. Ritual leaders use sacred sites and tree shade as their seats and pronounce words of blessings to the people from there. As conduits of blessing, sacred trees play a role in cementing local communal relationships. People invoke the names of some known sacred sites and trees to make solemn dealings such as curses, blessings and vows. Pronouncements of blessing, oaths, covenants, and issuing of punitive social sanctions such as

cursing are important values and they are linked to sacred forests and trees. The maintenance of sacred forests and native trees, therefore, engenders such useful socio-cultural services to the local community.

8.4.1.4 Local aesthetic expression

Sacred groves and trees play a role in serving as local aesthetic expressions from which locals derive satisfaction. They are perceived as playing a key role of providing an aura of beauty to a household's and a locality's physical layout; they are the favour and beauty of local farms; front yards and backyards. An interesting aphorism, (noted in Chapter 5), "a neighbourhood without [native] trees is like a sick person" (FGD-older men-1, 2012b), captures this important sense. A woman noted, "Abbo Wonsho is our very own beauty. It is our attraction," (Interview, 2012). Abbo Wonsho, due to its relative vastness and its well established institutional and ritual systems, is particularly a key source of such beauty. Many of local native tree species have a majestic physical feature with their towering height and vast canopy. Added to this is some species' quality of being evergreen. All these add to the aesthetic qualities. Such roles generally contribute to the community's overall well-being and quality of life (as described in Chapter Seven). Maintaining sacred forests and native trees, therefore, has an important role in sustaining a local sense of aesthetics and general wellbeing, and trees, especially native ones, are central to the preservation of such 'ethno-aesthetics'.

8.4.1.5 Shelter

Many informants allude to the role sacred forest sites and native trees play in serving as tents or office venues where ritual leaders and other people may execute varieties of tasks, including sheltering from the sun, rain and wind; praying, meditating and worshipping; recreating, resting and relaxing; debating, discussing and deliberating; and dispensing justice. Ritual leaders, except in few cases, generally use the shelter of sacred groves and bigger trees for their practice as well. This is a very important socio-cultural role. Enactment of serious clan and cultural matters and officiating religious affairs and adjudications of justice are not carried out in ordinary places; for their cultural acceptability and ancestral spirit approval they need to be undertaken at sacred sites. The role of sacred forests and trees as naturally occurring shelters is an important one creating a necessary spatial and cultural instrument.

8.4.1.6 Temple

Sacred sites and native trees serve as temples where worshippers through the instrumentality of these as physical objects meet ancestral spirits, pray to them, placate and worship them. Sacrificial animals are killed there; worshippers feast on the meat and food seated under the

canopy of these trees. The understanding and designation of these places and trees as such was very common and explicit among local informants as well as those from outside the community. As an informant from a dominant mainstream religion noted, "They [the SAR practitioners] consider it [the sacred forest or the tree] as their prayer house." Important rituals of *dasho, ţorosho and kakalo* (described in Chapter 5) are conducted within these temples. There are no impressive stone structures; as noted above, some large-scale sacred sites may have a humble bungalow of mud walls and corrugated iron roofs, but in most cases no such buildings exist. Neither are there pictures or statues of deities or ancestral sprits as medium of worship. The "temple" is the grove, the graveyard, or the symbolic tree standing on or encircling the grave.

As temples, sacred sites play a crucial role in serving the remnant SAR practitioners helping them to express and enact their religious values (and preserve them through practice), to meet the deep longings of the practitioners' psycho-social and spiritual quests, and to thus reinforce their religious identities amidst tough competition for religious allegiance. The actual enactments of such beliefs and practices in turn work towards preserving the ancestral religious system.

8.4.1.7 Alternative courts of justice

The term 'alternative' here is used in the sense of this ancestral legal system operating as an alternative to formal, state legal systems. It is, as informants note, indeed a highly cherished and popular alternative. It caters for the justice needs of considerable and wide-ranging groups of people, both from within the community and outside. This social function is one of the functions that makes the sacred sites institutions considerably relevant in this modern age.

A youth noted: "One important thing that we have here that does not exist elsewhere is that this place serves as a form of traditional court, as an alternative justice dispensing centre, especially for cases that lack evidence. It is a place where justice is sought and executed," (FGD-young men-2, 2013). Local government now collaborates with ritual leaders in handling legal issues. Certain cases that have the qualities of mysticism, elusiveness and minimal evidence are handled by ritual leaders who are believed to be endowed with spiritual insight for finding out the truth through the institution of 'cursing and blessing.' This institution is a key device in settling disputes, finding truth and vindicating the victim. Ritual leaders spend their days in their 'offices' at sacred sites and entertain a range of issues, apart from regular administration of tribunals. The *songo harra* also serve broader roles in dealing with communal matters. Ritual leaders and clan elders get together to discuss and deliberate on knotty issues, and according to informants, there are no issues that may not be settled by this system.

AWSF at present continues to serve as a renowned alternative justice dispensing centre. Every Sunday people come to the site seeking help for a range of issues from "friend denying borrowed money" to "a valuable item stolen", from the misfortune of a mysterious sickness in a family to an issue of childlessness. A salient organizing principle and an underlying value in this jurisprudence role is the still active belief among the believers in the potency of ancestral spirits in effecting blessing or cursing. Ancestral sprits are invoked to find out a "trampled and mystified truth," which is revealed through ritual communication to the leaders. When someone brings a case to the ritual leaders, "their cases are presented to Abbo". According to informants, it is almost certain that the truth will be found out and the victim will be vindicated. If the perpetrator persists in their crime, it is believed that the spell invoked in the names of ancestors will cause sicknesses, madness, poverty, eviction from one's home and locality, and even death.

Interviews with various officers from Wonsho District Administration officials to SNNPRS Culture and Tourism Bureau show how this role of sacred sites is widely recognized. According to an officer at Wonsho District Administration Culture and Tourism Office, "For example, the sacred ritual leaders deal with cases that lack credible evidence or witnesses, whereas the formal legal courts see cases that present evidence and witnesses. In this regard, the traditional jurisprudence has lessened lots of problems [for the community and the Administration]."

The Abboic justice system has had often tenuous interactions with the state legal systems across the various governments since Wonsho, Sidama became part of the Ethiopian nation-state in the 1890s. Most informants were of the view that the Abboic-state legal systems interactions were at their most damaging scale and nature during the Socialist era (1974-1991), while it has considerably improved since the 1990s. As informants reported, the two systems at the present operate in 'smooth and collaborative spirit', each recognizing the legal, jurisdictive prerogatives and remits of the other. Since cases amenable to be handled by each legal system are generally well understood, there are often little rooms for conflict of interests or breaches of prerogatives. When ritual leaders determine that a case is best handled by the state court systems, they refer it thereto. Litigants also know which courts system to choose to to go to depending on the nature of the case.

8.4.1.8 Shade trees

The idea of a "shade tree" occupies a significant place in local conversation about the role and use of trees. Householders' reasons for tree planting mainly include shade values as non-economical which is a great motive for tree conservation in Wonsho. Pressures of a growing population, land shortage and eroding ideological values have resulted in the erosion of non-economic reasons of tree planting. Despite such factors, sacred sites and native trees continue

playing an important role as a source of shade. Shade for fragile farm crops and cash crop trees have already been discussed above. Here the concern is for humans and cattle. The 'tree as office' role discussed earlier is related to this, however, in this case, the main role is the recreational, relaxing and sheltering service that people receive under the soothing shade of graceful trees. Shade trees are good settings for rural people to take shelter from the scorching sun during dry seasons, when temperatures can reach as high as 27^{o}C. Travellers and merchants alike use sacred groves as their temporary shelter; they will sit down and relax, invigorating themselves in the cool of the shade. Children spend their play and recreational times under these trees and students often use them for their studying.

8.4.2 The role of sacred sites in preserving botanical knowledge and tree-based material culture

Ancestral traditions persist in relation to sacred forest sites. In those rural areas where these ancestral traditions continue, the SAR and sacred graveyards, botanical knowledge and ethnobotanical traditions were found to be resilient. Current presence and maintenance of sacred sites serve as a link between Wonsho community's botanical past and future by way of furnishing children and other community members appropriate learning environments whereby useful botanical knowledge is acquired. Of particular relevance are sacred sites serving as an informal school for children and the youth where they find opportunities to relate with the botanical world as they execute livelihood activities.

A brief survey at a major Bokaso open market provided rich insights into such existing conditions and ongoing dynamics of material botanical culture; the survey provided a good opportunity to document aspects of intangible ethnobotanical knowledge systems and forest trees utilized. Informants agree that traditional wood—based objects and intangible cultural diversity in terms of knowledge involved in the artwork are fast weakening in many places in Sidama as they are replaced by modern technological items. The local market surveys, however, provided glimpse of hope on the resilience of local material and intangible botanical culture.

Figure 8-7 An open field market, Bokaso Town, market survey, October 2012, Wonsho, Ethiopia

I was able to inventory over twenty different traditional wood/ plant-based material objects on display in the market, spanning a range of livelihood and artistic spheres, including embroidery, indoor household utensils, basketry products, farm crop and poultry produce containers, beehives, *ensete* (*Ensete ventricosom*) processing tools, cattle dung removal and carriage items, cattle tethering items (ropes), carpentry products (boxes, stools, chairs, beds, tables, etc.), farm tool handles, traditional floor plastering mats, bedding items (mats), hats, etc. The intangible ethnobotanical knowledge system, in terms of technical and artistic skills in making these material objects, was also resilient. This may be considered as an aspect of the role, albeit indirect, of sacred forests in the communities.

Figure 8-8 A young a man displaying zambile (a bag) he made from saticho (Borassus aethiopum), Bokaso open market, market survey, October 2012, Bokaso, Ethiopia

In general, the above roles local communities derive from their sacred sites, and other botanical components, particularly native trees, are very important benefits, or what some call "cultural ecosystem services" (Sarukhan and Whyte, 2005), as components of the ecosystem services derived from biodiversity in general (See discussion below).

8.5 Discussion, summary and conclusion

8.5.1 Discussion

It is perhaps fitting here to introduce this discussion by situating the social, cultural, livelihood roles and ecosystem services of sacred forests and trees within broader importance of plants in general in human society and culture. Elsewhere, it has been reiterated that plants have overall pre-eminence in human society, culture, and livelihood and that indigenous peoples and local communities across time and space have developed inextricable links with the botanical world. It is also noted, emphasizing the role of plants in general, that the development of both material and non-material culture of human society has been tied to plants (Rival, 1998; Moerman, 1998; Deur & Turner, 2005). The ideologies, religious beliefs, practices, livelihoods, medicines, diets, etc., of people all depend on plants; and plants have determined the very course of civilization (Balick & Cox, 1996).

Local communities across the world and from time immemorial have benefited from these important roles of sacred forests and trees. Historical and ethnographic accounts of indigenous peoples and local communities' time-honoured relationship and closer affinity with plants in

general and socio-culturally dignified trees in particular demonstrate the centrality of plants, forests and sacred landscapes (Moerman, 1998; Rival, 1998; Minnis, 2000; Garibaldi & Turner, 2004; Sponsel, 2012). Following arguments from Cotton (1996), Minnis (2000), and Deur & Turner (2005) wherein the pre-eminence of plants in human society and civilization in general are noted, we may safely extrapolate such arguments to the findings and the issue under discussion here. Without sacred forests and trees, it would have been inconceivable to think of a resilient livelihood and social-ecological system as seen in the case of Wonsho-Sidama.

On the other hand, sacred forests and socio-culturally imbued trees have had special places in the course of development of local cultures, livelihoods and knowledge systems. Sacred natural sites have been shown to have a major effect on conservation, ecology and environment (Anderson et al., 2007; Sponsel, 2008; Bhagwat, 2009; Verschuuren et al., 2010). They "promote cultural identity and cultural and historic preservation as well as environmental and biodiversity conservation" (Posey, 2000). In short, they have multi-faceted values in social, cultural, economic, political, aesthetic, recreational and related realms (Sponsel, 2008).

The livelihood and ecosystem services constitute the most immediate, practical and tangible services the community benefits from sacred forest and trees in Wonsho-Sidama. The community's traditional agronomical practices, crop types and their yields, soil fertility enhancement and related activities have been substantially dependent on sacred forests and trees, which are sources of energy needs such as firewood, charcoal, local industry and infra-structural and constructional materials in varied areas such as house building, bridge development, sculpture, wood artwork, basketry, farm tools, household utensils, storage and carriage objects, to mention but a few. They have also served as important sources for harvesting timber and non-timber forest products.

The wide-ranging livelihood and ecosystem services local communities derive from trees and sacred forest sites in Wonsho-Sidama, and in the country in general, are well recognized phenomena. From time immemorial, Ethiopia's sacred and other forest ecosystems have provided varieties of provisioning ecosystem services including: logs (timber), fuel wood, poles, wild food (such as fruits, nuts, pods, leaves, honey, coffee, stalks, etc.), fodder, tannin, spices, condiments, medicinal plants, resin, fibre, oils, gum, incense, etc. They have also provided important other ecosystem services such as balancing climate, conditioning clean air and water, serving as windbreaks, shade and shelter for humans and animals, aiding in soil formation and its fertility management and erosion prevention (Breitenbach, 1963; Azene & Tengnäs, 2007; IBCR, 2009; Negash, 2010; Tadesse, 2012). As other forest areas become more and more degraded, sacred and similar other informally protected forests constitute important remnant

ecosystems for communities across SNNPRS and Ethiopia in general (Eshete, 2007; Negash, 2010; Vaughn, 2010; Reshad et al., 2013). These are important "provisioning", "regulating" and "supporting" services of the ecosystem which human societies across time and space have utilized from biodiversity (Millennium Ecosystem Assessment, 2005; De Groot, et al., 2005; Gatzweiler & Hagedorn, 2013; Jacobs et al., 2013).

One of the ecosystem provisioning roles of sacred forests in Wonsho-Sidama, which is, harvesting of wild edibles thereby supporting food security, perhaps needs further note here. As described above, despite decreasing these days due to a number of factors, local people continue to gain important benefits through a range of wild edibles from their sacred forests. Berries, herbs, leaves and tubers of plants and some wild games such as *hilessa (Lepus curpaeums)* and *heyako (Perdix perdix)* have served as good wild edibles, particularly in time of famine and as a form of recreational practice. In SNNPRS and Ethiopia at large, for those local communities who still practice hunting and gathering, the gathering of wild edibles (both plants and animals) for household food consumption and generation of income remains important (Tilahun & Mirutse, 2010). Despite their perennial importance, however, traditional vegetables and wild edibles in Ethiopia have received little attention (Zemede, 2014), and the roles of sacred forest sites in this regard are not well understood. Overall, consumption of wild edibles has been an important source of food security for communities in Ethiopia, especially during times of food stress such as hardship, war, drought and related crisis (Getahun, 1974; Yves & Dechassa, 2001; Vivero et al., 2005)**.**

The roles sacred forests sites play as tourism attractions, and the local perceptions and attitudes concerning these were described above. We have seen the generally positive stance local people apparently maintain with regard to this and it is also noted how such a sensitive issue needs to be taken forward cautiously. In recent years, Ethiopia has drawn attention of international tourism as its geo-diversities, cultures, peoples, history and paleoanthropological facts become better known. Apart from the foreign currency generation from this, however, concerns about perceived and actual negative impacts have surfaced in policy debates (FDRE-MYSC, 2005; Saundry, 2011; Officer, SNNPRS-CoN, 2013; Officers, FMCT, 2013; AllAfrica Com., 2014). In the global arena, with respect to the commercialization and promotion of sacred sites in general, tourism development commands mixed stances. Sacred sites have practical relevance for socio-economic development as centres of ecotourism (Posey, 2000; Sponsel, 2008). According to DeGroot, et al. (2005: 457), approximately 30 per cent of the revenues from global tourism industry "are related to cultural and nature-based tourism." However, opening up sacred sites for the generation of income through eco-tourism may cause negative effects (such as desecration) on local community and clashes over local ancestral land use rights (Johnston,

2006; Shinde, 2007; Saundry, 2011). In some cases, native access to their ancestral territories including sacred sites which fall within the protected area of national parks or other bio-reserves is restricted, or their ancestral sacred lands taken and put to other land use needs thus alienating the locals from their centuries' old traditions and territories (Igoe, 2004; GVI Kenya, n.d.; Githitho, n.d.). Furthermore, such tourism promotion and development roles of sacred natural sites are seen as, as some think, tools for some form of subtle extraction of local community's rich multi-purpose heritages by outside agents (Shiva, 1998; Johnson, 2006).

Findings above on the Wonsho-Sidama community's reliance on their sacred forest sites and native trees for maintaining their ancestral traditions, enacting rituals, and engaging in a range of socio-cultural domains demonstrates the continuing relevance of sacred forests in enabling local communities to effectively manage their socio-cultural affairs. The Wonsho-Sidama community utilizes sacred forests and native trees to understand, express, promote and sustain their cultures, identities, social structures, organizations and institutions. Sacred forests and individual species of trees provide them cultural memories of their past and ancestral roots. Such varied and time-honored societal arrangements are not possible without the contributions of sacred forests.

From time immemorial, sacred forest sites and native trees have provided key cultural ecosystem services and played valuable roles in social welfare, cultural diversity and continuity. Throughout Ethiopia, keystone trees such as *O.europea*, *Podocarpus falcatus* and *Junniperus procera* play key socio-cultural and security roles. The trunks of some sacred tree, for instance, were known to have provided practical social contributions such as temporary shelters from rain, hide-outs during time of war, sentinel posts, storages for valuable items, etc. (Negash, 2010; Bekele, 2012). These important cultural preservation and practical social roles of sacred forests are well recognized in the existing literature.

Sacred forests promote cultural identity and cultural and historic preservation (Posey, 2000; Chouin, 2008). This is indeed a salient role. Sacred forest sites, native trees and other sacred landscapes promote a community's identity, preserve its culture, manifest its cultural domains, and validate its claims of rights, historicity, roots, and allegiances to specific spatio-temporal and locational claims (Davis, 1994; Park, 1994; Toledo, 2002). As noted in earlier chapters, the very material presence of a sacred forest site or a respected socio-cultural tree in a given landscape is not only a testimony to how and why the community has maintained the sacred landscape, but also what actual benefits and services they are generating from that sacred landscape (Verschuuren et al, 2010*)*. As seen in Wonsho-Sidama study, for local people, the issue of identity, culture, traditions, socio-cultural organizations and a whole range of other

related values are contingent on maintenance of sacred forest and trees. By so maintaining, therefore, local communities are beneficiaries of such defining roles.

Figure 8-9 A sacred Podocarpus falcatus at a road side in Huleteŋa Ferro, SNS survey, November 2012, Wonsho, Ethiopia
(The trunks of some sacred trees serve as temporary shelters from rain)

The case of sacred forest sites and some socio-culturally important trees serving as religious temples and worship objects is a key aspect of the issue of identity and culture. In a highly changing world in general and in a regional context where various religions compete for pre-eminence, the mainstream religions often supplant the ancestral religions (Hamer, 2002; Tekle et al, 2011). Having sacred forests and socio-culturally imbued trees as religious objects is an important tool and evidence for local communities to show the vitality of their ancestral religious identity (Maffi, 2010). The fact of ancestral religions vitally linked to a botanical territorial scale, thereby supporting biodiversity and environment in general, is an important dimension that provides a crucial benefit for ancestral religions. It helps generate positive attitudes and sympathies from the government and other concerned agents, although it is also often seen as patronizing and romanticizing (Igoe, 2004; Johnson, 2006). Sacred forest sites make this possible. Wonsho-Sidama ancestral religious institutions utilize sacred forests sites, trees and other landscapes, as mediums of worship, not the objects of worship in the sense that people venerate trees or groves per se (as described in Chapters 4 and 5). The services the latter provide for the former are one of salient positive outcomes of maintaining sacred forests and native trees. What Cunningham (2001) calls a 'theology of the environment' explains the SAR whereby veneration of ancestors is central. Such a system is in turn possible through the spatio-temporal, symbolic and practical services sacred forests provide.

The 'alternative jurisprudence' role of sacred forest sites as spatial contexts for the conduct of the tribunal court is an important institution in Wonsho, Sidama (Teshome, 2009), and an

ancient and on-going one in Ethiopia and other traditional societies around the world. In Ethiopia, various researchers have documented traditional spirit possession cults associated with ancestral religious institutions, which often involve 'investigation of cases and passing of court decisions'. These often are tied to sacred natural or other man- made sites (Hamer, 1976; Ishihara, 2009). This a form of what Ross (2008) calls 'palaver trees' when writing about the role of trees and groves as venues for community dialogues and public and justice administration in Senegal. The palaver tree concept has become an emblem of African grassroots democracy that has existed for millennia (*Ibid*).

Some consider the cultural, religious, social, aesthetics and tourism roles of sacred forests and tree biodiversity as 'cultural ecosystem services'. De Groot, et al. (2005: 458) call these "cultural and amenity services provided by ecosystems and landscapes." They categorize such services and amenities in to:

> … cultural identity (that is, the current cultural linkage between humans and their environment); heritage values (''memories'' in the landscape from past cultural ties); spiritual services (sacred, religious, or other forms of spiritual inspiration derived from ecosystems); inspiration (the use of natural motives or artifacts in arts, folklore, and so on); aesthetic appreciation of natural and cultivated landscapes; and recreation and tourism

Biodiversity such as sacred forests and trees, therefore, not only provide (materially based) ecosystem services that local people directly consume, but they also generate non-material, socio-cultural and spiritual services. These cultural ecosystem services, are equally important as they have high significance for a community's general wellbeing and socio-spiritual development (Millennium Ecosystem Assessment, 2005; Jacobs et al., 2013; Gatzweiler & Hagedorn, 2013).

8.5.2 Summary and conclusion

This Chapter has examined the roles sacred forests and native trees play beyond biodiversity conservation in Wonsho, Sidama. Emphasis has been placed on their roles in supporting local livelihood, cultural ecosystem services and agronomical systems through a range of mechanisms. These mechanisms included serving as freely accessible sources for meeting immediate livelihood and other practical social needs and local material cultural development; protecting local, topographic and environmental health through buffering erosion, winds, drought; boosting soil and crop productivity; enhancing socio-cultural capital by reaffirming identity, enriching cultural memory and preserving local socio-cultural identity, structures and institutions, etc. The central role of plants in general and sacred forests and native trees in particular in broader ethnographic and historical contexts are further discussed.

The results and discussions generally attest to the time-honored value and role of plants in general and forest biodiversity in particular in human society and culture. They demonstrate the crucial roles of sacred forests and native trees in the development, continuity and vitality of local socio-cultural traditions. Sacred forests and native trees are the very foundation on which local livelihood, ecology, and socio-cultural systems depend. Their roles in wide-ranging dimensions across these livelihoods, environmental and socio-cultural realms are astounding.

Sacred forest sites are the evidence of human influenced nature: they demonstrate the way traditional people have managed forests. Such forests are not only the collection of trees or those that provide livelihood and material ecosystem functions, but they define the holistic socio-spiritual and ethnohistorical identity of an ethnic group. Besides being safe havens for biodiversity they contribute towards community identity continuity and cohesion.

In general, the mutual relationship that exists between culture and forest biodiversity works not only to conserve the latter but also to preserve the former. Maintenance of sacred sites promotes livelihood and cultural resilience, contributes towards healthy and secure society and environment.

In the following chapter, I will examine the various types and sources of threats that face sacred forest sites, trees and ancestral traditions in Wonsho, Sidama; I will also discuss existing governance frameworks, policy environment and conservation and protection actions in place.

Chapter 9. SNS, Threats, Governance Frameworks and Conservation Actions

A multiplicity of factors exists that challenge the integrity and continuity of sacred forest sites and ancestral traditions in the study communities; the benefits arising from them that support both the biodiversity and local socio-cultural and livelihood systems are also at stake. This Chapter reviews findings on the facts, processes and drivers of such threats (Section 9.1-9.3) and what governance frameworks and conservation actions currently exist, both at grassroots and organizational scales (Section 9.4-9.5). Section 9.6 discusses the results in a broader context. The Chapter concludes that internally and externally driven threats exist (the most salient being socio-economic and demographic pressures, coupled with inappropriate polices or when such exist, weak implementation capacities), and that the ritually-based past governance frameworks are now being replaced by collaborative governance and emerging conservation actions that, despite registering some good results, were found to be fragmented, unsystematic and poorly resourced.

9.1 Overview of state of biocultural diversity

In Ethiopia, the endangerment of biocultural diversity is well recognized. Specifically, tree biodiversity has faced serious endangerment and, as discussions below show, a number of the country's native wood species are on IUCN's Red List (Vivero et al., 2005, 2006). Native forest species are particularly at risk and current management focus is on ex situ and in situ conservation strategies for these species (Director, BIE, 2013). Wildlife, native land races, cattle, equine and ruminants are also endangered (IBCR, 2009). Traditional biodiversity-friendly knowledge systems and sacred natural sites also face an increasing scale of endangerment. According to the Federal Ministry of Culture and Tourism, among other things, biodiversity-friendly values are declining as society increasingly succumbs to multiple forces of erosion (Officers, FMCT, 2013).

In SNNPRS, various conservation actors appreciate the fact and scale of the erosion of biocultural diversity. What an expert informant dubbed the Region's 'biodiversity supermarket', is facing increasing demographic pressure, agricultural intensification, deforestation, the impacts of unsustainable 'development' and urbanization processes. With respect to the threats to tree biodiversity, according to experts, there is no systematic information on their IUCN endangerment status. However, in general, some forest (native tree) species of the region are on

the IUCN list of "rare, endangered and unknown categories" (Experts, SNNPRS-BDC, 2013). The informants further noted the increasing endangerment of native biodiversity and local livelihoods due to expansion of invasive species. The likes of *Lantana camara,* for example, were mentioned as growing challenges (Ibid, 2013).

According to officers at the SNNPRS Bureau of Culture and Tourism, cultural diversity erosions, the weakening (and in some instances loss) of useful, biodiversity supporting values, belief and knowledge systems and institutions (such as the ones discussed in Chapters 5 through to 8) are becoming more evident. One of the drivers of these changes is modernization, the process of replacement of local, traditional value and belief systems and practices with outside (often thought of as Western-originated) value systems (Spencer, 2010). Other causes, often not unrelated to modernization processes, include modern education, urbanization and religious conversions. The effect of 'modernization' in the context of this study may be further understood as the process whereby local communities succumb to the influences of other dominant cultures—which could be western originated or those of majority ethnic groups in the country—through exposure to modern media, education, religion and similar processes, and then abandon or gradually get detached from their ancestral values. Grave-site tree planting being replaced with erecting modern stone structures (discussed below) is a good example. Informants at the SNNPRS BoCT note 'development' activities that do not take into account appropriate environmental and cultural impact assessments sometimes threaten useful cultural diversity, as in, for example, a number of controversial mega-infrastructural projects that reportedly interfere with local cultural and natural heritages (Officer, SNNPRS-BoCT, 2013).

An increasing concern for the Regional Council of Nationalities and BoCT is the erosion and loss of useful environmental and biodiversity knowledge systems and institutions in favour of less plant-friendly lifestyles and unsustainable consumerist behaviours among many local communities. Thus, a key task at present for the Bureau is "studying some of the long abandoned useful values and institutions," (Officer, SNNPRS-CoN, 2013). As my informant suggested, the allure of urban, glittery lifestyles are reflected in a range of dimensions such as costumes, culinary practices, material culture, beliefs, and so on, in even the "remotest parts of the country." This process of abandonment is a gradual one that has been in the making over the last several decades, though its momentum has increased particularly since the early 1990s, with the introduction of the current government. While constitution[10] and policy exist that encourage peoples of the country to resuscitate, promote and develop their own cultures, languages, histories and identities (FDRE, House of Representatives, 1995; MoCT, 1997, 2000), there also

[10] Some, however, accuse the current constitution and government as a cause for ethnic tensions and conflicts through its ethnic-based regional divisions stating that this is in some places a factor in increased encroachments into church forests and other forest areas (see for example, Tsehay Berhanie-Sellasie, 2008)

appears to exist a hidden process, working through the 'invisible' forces of cultural and economic globalization, increasing reliance on a market economy and new visions of a modern way of life, that cause many indigenous peoples to abandon their ancestral ways. The current values and practices of many heretofore secluded native communities, especially in south-western part of Ethiopia (where much of the country's ethno-linguistic groups exist and therefore the focus of national and international 'ethnographic' tourism) are in the process of syncretisation, and this is one of the policy concerns for the government (Officer, SNNPRS-CoN, 2013; Officers, FMCT, 2013; Saundry, 2011).

Similarly, sacred forests and related ancestral traditions face continuing and increasing endangerment through a "shift in the religious ideology, economic problems and the increasing population and climate change," (Forestry expert, SNNPRS-BABR, 2013). What the SNNPRS BoCT senior culture expert dubs as 'modern religions' pose serious threats to sacred forests. According to him, such religions, particularly Protestant Christianity, help engender an erosion of the fear and respect people used to have towards ancestral spirits and sacred forests; at worst, they often equate such places and associated rituals as backward, unhygienic and demonic (Officer, SNNPRS-BoCT, 2013).

In Wonsho and across other districts in Sidama, environmental degradation and biocultural diversity erosion exist together as major problems (Expert, SZ-ANRD, 2013; SZ-BD Expert, 2013; Officer, SZ-CTD, 2013). Section 9.2 below presents findings on this.

9.2 Biocultural diversity erosions in Wonsho, Sidama

9.2.1 Local understandings and parameters of biocultural diversity erosion

How do local people define or describe an erosion or endangerment of biocultural diversity (such as native trees, wildlife, or their knowledge and sacred ancestral values)? This is an important question and I will briefly review the various local phraseologies and aphorisms, used as indicators of the fact and process of erosion. A range of indicators of erosion are implied in the way people talk about the endangerment of floral and faunal diversity, sacred forest sites and ancestral traditions in their localities. In general, the idea of a tree or a wild animal in a precarious state is well understood. Local conceptions of a tree or wild animal's endangerment is often expressed as "[Such and such tree] is now lost in our locality," "[Such and such tree is now] extremely rare," "completely lost from household farmlands," "you could not find even a single individual these days," "Trees like *duwancho* [*S. sygyzium*], *itancha [Dodonaea*

angusitifolia] and the like are known only by name,*"* etc. An informant commented, "If you ask [a young person] about what a hare or a gazelle is, he may not know it." Another informant said *"Lemedihanitnet enquan bitfeligew aygenyim!"* a well-known aphorism that may be rendered as 'Even if you wanted it as a medicine to save a dying person, you could not find it.' As for sacred forests, they used to "cover the entire land"; there were "forests everywhere" but now these are "lost in many localities."

A salient concern that surfaces in local conversations of biodiversity endangerment relates to native trees. Understandings and parameters of endangerment are not uniform or clear, some claiming "many native trees are already lost from their locale," others acknowledging all native trees that existed from time immemorial "exist today"; still others saying "most native trees are on the verge of extinction," etc (see Figure 9.1). However, a unifying concern across all the range of views and social categories is the fact that native trees are declining particularly fast and with them many traditional agronomical, livelihood and ecosystem services have been at stake. According to informants, some native trees such as *Syzygium guineense* and *gowacho* (*M. lancolelata*) are so rare, such that, in the words of an educated local informant, speaking in Amharic, the national language, "*Le-tarik enquan adisu tiwuld enezihin ayawqim!*" an aphorism that may be rendered as, 'even for history itself[11], the younger generation does not know anything about them' (Officers, SCRBO, 2012) .

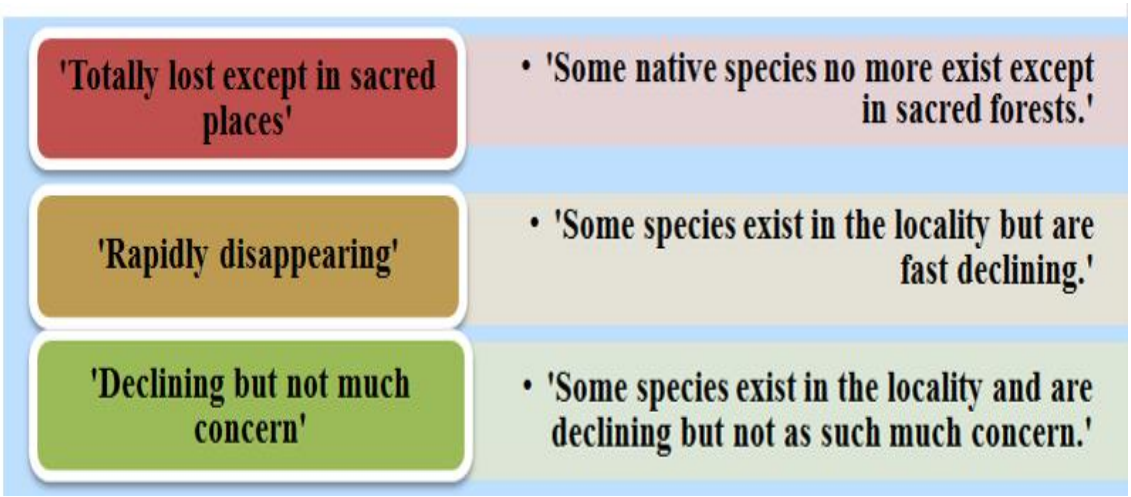


Figure 9-1 Local conceptions of endangerment levels of tree biodiversity, HHS, interviews & FGD, 2012-2013, Wonsho, Ethiopia

Local conceptions of the effects of biodiversity decline and loss, particularly native trees, generally call attention to declining productivity in soil, low crop productivity, and changing

[11] A rendering of local idiom that is expressed when talking about how something has become extremely rare.

climate conditions. An elderly informant, for instance, lamented how "we used to produce a real *wesse* [*Ensete ventricosom*] in the past, but now productivity has declined and the soil has become infertile. We have a soil with no minerals. Many people have left their locale and gone away to other places because their land has become dry and infertile." Another informant told, "These days our cattle do not grow well, because there are problems of grazing lands as more and more lands are being cultivated." This is a phenomenon common across the country (Taddese, 2001). Further, decline in native forest species is perceived as causing what another elderly informant understood as a changing pattern in rainfall. He said, "Since natural forest has declined, we have now erratic rainfall."

Generally, perceptions of local people about the trends, direction and scope of change in their local biodiversity, environmental conditions, livelihoods and ancestral traditions are often difficult for comparison. Local perceptions of the trends in the change in the conditions of productivity of their lands, crops, animals, etc., generally take a temporal comparison scale, whereby they describe changes over a span of usually decades (which could be from one to several). A common temporal reference point is often a rough time frame of "the past." Thus, informants may refer to "in the past," or "the good old days of our fathers and grandfathers." Sometimes, more specific temporal scales may be given as in such expressions as, "In the last twenty to thirty years most of the land became bare of forests," or an old man of 70 or 80 years old may say, "When I was a child, our entire area was covered with trees," etc. Reference to central government era or key historical events such as coming of missionaries into the area are also useful indicators in the local perception of trends and changes in local botanical landscapes, as in, "This *bardaffe [Eucalypetus camaldulensis]* was introduced into our area during early years of Haile Selassie [I- 1930-1974]." Changes in local botanical landscape in terms of composition of species, such as fruit trees, for example, are linked to the Christian missionary introductions beginning from the 1940s and 1950s, when many of today's nativised exotic trees such as *Persea americana*, *Mangi feraindica,* were introduced, as informants note. Introduction and expansion of cash crop such as *Katha edulis* are also important indicators of this process, which, according to informants, became popular since the 1970s (Hamer & Hamer, 1994).

9.2.2 The fact of endangered sacred forests and native tree species

Wonsho land teemed with trees and sacred forests "just a couple of decades ago" as noted above. Many have been totally transformed and some existing ones are extremely degraded. Communal and clan-based sacred forests have particularly suffered, many of them being subjected to growing needs of a growing population through conversion to agriculture. Many communally-owned ancestral sacred places were in some cases divided up and apportioned

among landless people during the Socialist Regime (1974-1991) (FGD-older men-1, 2012; KI-AiO-RA, 2012). More recently, local development projects such as schools, open market places, roads and urban development have been built on cleared sacred forest areas. In many other instances, privately managed sacred groves have been cut down to meet the economic needs of households, with the timber being sold off and the land used for agriculture. In certain instances, religious conversions have led to felling and degrading of sacred groves as a symbolic gesture of severing one's link to an 'older', 'backward' way of life (Hamer, 1976, 2002). However, our survey identified at least four cases of sacred forest maintenance by ex-SAR practitioners, suggesting that the widespread idea that 'conversion to other religions, particularly evangelical Christianity, leads to destruction of sacred groves' is more stereotype than fact.

In general, changing demographic conditions resulting in rapid population growth, increasing problems of land shortage and economic challenges, as well as the seductive idea of gaining quick cash, have been and continue to be a challenge to sacred forests and native trees. Illegal encroachments especially into communal sacred forests are a growing threat, a fact necessitating local government to establish a strict form of patrolling and controlling these areas during the past three years (from the time of fieldwork in 2012/2013). As informants noted, a recent issuance of a new local government by-law that stipulates, "Even private custodians of household sacred groves may not cut their trees at will and any felling down of sacred grove trees will require permission," indicates the growing extent of internal threats to sacred forests and native trees.

Table 9-1 Some 'extinct' or 'transformed' sacred forests in surveyed localities, interviews & FGDs, 2012-2013, Wonsho, Ethiopia

Name of sacred forest	Major tree species	Conservation state	Reason for endangerment
Komole	*Commiphora schimperi, Syzygium guineense, Cordia africana, Hagenia abyssinica*	Disappeared	Household agricultural conversion
Haraka	*Rhus glutinosa, Cordia africana, Syzygium guineense, Croton macrostachyus*	Disappeared	Household agricultural conversion
Arache	*Podocarpus falcatus*	Disappeared	Household agricultural conversion
Bollo	*Yeshania alpina*	Declined and degraded	Household agricultural conversion
Madale	*Syzygium guineense*	Disappeared	Household agricultural conversion
Kotte	*Podocarpus falcatus*	"Now there are no trees"	Household agricultural conversion
Hambasa	*Podocarpus falcatus, Croton macrostachyus, Celtis africana*	Disappearing; "now few exist"	"Land converted to a community school building"
Gullo Gowwa	*Cordia africana*	"Now almost all cut down; only remnants exist"	Household agricultural conversion
Mamuna	*Podocarpus falcatus*	"Full of podo trees where people worshipped in the past; now it is obsolete."	"The perimeter is now converted into open local market and farm place."
Golola	*Podocarpus falcatus*	"Half of the space is farmed; about 50 sacred trees stand."	Household agricultural conversion

Some of tree species in Sidama are highly endangered in the sense of their rarity in occurrence and in some cases their virtual disappearance from front and backyard farmlands and wood plots of households. According to local informants, some of these trees are already lost from such spaces and are wholly limited to sacred groves (Figure 9.1). On the other hand, some of the trees that were not originally part of the sacred forests are virtually lost.

Ritually important trees, that have held immense ideological value and form the foundation of traditional sacred site maintenance and conservation, are generally more threatened than others. The highly versatile economic use of these trees, rather than their status as ritual trees, is the main factor in their endangerment. Some of these trees are also cultural keystone species. The most known such 'cultural keystone trees', *Podocarpus falcatus* and *Olea capensis spp.*, are also the most highly sought after due to their versatile livelihood uses. Some of these species, according to local botanical knowledge, are difficult to manage and replacing them with new seedlings is increasingly difficult as these get older. For example, one of these trees, *Olea capensis spp.,* is getting lost in many localities and in some areas it is believed to be "now totally lost," as the last aged ones die and "its seedling is not easily found." Similarly, *Syzygium guineense,* another important tree, faces similar predicament due to its perceived hard biological management. The cases of such ritually important and highly endangered trees were also a matter of concern for the Wonsho District Administration (Head, WDCTCO, 2013).

Table 9-2 Some woody tree species locally reported as endangered, HHS, interviews & FGDs, 2012-2013, Bokaso, Ethiopia

Local name	Scientific name	Main reason for endangerment	Reported recognition of endangerment	Observed existence during surveys
Dongicho	*Prunus africana*	Overuse (medicinal)	Highly endangered; "totally lost elsewhere"	Only three individuals were observed at AWSF during inventories at AWSF
Seetame	*Olea capensis spp*	Overuse; locally perceived difficulty in managing; hard to find seedlings	Highly endangered; very rare sightings	Very rare sightings; only few exist in AWSF; little or no sightings of growing ones. No seedling management plan
Dagucho	*Podocarpus falcatus*	Overuse; deforestation	Declining	Relatively abundant as shade tree; family grove, clan sacred sites; organizational settings; churches; also promising seedling propagation by local government
Duwancho	*Syzygium guineense*	Overuse for charcoal, pole and posts. Difficulty in seedling management	"It is almost lost outside of the Abbo Wonsho [and other] sacred sites."	Very rare sightings at AWSF and some other sacred sites. No seedling management plan
Dugucho	*Pouteria altissima*	Overuse for timber and construction needs; perceived difficulty in	"*Dugucho* is also more or less lost from our locality"	Rare sightings. Only few old individuals stood at AWSF. No seedling management plan

Local name	Scientific name	Main reason for endangerment	Reported recognition of endangerment	Observed existence during surveys
		management		
Lemicho	*Yeshania alpina*	Overuse; deforestation	Declining	Sighted at some places.
Sidancho honcho	*Junniperus procera*	Overuse; difficulty in seedling management	Fast disappearing	Very rare sightings; those sighted only limited to sacred site.
Falako	*Macaranga kilimandsharica*	Overuse	Lost in farm yards; "found only at the sacred site"	Not observed
Çuço	*Maytenus arbutifolia (A. Rich.) Wilczeck*	Overuse	Lost elsewhere	Observed
Kobire	*Polyscias fulva*	Overuse	"Almost lost elsewhere but are found here"	Observed
Oloncho	*Rhus glutinosa A. Rich*	Overuse	"Almost lost elsewhere but are found here"	Observed
Ejersa	*Olea europa*	Multi-purpose overuse	More or less disappeared.	Sporadically existing
Kincho		Medicinal overuse	"Almost lost not only from this locality but also from entire Sidama"	Not observed
Dadako	*Hagenia abyssinica*	Medicinal overuse; changing climate	Disappearing but promising propagation management going on	Observed
Shohicho	*Okotea kenyensis*	Cultural overuse	"Disappearing"	Sporadically existing
Itancha	*Dodonaea angusitifolia L.f.*	Medicinal and firewood overuse	"Now disappeared from the locality*"*	Not observed
Maticho	*Acokanthera schimperiAlbizzia gummifera*	Medicinal & firewood overuse	"Now almost lost"	Observed rarely
Gancho	*Santalum ellipticum*	Overuse	"Totally lost"	Not observed
Shisho	*Celtis africana Burm. F.*	Overuse	"Declining; exists only at sacred sites"	Observed at sacred sites
Gidincho	*E. cymosa*	Overuse	"Fast disappearing"	Observed at sacred sites
Oloncho	*Rhus glutinosa A. Rich*	Medicinal & livelihood overuse	"Fast disappearing"	Observed
Hagalcho	*Flacourtia indica (Burm. f.)*	Wild berry tree	"Has disappeared"	Not observed

The case of the native tree *dongicho, (Prunus africana),* drew much attention during fieldwork, as informants made many references to its rapid decline through medicinal and other livelihood exploitation. It appears that centuries of *hammessa* practice (traditional 'vaccination' for infants,

See Chapter 7) from decoction of barks of this tree have been contributing towards its decimation. According to informants, the tree has disappeared from household farms; the most likely place to find it today is in sacred sites. Even there, these are hard to spot. Actual field observations and surveys appear to confirm this. I could count only three individuals during the fieldwork at AWSF and other places, and it was observed that de-barking and branch lopping on these trees and others were common. Native trees with key livelihood uses and core medicinal values were in particular in a more susceptible state in Wonsho, Sidama.

Figure 9-2 De-barked Podocarpus falcatus (left) and Prunus africana (right) at AWSF, SNS survey & observation, December 2012, Wonsho, Ethiopia
(Spotted during a repeat transect walk with a forestry expert and child informants)

In general, threats to sacred forests and native trees exist in Wonsho, Sidama and they have escalated over the recent few decades, the most salient factor being understood by informants at all scales as changing demographic trends resulting in population growth, which is then generating a host of socio-economic and livelihood pressures. Ancestral traditions and sacred forest institutions that have espoused such landscapes and tree biodiversity so far, despite resilient, also face endangerment as discussed below. In the following paragraphs I summarize findings on wildlife endangerment.

9.2.3 Endangered fauna

While much more attention of conservation efforts dwells on the nation's fauna, at the local level, at least in Wonsho, Sidama, the phenomenon of endangerment of the fauna, both domestic

and wild, although no less a fact, are not equally appreciated and felt, their past and present place and role in defining the community's ethnohistoric and livelihood identity being overshadowed with trees and sacred forests. At Sidama zonal scale, concerns about the endangerment of native poultry, small ruminants, cattle and equines are evident (SZ-BD Expert, 2013), a concern that also exists at the national scale (IBCR, 2005). In Wonsho, locals noted the progressive decline of these domestic animals, as "land shortage and decreasing pasture causing problems managing these cattle."

As for the wild fauna, they are evidently endangered and talk of how the land in a bygone era teemed with varieties of wildlife was common. As an elderly informant noted, many fauna existed in the past and people "lived peacefully with wild animals without harassing or killing them; now such a way of life has disappeared. The forest has declined… Most of the wild animals have disappeared. Even here in our locality, we do not see them anymore." Informants invariably noted rapid human population growth resulting in deforestation and bush clearance as a major culprit for the decline in wildlife. Many wild animals fled as bush and smaller wild plants supporting them as shelter and food were cleared. As an informant noted, "there are no wild berries [in abundance] and the forest is no longer thicker enabling them to [get enough food and also take refuge in the forest]…They do not find sufficient diet to feed themselves in the forest. Only Colobus monkeys exist now."

Killing wild animals for food, recreation, as retribution for destroying crops and domestic animals, and other cultural reasons, may have contributed to the decline of some fauna. Informants did not establish such a link, although killing wild animals for such reasons is recognized. For example, as noted in Chapter Six, "For circumcision ritual, a bird called *wolima* [*Tauraco ruspolii*] is hunted and killed." This bird, Ruspoli's Turaco, is killed for its colourful feather, which is required as an adornment for the initiate. The bird is now limited to sacred forests. Some fauna that used to exist in larger sacred forests, such as Abbo Wonsho, have declined as they got killed or chased away for attacking crops and livestock and pets. In one case, I witnessed a freshly killed fox in a ditch in AWSF, allegedly killed for eating someone's chicken.

Figure 9-3 A Wolima (Tauraco ruspolii), October 2012, Hawassa, Ethiopia
(Source: A University of Hawassa poster on the birds of Lake Hawassa, Ethiopia)

Figure 9-4 A yedala (Canis aureus) in a ditch in AWSFS, SNS & BD survey, November 2012, Bokaso, Ethiopia
(Left: locals watching the animal as I took picture; right: the animal in close-up)

About 33 taxa of fauna were identified as either existing in the past or (some of them) currently reported as taking refuge in sacred sites, particularly relatively large-scale ones (e.g. AWSF). Few of them were either observed (e.g. *Colobus guerezza)*, or their proxy evidences (such as feces, burrows, spines, etc.) documented during survey (See Chapter 6). Almost all were reported as "very rare", "locally lost," "fled away to distant lowlands," or "exist only in sacred forests."

9.2.4 Endangered ancestral traditions

As noted above, dimensions of 'biocultural diversity' in the context of this study relate to the biodiversity supporting values, beliefs, knowledge and practices discussed in Chapters 5 and 8. Local understandings of their endangerment, unlike those for endangered biodiversity, are rather more subtle and difficult to operationalize. However, a similar set of common sayings exists to describe the fact of changes and trends. Furthermore, tangible indicators of how ancestral values

beliefs and practices have declined over the years also may be captured through tapping into factually observable, material dimensions of local life, and also through finding out about whether and how frequently locals do engage in practices that affirm those ancestral values.

From what locals narrate, and from existing literature, a general pattern in this regard may be discernible. A three-phase temporal scale may be identified that depicts change in Sidama ancestral worldviews and institutions. The first phase was an era that may be termed as 'a time of undisturbed reign of indigenous ways of life,' which covers the time from the first settlement of ancestors in the mid-16th century[12] in the present Sidama land to the early 1890s when Sidama was incorporated into the Ethiopian nation state. From 1890s to 1990s, the hundred-year period, may be termed as a period of gradual heterogenization and syncretism of Sidama society and culture, a period that witnessed transpiration of great deal of changes in the whole gamut of Sidama society. The third era is from the 1991 to the present, termed as 'the era of EPRDF[13]' referring to the current government, a period that has, among other things, witnessed some degree of resurgence in ancestral values, identities and institutions (Head, WDCTCO, 2013; Head-WDA, 2013; FGD-older men-1, 2012).

In short, there has been downward spiral in ancestral traditions in the last 110 years in general and the pace of the change accelerated, particularly since the 1950s and 1960s, with the intensification of demographic changes, expansion of modern religions and related socio-economic transformations (Hamer, 2007). This is what most local informants generally agree with. They invariably noted the fact of decline in ancestral traditions as SAR practitioners dwindle through conversion to modern religions such as Protestant Christianity, influences of modernization and related factors. As noted in Chapter Four, SAR itself is highly endangered, a fact wholly accepted by most informants. Asked when their last enactment of ancestral rituals or participation therein was, many replied in a way that implied such practices were really disappearing. Not more than five cases reported such an enactment in the past few weeks or months at the time of interviews.

Some surveyed sacred groves lost their sacredness, in the true sense of the term, as their owners, mostly Protestant Christians who formerly practiced SAR, abandoned the ancestral rituals, where they have been converted to market places, schools and other 'development' sites. Of

[12]This time fame should be taken cautiously, as there exist divergent views concerning the time when Abboic community's ancestors arrived and settled at the present land.

[13]EPRDF: Ethiopian Peoples' Revolutionary Democratic Front, the name of the Political Party running the government since 1991. While the era since the 1990s is generally held in positive light in Ethiopia, especially in south and southwest, where many of the ethnic groups in former eras suffered from marginalization and were not free to express, use and develop their own histories, languages and cultures, it should be taken cautiously as there are diverse views. My own presentation in this study is not to take any sides but to use classification only for analytical purposes. However, all the views presented are those of the informants and in some instances my own interpretations.

about 26 identified protected sacred groves in seven localities, only about four were currently being maintained by ex-SAR practitioners, as noted earlier. I had talked to the ex-SAR custodians and the main reason for their continuing maintenance, while no more practicing the religion, was their conviction that even if they had made a spiritual detachment from the 'old religion', they could continue keeping the trees. Asked if he still prayed at the grove and conducted a ritual to ancestors, one of the custodians said, "Why? I will not worship two gods!" a conception shared by most conservative Christians that SAR practitioners actually worship ancestors, especially the apical ancestor Abbo. On the other hand, these custodians also keep the grove on quite practical, pragmatic grounds, including a commitment to use the trees as cultural memories, and also as a show of respect, not a mood of worship, for their deceased ancestors and the ethnic culture as a whole. More tangibly, the groves are maintained for their relevance in livelihood, social and ecosystem services discussed in Chapter 8. In short, while the primary motive for maintaining sacred groves for current conservative SAR adherents was the need to use the grove as a temple, spirit medium and ritual arena, for ex-SAR custodians it is more the social, livelihood and ecosystem services of the trees that motivate them to continue in the maintenance.

As for the popular attitude towards the SAR and ancestral rituals, there has been a tendency among most local people, particularly those of radical Protestant Christian persuasion and those highly urbanized and modernized, to consider such practices as backward at best and demonic at worst. One informant aired a view generally shared among most conservative Christian and Muslim informants: "adhering to these practices is considered as sin." Furthermore, the ritual slaughter of cattle is considered a waste of a valuable resource these days when a single grown bull may be worth thousands of Birr[14]. An informant makes this clear, "These days the living cost has soared. We recommend people not take their cattle for ritual killing, instead use it for their economic needs. The ancestral worshippers waste their livelihood in such rituals." With growing livelihood challenges even the SAR faithful find it difficult to provide sacrificial animals.

Due to modernization (defined above), declining fear and respect for ancestral values and also more importantly, growing needs of livelihood, lack of cultivable land, etc., people are abandoning many of their traditional non-economic based tree conserving beliefs and practices, such as ancestral memorial planting in grave yards. The new generation no longer "holds this belief and practice." As a local high school principal rightly observed, the present generation lacks the appropriate ancestral knowledge and information. The older generation recognizes

[14] These days, an average sized, fattened ox may be worth between 10,000 and 15,000 ETB, depending on geographical locations and other factors. This is equivalent to £ 330 to £460, which is a massive amount of money in peasantry standard in rural Ethiopia.

ancestral tradition, but the new generation considers this as backward. “So this generation does not fear ancestral values. They easily fell trees even from grave yards.” Elderly informants routinely complained that “the current generation” does not respect ancestral norms. The “good old days” when all people feared and respected ancestral rules and no one dared to “touch” trees has disappeared. Erecting modern stone tombs has become “a symbol of great and modern men,” supplanting the “old ways of preparing earth mounds and planting memorial trees.” People now give priority to livelihood challenges.

Related to this is increasing acceptance and expansion of exotic trees due to their relatively faster maturity, high yields and low energy demands. A value shift is occurring whereby the non-economic values of tree planting are replaced by economic values. Inventories of tree species and a survey of tree seedling propagation farms and vending centres in Wonsho and Hawassa City showed a preponderance of exotic trees. Local people report that such exotic plantations often do not encourage the growth of smaller herbs, shrubs and grass species inside their spaces unlike the indigenous trees. Despite such ecological harms of exotic trees (the case of *Eucalypetus camaldulensis*, for example, is a national policy issue and has often caused a great stir among foresters and botanists; Dr. Zebene Asfaw, personal communication, 2012), locals are demonstrably making an economic shift to these trees in the wake of native trees’ decline as well as their perceived negatives in biological management.

With respect to useful botanical material culture, the practice of making household utensils from wood such as stools, beds, pillows, and various other items is now disappearing. Both the practice and the material objects are being replaced by modern furniture and skills. However, informants did not seem very worried about these as they were about sacred forests or ancestral rituals. A silent acquiescence to modern technology seems to exist. Even the *Ganna* (supreme ritual leader) himself “used modern technologies such as mobile phones” (KI-AiO-RA, 2012), a fact I also witnessed.

In closing this section, a reiteration of major factors of biocultural diversity erosion is important. Salient factors of biocultural diversity erosion in general and those that militate against sacred forests and ancestral traditions in particular may be categorized as natural and anthropogenic. Natural factors include the degradation and decline of sacred forests through ageing, difficulty in replacing new trees due to biological features (in the case of trees) of slow maturity, etc. Local people see such natural factors as a challenge to sustainability of sacred sites. Field observations and surveys of sacred sites show degradation of individual trees do occur due to natural factors.

Rapid human population growth is a great concern. Many understand it as the root cause of other more proximate anthropogenic causes of deforestation, illegal logging, agricultural clearance, and related encroachments, etc. In a matter-of-fact manner, informants note growing pressure of population, the need for more land to cultivate and these, more than all other factors, take the blame for decline in sacred forests. The population of Sidama grew from an estimated 0.7 million in 1970 to 3.5 million in 2014, and the sub-region takes about 19 per cent of the projected (around 17.9 million) population share of the SNNPRS for the year 2014, making it the most populous in the region (Hamer, 1976; CSA, 2012; Anon, 2014e; 2014g). A reflection of this is rural land holding. At the present, the average rural household has 0.3 ha of land (compared to the SNNPRS and national averages of 0.89 ha and 1.01 ha, respectively (Anon, 2014).

Table 9-3 Population growth trends for Sidama & Wonsho against regional and national figures, documentary reviews, October 2014, Wonsho-Sidama, Ethiopia

	Population size in millions							
Spatial scale	1900	1950	1960	1970	1984	1994	2007	2014
Ethiopia	11.8	19.0	23.6	28.4	39.9	53.5	73.9	97.9
SNNPRS	--		--		--	10.4	14.9	17.8
Sidama	--		--	0.7	1.5	2.5	3.0	3.4
Wonsho	--		--		--	--	0.097	0.102

(Source: Hamer, 1972, 1976, 1980; Hoteso, 1990; PHCC, 1991; ESA, 1996; Bielli et al., 2001; CSA, 2012, 2013; Anon, 2014, Anon, 2014)

Wonsho district does not have figures for the two census years of 1984 and 1994 as it was in 2006 that it came into being as an independent district. The District belongs to a group of districts in Sidama Zone that are most densely populated (Figure 9. 4), where population density per km^2 ranged between 484 and 1018 persons.

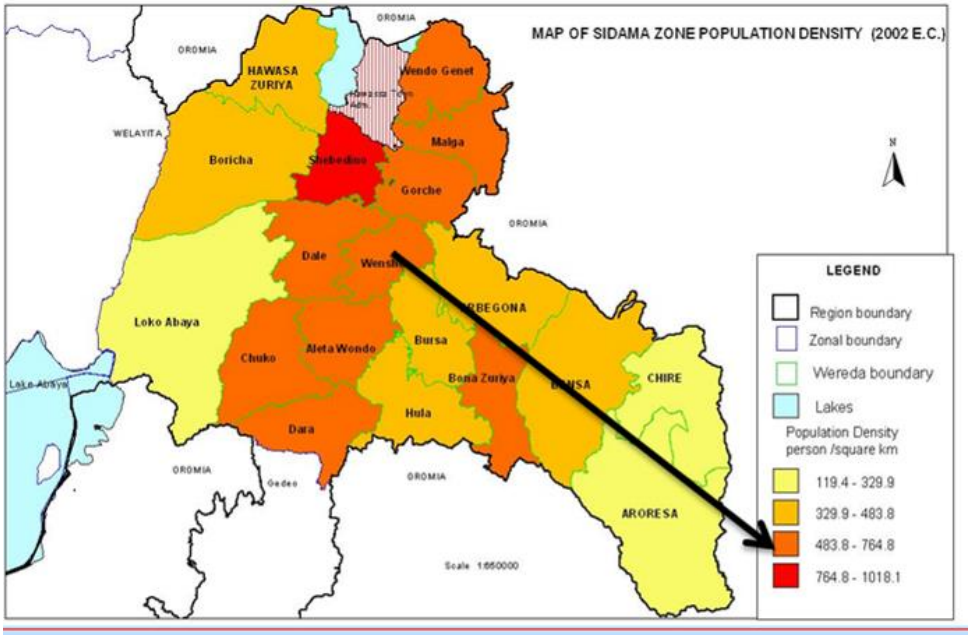


Figure 9-5 Population density map of Sidama Zone, documentary reviews, March 2013, Sidama, Ethiopia (Credits to Sidama Zone Agriculture and Natural Resource Department, Hawassa, Ethiopia, 2012)

Table 9.3 as well as interviews and discussions thus indicate that the main drivers of decline in sacred forests, endangerment of tree diversity and associated cultural values are high population growth, modernization processes, 'development' interventions and religious conversions. The main drivers of high population growth in turn are traditional beliefs and practices that value high fertility and large family size. Polygamy, although declining due to influence of Protestant Christianity, still persists (Regassa & Stoecker, 2012). Furthermore, as informants noted, Sidama's traditional belief system does not favour out-migration. As a focus group participant noted, "Our people do not want to leave their land. It is part of the traditional belief system; migrating, especially westward, is discouraged because our ancestors came from the east," (Officers, SCRBO, 2012). A comparison of Sidama and two other ethnic groups on the criterion of members living or settled in other regions in the country, in the 2007 National Population and Housing Census, confirms this view (See Table 9.4).

Table 9-4 Comparison of the number of Sidama ethnics with those of Wolayta and Gurage[15] living in other regions of the country in the 2007 Population and Housing Census, documentary reviews, March 2013, Sidama, Ethiopia

	Regions									
Ethnic group	Tig	Afar	Oro	Som	Am	BG	Gam	Har	AA	DD
Sidama	36	59	52604	145	1166	55	1508	39	2180	77
Wolayta	186	8221	64552	122	3790	331	1703	254	18815	402
Gurage	391	1694	251451	5224	3004	1268	1895	794	444521	15554

(Source: CSA, 2012)

[15] The Wolayta and Gurage ethic groups in SNNPRS are among the most out-migrating ones.

The effects of the demographic pressure and other drivers are reflected in local communities engaging in unsustainable ways of using existing forest resources. The traditional structure of Ethiopia's socio-economic system puts trees in high demand for a range of livelihood, social and cultural needs, including notably firewood, charcoal, construction, fences, furniture, etc. Urban expansion means construction of more houses and these require beams, poles and plasters etc. from wood. Indigenous trees with strong and durable wood quality such as *Junniperus procera, Cordia africana, Podocarpus falcatus, Hagenia abyssinica and P. anigeria* have been exploited heavily for construction material. Others such as *(Syzygium guineense)* have been severely decimated due to their high quality charcoal uses.

Figure 9-6 Men working on Cordia africana log for timber production, Ferro, interviews & observation, October 2012, Wonsho, Ethiopia

With respect to ancestral traditions, especially adherence to SAR, similar drivers, particularly introduction and expansion of Protestant Christianity explain the decline, as informants note. A review of religious adherence pattern in Sidama and SNNPRS as well as the nation at large in the three national censuses may reveal this. The censuses show a clear trend of downward spiral (Table 9.5) for SAR. Protestant Christianity has grown steadily and with acceleration over the three census periods (from 6.4 per cent in 1984 to 19.3 in 2007 nationally) and the growth in SNNPRS and Sidama is phenomenal, from 34.8 to 55.6 and 62.5 to 84.5 between 1994 and 2007 censuses, respectively.

Table 9-5 Trends in religious adherence of traditional religion in Sidama, SNNPRS and Ethiopia against dominant religions in three national censuses, documentary reviews, March 2013, Sidama, Ethiopia

Spatial scale	Census years and corresponding population sizes in millions (Population size shown in brackets)											
Ethiopia	1984 (42.6)				1994 (53.8)				2007 (73.9)			
	EOTC	P	I	TR	EOTC	P	I	TR	EOTC	P	I	TR
	50.4	6.2	33	5.8	50	10.1	32.8	4.6	43.5	19.3	33.9	2.6
SNNPRS	--				1994 (10.4)				2007 (14.9)			
	--	--	--	--	27.6	34.8	16.7	15.4	19.9	55.6	14.1	6.9
Sidama	1984 (1.5)				1994 (2.5)				2007 (3.0)			
	--	--	--	--	8.24	62.54	8	13.64	3.35	84.38	4.62	2.72

(Source: PHCC Ethiopia, 1991; ESA, 1996; CSA, 2012; Lewis, 2013; Teller & Gebreselassie, 2006
Abbreviations: EOTC: Ethiopian Orthodox Tewahido Church; P: Protestantism; I: Islam; TR: Traditional Religion

At the present, according to my informants' views, two local models appeared to exist concerning the future of ancestral traditions and SAR in particular. On the one hand, some informants viewed the future as very bleak alluding due to the major processes affecting them, as discussed above. On the other hand, in recent years a modern approach encouraging locals to reclaim their ancestral roots has arisen. This re-recognition of ancestral values appears to be supported by the introduction of new government policy following the downfall of the Socialist Regime in 1991 and, in Wonsho area, particularly following the creation of Wonsho district in 2006 (Head-WDA, 2013; Head, WDCTCO, 2013). Therefore, some informants had a surprisingly positive view of the future as good, and many based their hopes on the current favourable policy atmosphere. Some informants further alluded to the inherent resilience of ancestral traditions themselves, implying they have a tendency to move forward, despite obstacles; they noted how ancestral rituals survived the harsh policy of persecution during the Socialist regime (1974-1991).

While many may disagree with the idea that the present policy environment is favorable to BCD, the tendency among some to use current policy environment for judging the future of sacred groves in optimistic terms is a precarious position. On the other hand, the allusion to the inherent tendency of ancestral institutions and sacred groves to emerge out of challenges in the past as an evidence of their resilience and continuity is a valid point, in light of the arguments presented so far, that sacred groves and ancestral traditions are dynamic phenomena, not vulnerable, static entities (Sheridan, 2008).

In sum, processes and drivers of biocultural diversity erosion in Wonsho, Sidama may be summarized in the following table which provides, based on deductions from local oral tradition and available historiographical information, temporal scales of important episodes and their effect on biocultural diversity, especially sacred forests.

Table 9-6 Temporal scales, important milestones and significant phenomena bearing of Wonsho-Sidama bio-cultural diversity, c. mid-16th C to 2014, interviews, FGDs & documentary reviews, Wonsho, Ethiopia

Important milestones	Time periods/dates	Key events	Sources
Abbo's generation settle at the present day land	Mid-16th C (??)	Abboic founding ancestor arrives and settles Foundations laid for the sacred forests of the area (e.g. Wonsho 'original' grove, AWSF)	Hamer, 1976; Hoteso, 1991; Braukámper, 1979; oral history
The era of the reign of indigenous way of life	Mid 16th C to 1893	Wonsho-Sidama lead a more or less homogenous socio-cultural and economic organization with autonomous polity; SAR being the unifying, universal world view and religion	Hamer, 1972; Hoteso, 1991; Hameso, 2014; Kumo, 2009a; Tekle et al, 2012
Wonsho-Sidama's incorporation into the Ethiopian nation-state	Early 1893-1920s	Set in motion a whole new process of externally-driven change in socio-cultural, politico-economic and ideological organization of the people, sowing the seeds of change in human-environment relationship Land tenure changes: landlord-tenant relationship begins Urbanization begins through military settler garrison towns Introduction of EOTCs, attempts at forced, largely failed, conversion of locals	Hamer, 1972; Hoteso, 1991; Hameso, 2014; Tekle et al, 2012
Wonsho-Sidama under the reign of Haile Selassie I (1930-1974)	1930-1974	Consolidation of feudal system Transformation in entire socio-economic organization and human-environment-forest relationship continues A period characterized by land dispossession, feudalism, force, demotion of the locals systems of governance and so on Modern education begins Introduction of cash economy begins Expansion of commercial farms, logging enterprises, sawmills, etc In-migration of people to emerging and expanding towns, state farms, etc to some parts of Sidama (e.g. Wondo Genet and Hawassa area) Introduction and expansion of exotic trees (e.g. *Eucalypetus camaldulensis*) Decline in SAR and associated values of human-forest-environment relationship begins and accelerates	Hamer, 1972 ; Hamer & Hamer, 1994; Chaffey, 1979; Braukámper;1992; Berisso, 1995; Hoteso, 1990; Hameso, 2007; Dessie 2007; Kummo, 2009; Negash, 2010; informants
Expansion of modern religions	1950s to 2013	Modern religions esp. Protestant Christianity gains ground Introduction of Islamic faith, together with cultivation of *Katha edulis*, 1960s & 1970s SAR declines to 2.7% (in 2007) from 13.6%(in 1994), endangering tree-supporting values Protestantism grows to 62.5% by 1994 in 3-4 decades and increases to 84.4% (in 2007)	Hamer, 1970, 1976; 2002; Tekle et al, 2012; CSA, 1996; 2007); Hameso, 2014; ESA 1996,2007; Anon, 2014; informants
Socialist Government : the era of harassment of ritual leaders & incursions into sacred forests	1974- 1991	The era when significant deforestation took place Demographic pressure as population growth from 0.7M to 2.5 M Harassment of ritual leaders, denigration of the SAR, weakening of key socio-cultural institutions and incursions into sacred forests increase *Gudumales* and other sacred places transformed into cash crop production and villagization centres Cash crop production (such as coffee, *khata edulis*) intensifies, esp. since the late 1980s	Hamer, 1970, 1980, 1994; CSA, 1996; Reusing, 2000; Hameso, 2014; Dessie, 2007; Informants

Important milestones	Time periods/dates	Key events	Sources
1991- 2005	The first 15 years post-Socialist era	Political transition periods leading to more and intensified incursions into sacred sites Land shortage increases through accelerating population growth Although continues to decline, a resurgence in identity and SAR affiliation and affirmation emerges Cash crops (esp. *K. edulis)* prominence continues, contesting land space with other crops and forest areas	Hamer 1994; Yibabe, 2001; Desie, 2007 Informants
2006 to the present	Consolidation years	Wonsho District Administration comes into being Cultural revitalization efforts increase SAR and ancestral values and events promotion and reaffirmation increase Sacred forest protection efforts improve (the last four years) Collaborative governance for sacred sites increases Tree planting at AWSF takes place for the first time (2012)	Informants; Observation

In general, the decline and endangerment of local tree biodiversity, sacred forests and associated supporting ancestral traditions were real. Although local peoples' views suggests natural factors played a role, their views and the objective facts on the ground suggest the major concern is with the growing challenges of demographic, socioeconomic and modernizations processes and changing and weak government policies. In the following section, I describe what local and formal responses in the form of governance framework and protection action exist to deal with these threats.

9.3 Governance frameworks and protection actions

What governance frameworks and protection actions exist? What do policy instruments across successive governments look like? How do local governance values coexist and collide with state policies? These and related issues are addressed in the following sections.

9.3.1 Overview of biocultural diversity policy context

Reviews of existing documents and interviews at various scales generally indicate a favourable policy environment at the present, despite divergent views exist. Ethiopia is a party to a number of relevant UN instruments pertaining to biocultural diversity and local institutions. As a signatory to CBD and related instruments, it has pledged to protect biodiversity and indigenous knowledge systems. These are also protected, in principle, by the current Constitution, which "takes into account most international laws and conventions on cultural diversity and conservation," (*Officer, SNNPRS-CoN, 2013*). With respect to sacred forest sites, forest policies

exist that are framed within the existing national Constitution (National Forest Policy, 2007). Signifying the importance of forests and the need for reclaiming the country's degraded lands, a government body, the Ministry of Environment Protection and Forestry, was set up in 2013 (The Reporter, 2013). The national forest policy "acknowledges traditional forest governance norms." Forest-friendly knowledge and values of local communities "are supported and when these are violated it has the duty to intervene. The government's interest is to protect forest and biodiversity, whether it is by heavenly or earthly, formal or informal law,"(Forestry expert, SNNPRS-BABR, 2013).

However, on the on hand, despite the policy document acknowledges local communities, participatory forestry management and the role and contributions of traditional knowledge, there are concerns about implementation issues and genuine empowerment of local people, especially safeguarding forest-dependent traditions and communities (Ibid.; The Reporter, 2013; Said & Lemenih, 2013). On the other, according to some sources, the state of biodiversity components such as sacred groves, including church owned ones, has suffered in many parts of the country since the 1990s and some attribute this to the current government policies (e.g. Berhanie-Selassie, 2008; Yadav & Mekonnen, 2013).

Nevertheless, in Wonsho, Sidama, informants note tenuous and often repressive policies were applied during the past regimes, particularly during the Socialist era (1974-1991). As AWSF supreme spiritual leader put it, the Socialist Government forbade enactment of ancestral rituals, partitioned sacred forest lands for agricultural expansion, exploited forest resources for a range of dubious purposes, forcefully attempted planting culturally unacceptable exotic trees inside sacred sites, harassed ritual leaders, etc. Local views of the current policy environment with respect to sacred sites, ancestral traditions and related identity issues are broadly positive.

9.3.2 Current conservation and protection actions

At various scales, reviews and interviews indicate governmental, NGOs, other community-based and private organizations engage in a range of biocultural diversity conservation and protection actions. As noted above, the establishment of the Ministry of Environment Protection and Forestry in 2013 is a response to the challenges the nation's biodiversity has been facing, with alarming deforestation rates especially the years leading up to 2000 (Dejene, 2014).The Biodiversity Institute of Ethiopia (BIE) oversees biodiversity conservation and research works showcasing a number of *in situ* and *ex situ* conservation centres distributed across some selected national forest priority areas in the country, which are places where much of the remaining protected and natural forest areas concentrate, with aims of protecting endangered native animal

and plant species. Native forest species are given attention and their conservation is being undertaken in collaboration with local communities, (Director, BIE, 2013). Since the onset of the Ethiopian Millennium in September 2008[16], a flurry of tree planting activities, as a matter of urgency, began throughout the country, resulting in the planting of, by 2009 estimate, "1.6 billion tree seedlings in degraded areas and areas designated for Millennium Parks in many localities" (IBCR, 2009: 18), "more than 700 million trees in 2007 alone," (Dejene, 2014). One of the visible landmarks of this government-led action was a requirement for every major town to set up a protected area as a tree park, in commemoration of the millennium celebration.

With respect to cultural diversity conservation, as noted above, a range of institutional arrangements that oversee and implement such activities exist. According to interviews, national and regional government organs engage in researching of shared values, ethnohistories and cultural identities of the peoples and cultures of the country; help local communities reaffirm their identities; restore weakened ancestral traditions; create awareness and educate the young about value erosions, etc. (Officers, FMCT, 2013; Officer, SNNPRS-CoN, 2013). In recent years, national, large-scale events aimed at reaffirming and promoting heretofore marginalized local traditions of ethnic groups take place every year across the country. One of these 'cultural bazaars,' called 'the Day of Nations and Nationalities,' has drawn international attention (Embassy of the Republic of Kenya, 2011; allAfrica.com, 2012). Although divergent views exist, this and other related events are considered aspects of cultural diversity protection and development.

In the wake of the downfall of the Socialist Regime in 1991, and especially since the early 2000's, non- and para-governmental, private and grassroots organizations came to the fore and began engaging in a range of indigenous knowledge revitalization and promotion activities, including a focus on traditional ecological knowledge systems and sacred natural sites. For instance, the first national workshop on the role of sacred natural sites took place in July 2010, helping to bolster recognition for sacred sites[17]. Local environmental and cultural-revitalization movements and conservation associations have in recent years sprung up throughout the country, collaborating with and supported financially and technically by a number of international and national conservation-based actors, national agencies and academic and research institutions (Officer, SNNPRS-BoCT, 2013), despite such efforts are often fraught with many problems.

[16] Ethiopia has her own indigenous calendar, based on the Julian, as opposed to Gregorian, traditions.
[17] I was part of the national steering committee responsible for designing the concept for the workshop, organizing it and drafting up a declaration (position statement) on sacred natural sites of Ethiopia

Biocultural diversity conservation and protection actions in SNNPRS, within the framework of the National Conservation Strategy & Action Plan (IBCR, 2005) focus mainly on reclaiming the Region's degraded environment, reforestation activities, and *in situ* conservation of threatened animal and plant species. Informants reported collaboration with local communities and their sacred forest institutions exists, aiming at protecting sacred sites from increasing encroachments by providing legal enforcement. The creation of two biosphere reserve areas in the Region and the registration of a number of UNESCO world heritage areas in recent years is also considered indicative of on-going biocultural diversity conservation work (Head, WDAO, 2012; Forestry expert, SNNPRS-BABR, 2013). However, there are reports of intensified mechanized agriculture on cleared forest lands, deforestation and incursions into sacred forests since the 1990s in some parts of the country.

In Wonsho-Sidama, while systematic works and direct engagements in tackling problems of biocultural diversity in sustained and integrated manner are lacking, nascent endeavours exist that aim at sorting out the zonal scale of main issues and devising management strategies (SZ-BD Expert, 2013). The zonal government "recognizes ancestral values and supports sacred forests and works with local leadership to organize communities to protect BCD hotspots"(Expert, SZ-ANRD, 2013) Legal, technical and material supports are provided for custodians of small-scale sacred forests, as these continue to be vulnerable to encroachments,(Officer, SZ-CTD, 2013). A number of NGOs and private business establishments operate in Sidama. Some organizations were visited and their representatives interviewed to find out what they were doing in terms of contributing towards protecting biocultural diversity. LEWI and Haile Resorts in Hawassa, nationally known hospitality and tourism business companies, and Furra Institution and Aregash Lodge in Yirgalem, were major actors and serve as representative cases for other actors now operating in Sidama. The latter two have emerging institutional support links with the Wonsho District Administration and local custodians of sacred sites such as AWSF, which in recent years are becoming a focus of destination for tourists of these resorts. Some otherwise endangered native trees species and wildlife, along with useful local material culture, are conserved on their premises.

At all scales, informants noted that gaps existed in terms of instituting more robust instruments and weak policy implementation capabilities. A range of problems existed including lack of appropriate expertise (e.g. low knowledge about various international BCD supporting instruments and conventions); limited resources, lack of coordination among various sectors; low resource, knowledge and commitment to work with local communities; and un-sustained programs, among others, (Director, BIE, 2013; Experts, SNNPRS-BDC, 2013; SZ-BD Expert, 2013). In general, the work at all scales appears to be poorly resourced, fragmentary and not

integrated. Wonsho District Administration is one of the newly instituted districts in Sidama Zone in 2006, and as such, informants told, it has had a range of challenges to deal with, with limited resources, although, as discussed below, since its establishment, engagement with custodians and protection of sacred sites has reportedly improved.

9.3.3 Current grassroots conservation and protection actions

A salient aspect of current local activity occurs at local community-local government scale, which in an important sense is the backbone of the local scale of conservation and protection. Overriding management reasons hinge on the instrumental utility locals derive from maintaining sacred sites and trees. As discussed in Chapter 8, the local community engages in traditional tree management to sustain their livelihood, ornamental, aesthetic, recreational, medicinal, ecosystem service and agronomical needs. Surveys of local botanical environments generally show important agroforestry trees, both new and old, managed for use and preservation.

The botanical environment is an important component of Wonsho land use and land cover (See Figure 9.5). A household land comprises varieties of tree species on a range of lands with designated use patterns and motives for management. Land use involving trees as agroforestry elements and sacred entities is particularly important. Crop cultivation combining agro-forestry is the most important land use type, the other types being grazing, protected forest and open grasslands; these vary across agro-ecological zones (Expert, SZ-ANRD, 2013; Yilma, 2013; Moges et al., 2013).

Figure 9-7 A view of Wonsho botanical environment, Lalamo, observations, October 2012, Wonsho, Ethiopia

As Table 9.7 shows, the major current tree conservation and management actions in Wonsho are largely driven by socio-economic and aesthetic needs. Explicit conservation is mainly evident in the protection of trees in institutional settings and the recently beefed up seedling propagation actions. Sacred areas embody conservation values although not necessarily for explicit conservation concerns. Land use pattern has over the years changed along with changing needs, with increasing focus on agroforests and cash trees, especially *çaate (Katha edulis*) and coffee trees. Land use and cover for sacred rituals has declined over the past several decades, particularly since the last 3-4 decades, with growth of demand for cash crops and trees (Dessie, 2007; FGD-older men-1, 2012a; Head, WDAO, 2012).

Table 9-7 Current commonly managed woody tree species in Wonsho, interviews, FGDs & observation, December 2012, Bokaso, Ethiopia

Local name	Scientific name	Where managed	Reason for management	Conservation concern
Bardaffe	*Eucalypetus camaldulensis*	Border areas; front yards; road side, organizational settings	Versatile socio-economic use; easy management; fast maturity	Has already overtaken native trees; taking more and more land cover
Grawella	*Gravillea robusta*	Front yards; Millennium Park	Ornamental; shade; timber; firewood	Getting dominant
Akacha	*Acacia decurrens*	Front yard	Ornamental; shade; agroforestry; firewood	Rapidly gaining acceptance
Dagucho	*Podocarpus falcatus*	Front yards; Millennium park; sacred site, sacred sites	Conservation concern	Locally declining, although the most protected in sacred areas
Maticho	*Albizzia gummifera*	Front yards	Conservation	Declining
Dadako	*Hagenia abyssinica*	Sacred site, front yards	Conservation; socio-cultural	Declining
Faranjete masincho	*Croton megalocarpus*	Front yards	Popular acceptance; shade; ornamental	Gaining growing acceptance
Wadicho	*Cordia africana*	Backyards, sacred sites	Soil fertility; shade for crops	Declining
Welako	*Erythrina abyssinica*	Backyards; front yards, sacred sites	Soil fertility; shade for corps	No local concern
Hengedicho	*Milletia peruguinea*	Backyards	Soil fertility; firewood	Locally declining
Duwancho	*Syzygium guineense*	Front yards, sacred sites	Conservation; socio-cultural	Very high local concern; currently not being managed
Ţonqicho	*Dracaena steudneri*	Front yard	Ornamental; shade; bakery (leaves)	Rare and declining
Oloncho	*Rhus glutinosa*	Front yard, sacred sites	Ornamental; conservation	Disappearing
Masincho	*Croton macrostachyus*	Farm yard, sacred sites	Shade for crop; soil fertility	Least concern

In recent years, exotic tree species have become significant in the households' livelihood and social lives, taking up much of their management efforts. They occupy a significant portion in the topographic, economic and social landscapes. There are several smaller trees and flowery herbs that are now adapted to the rural local community in Sidama. In most cases our observations show introduced trees are managed in the open front yards, mainly as ornamental trees, live fences, shade, edible fruits, and for cash purposes. Apart from their obvious growing livelihood support as cash sources, food security supplements and the appeal of aesthetic and ornamental values, exotic trees are increasingly being selected for their relative ease in management (Head, WDAO, 2012). They take a shorter time to mature and their seeds are easily accessible. Furthermore, their lack of socio-cultural symbolism helps households, particularly those subscribing to SAR, to use them without any sense of guilt.

An aspect of current tree conservation and sacred sites rehabilitation work at local community-local government scale is running tree seedling farms in selected localities in Wonsho District. Maintenance of seedling farms for varieties of indigenous and exotic tree species have been gaining momentum, especially since the onset of the Ethiopian Millennium of 2008 as noted above. The local government currently focuses on those tree seedlings which the community is getting well accustomed to and which are of high food-security, environmental protection, livelihood and socio-cultural relevance (Head, WDAO, 2012; Head-WDA, 2013). Threatened native trees were prioritized, which is a reflection and implementation of national strategy in conserving native forest tree species (see Table 9.8).

Table 9-8 Currently prioritized woody tree species in local seedling farms, interviews, FGDs & observation, January 2013, Wonsho, Ethiopia

Local name	Scientific name	Reason for selection	Conservational concerns
Dagucho	*Podocarpus falcatus*	Cultural, livelihood, ecosystem service, management ease, conservation concern	National list of highly threatened; locally observed and reported as declining
Dadako	*Hagenia abyssinica*	Socio-cultural and medicinal significance	National list of highly threatened
Grawella	*Gravillea robusta*	Multi-purpose (shade, ornamental, timber, etc.), management, fast maturity	Dominating the botanical landscape
Sidancho honcho	*Junniperus procera*	Cultural and livelihood; relative ease in management; conservation concern	National list of highly threatened
Faranjicho honcho	*Cuprensis lusitanica*	Livelihood, ornamental, shade	Dominating
Maticho	*Albizzia gummifera*	Cultural, livelihood, management ease	Locally reported as declining
Akacha	*Acacia decurrens*	livelihood, management ease, shade, ornamental	Dominating
Wadicho	*Cordia africana*	Socio-cultural-livelihood, management ease	National list of priority concern trees; locally reported as declining
Garbicho	*Ekebergia capensis*	Cultural; management ease; conservation	Locally reported as declining
Faranjete masincho	*Croton megalocarpus*	Livelihood; ornamental; management ease	Growing local acceptance

As Table 9.8 shows, current preference and priority trees are divided between native and exotic ones, with increasing local community's inclination towards the latter, as they fulfil much of their most important ecosystem services and socio-economic needs except for their use as instruments of sacred rituals (Yirdaw, 2001).

The local Administration oversees the management, propagation and distribution of forest, fruit, and ornamental and other tree species at three of its farm centres. The seedlings are often freely distributed to the local community. Some private seedling farms in the towns and also in rural areas, however, sell seedlings at exorbitant prices, especially some tree species such as those highly needed for ornamental purposes in urban areas due to their very appealing cosmetic features.

Figure 9-8 Workers at a tree seedling farm at Ferro, tree seedling farms surveys & interviews, January 2013, Wonsho, Ethiopia

Current tree conservation work at the local community scale is also evidenced by assignment of 'Millennium tree parks' in town centres. In Wonsho, the town centre has such a designated conservation area called Bokaso Millennium Park, within the land space under the municipality. The Park was set up in 2008, and represents a microcosm of national tree planting and conservation ethos. During the fieldwork (2012-2013), the Park, of roughly football field size, had two major species, *Podocarpus falcatus and Gravillea robusta*, at different growth stages, having been planted in 2008 as a memorial for the Millennium event. The selection of these trees is indicative of the former cultural keystone tree and its locally endangered status; and the

latter's growing acceptance in the community due to its multi-purpose uses and fast-paced maturity. Informants reported, since the Ethiopian Millennium of 2008, hundreds of thousands of native and exotic tree species have been planted in household front-yards, agro-forestry farms, town streets, religious centres, schools, and designated Millennium parks.

Local schools form crucial actors in these local-community-local government collaborative conservation actions**.** Three schools were visited and their principal heads interviewed during the fieldwork. As rural town areas, local schools maintain a large land space and one of their major activities in such settings is tree planting and management. The primary motive being economic, but such places also serve as important biocultural diversity protection areas (see Chapter Six).

Figure 9-9 A managed agroforest, Bokaso High School, informal protection areas surveys, November 2012, Wonsho, Ethiopia,

9.3.4 Traditional governance values and their coexistence with formal governance norms

A highly valued traditional governance principle for sacred forests involves a taboo whereby trees of sacred places may not be used for any mundane needs. It is generally accepted that unless such trees fall down by reason of old age or some natural force, "no one would dare to touch them," under normal circumstances. It is a sacred governance principle; "trees grown at sacred sites where they conduct rituals are not cut" (FGD-Women-1, 2012). Prohibition of planting new trees at sacred forests is another core principle. An implicit belief in "sacred

forests take care of themselves through natural and spiritual processes" seems to exist. It is believed that the ancestors preside over the affairs of the additions of new trees, growth patterns and protection of the trees. This may be interpreted as an allusion to the inherent nature of sacred groves as dynamic systems. Any human planting of trees in sacred forests has been unacceptable and is tantamount to desecrating the ancestors. Management in the sense of digging the soil, weeding, pruning, removing aged and diseased trees and planting new ones have been traditionally tabooed and generally reserved for other contexts. Such a principle may not be salutary to tree biodiversity and sustainability of sacred forests.

Fear and respect for ancestral ghosts and sanctions is another important governance principle. Many informants appeared to believe and had confidence in the role ancestral spirits play in management and governance of sacred forest affairs. One hundred and sixty-three household heads (80%), for example, agreed that ancestral spirits have a role to play in governance and protection of sacred forests. Similarly, 154 households (77%) had a supporting belief about the power and authority of ancestors in governance and 175 (87.5%) believed the practice of ancestral rituals was essential for protection. These opinions, though, may not necessarily align with actual behaviours of the households.

As noted elsewhere, people who violated management taboos and norms were sanctioned through retributions believed to be from ancestors, including "madness and death." Apart from such alleged spirit retributions, there have been practical sanctions meted out by ritual leaders on violators. As an elder noted, "If a single tree is cut, elders would edict sanctions which include ostracizing the offenders from the community. They issue the *seera* [ancestral sanction] declaring no one may have contact with the offender, no one may lend him anything," (Participant, FGD-older men-1, 2012).

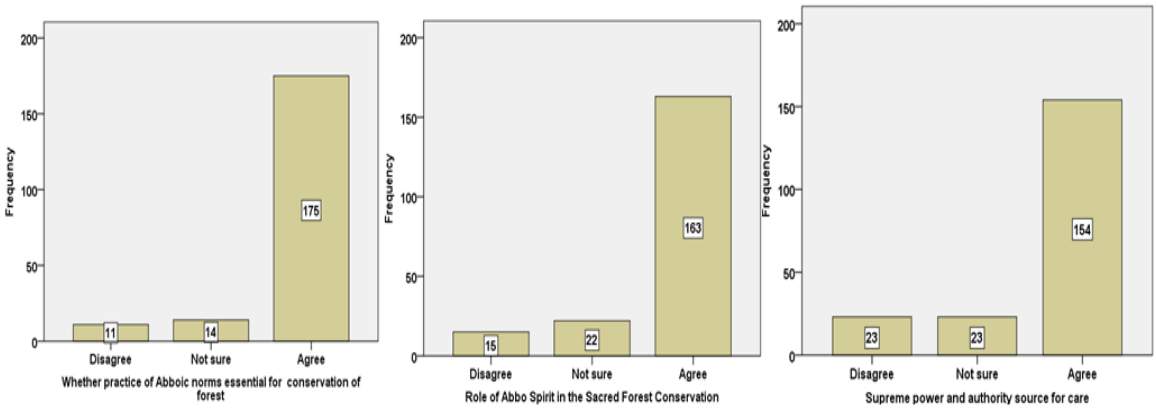


Figure 9-10 Household heads' opinions of power of ancestors, role of ancestral values and relevance of observing them in sacred forests governance and protection, HHS, September 2012, Bokaso, Ethiopia,

A related governance principle is the value of oracles and dreams in forest governance and decision-making. The ritual leaders and other SAR practicing people attach high values to these. As one such informant noted, "Abbo comes and reveals himself to us in visions and dreams." The ritual leaders "receive guidance from ancestors" on a range of affairs such as whether and when to use a particular fallen tree, bar cattle from sacred forest or let them browse, when to mend worn-out fences, whether to permit planting of new trees, and all other dimensions in work relationships with local government. Dreaming is considered one of "the most important channels of communication with the supernatural world" (Hamer, 1976: 328; 1980). The 'organogram' for Abbo Wonsho sacred forest management, for instance, would situate Abbo and other ancestors at the top level. Below are the supreme spiritual leader and his management team (the *Ganna*, *Womma*, *Qaricha* and *Gadanna*- fourfold leadership positions- discussed in Chapter Four).

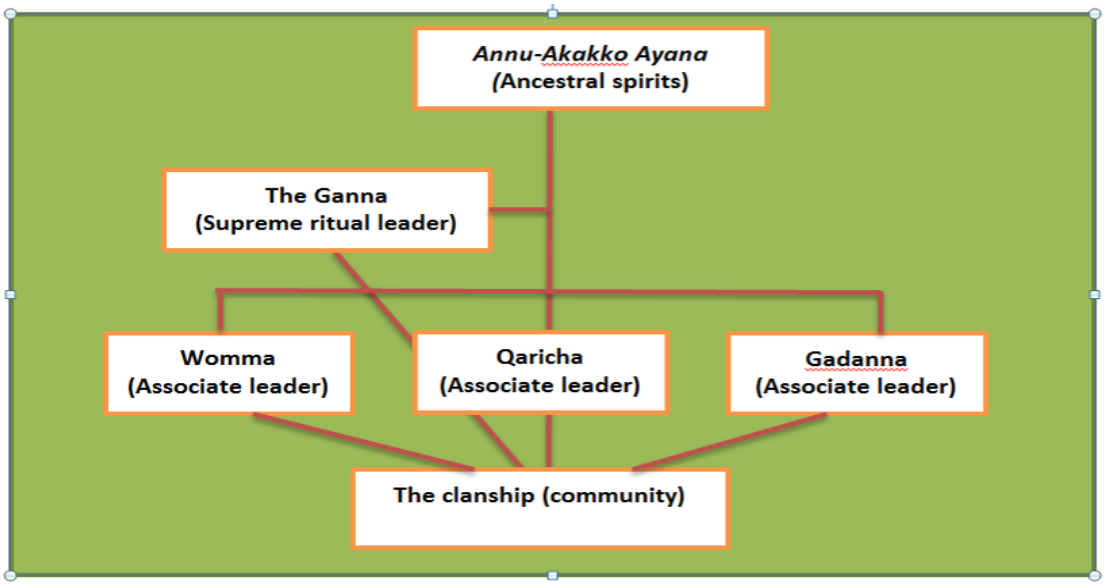


Figure 9-11 Structure of ritual governance of sacred forests, interviews & FGDs, 2012-2013, Wonsho, Ethiopia

According to this governance and leadership arrangement, the Ganna is the supreme person responsible for managing the sacred site ritual affairs and the forests itself, receiving guidance from the ancestors, particularly Abbo, and support from his associates and the community at large. While the Ganna is (considered) the highest in the ranks of the *qaddo* (the four ritual leaders) their roles are "more or less the same but with some particularity to each one," (KI-AiO-RA, 2012; Wansamo, 2009). As the organogram shows, the associate leaders can also directly communicate with ancestors, as can any faithful, ritually able-aged member of the clan, although not with equal intensity or frequency (Hamer, 1976). There are divergent views as to whether the structure is really hierarchical or the four positions are equal in authority. At

present, the Ganna is the highest authority, which he himself confirmed during an interview with him. The details of this are discussed in Chapter 5.

The traditional governance principles were strongly upheld and often in conflict with interventions from local government in the past. Since the 1990s, informants reported, sacred forest governance norms have relaxed; the past 'closed system' appears to have been or being replaced with an open system that accommodates modern values and norms. This is manifest in the way the local government collaborates with custodians to protect, rehabilitate and reforest affected sacred sites. There is an appreciation of the sensitive nature of governing sacred forests and the strong sense of attachment and ownership custodian community holds. State and regional forest policies (National Forest Policy, 2007; SNNPRS Forest Policy, 2012), while reiterating the ultimate authority and responsibility in developing and managing forest resources, including sacred forests, primarily lie in government jurisdiction, they acknowledge community ownership of forests and ancestral rights of custodian communities (Forestry expert, SNNPRS-BABR, 2013; Head, WDAO, 2012; Head-WDA, 2013). However, as noted above, there are concerns that these policies suffer from weak implementation and enforcement (Said & Lemenih, 2013).

There is, thus, a spirit of collaboration and mutual understanding among the local community, ritual leadership and local government. Local government officials recognize the fact that "ritual leaders are more listened to and influential than us in some cases so we work together with them," (Head, WDAO, 2012). Ritual leaders receive representations in various local, district and zonal governmental affairs. According to ritual leaders, the current collaborative work is something 'approved by' ancestral spirits. The approval of ancestors must be sought and respected before engaging in any big decision affecting sacred sites affairs. Thus the *Ganna* noted, "Dergue [Socialist Government] officials wanted to plant new trees inside the [Abbo Wonsho] sacred site by force [and were in trouble with us and ancestors]. So even now if they want to do anything without consulting us, Abbo [would be angry]" (Interview, 2012).

As Figure 9.12 shows, the symbolic and spiritual representation of ancestral spirits at the top as far as sacred forest governance is concerned, is recognized by the government administration, and the Ganna is the representative of his team of leaders. The local community is under both the mundane, legal jurisdiction of the local government and ritual administration.

.

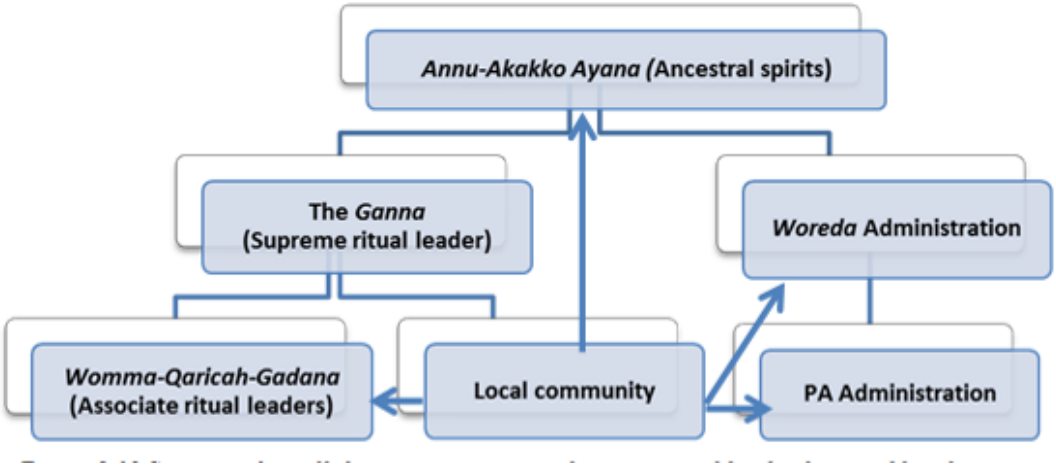


Figure 9-12 Structure for collaborative governance between ritual leaderships and local government, interviews & FGDs, 2012-2013, Wonsho, Ethiopia

A recent example of mutual understanding and collaborative governance was the action taken to plant trees in a bare part of AWSF. The local government collaborated with the ritual leaders to rehabilitate degraded spaces, and in one of its first major events, a new tree planting scheme was undertaken in June 2012, mobilizing local youth and women. A reported 6000 new seedlings were planted and at the time of fieldwork (2012) were being protected. As per the wishes of ritual leaders, only native trees were selected for planting; these included *Podocarpus falcatus, Cordia africana and Hagenia abyssinica*. Another example is the way local government intervenes and collaborates with ritual leaders to control encroachments into sacred forests. As a means for rehabilitating the sacred forest, one of its recently instituted management measures is barring the heretofore free roaming cattle from grazing inside the sacred land. Although local people continue grazing cattle, particular sections of the sacred forest, such as the area where recent tree planting was made, are excluded from cattle grazing. Private household owners of sacred groves and native trees may not fell their trees without prior and convincing justification provided to the local government. However, in reality, according to informants and our own field observations, "people cut down native trees under the cover of darkness," or through some other means (KI-AiO-RA, 2012).

The relationship between the local community, ritual leadership and local government should not be taken as always harmonious. There are reports of conflicts arising from perceived understanding on the part of some community members that the government is intruding into sacred site institutions. Suspicions and fears are also reported among some members concerning the government policies towards sacred forests and these sacred lands may be taken over for development purposes. According interview with local government officials, such suspicions and fears are often unfounded and disseminated by some ill-meaning individuals.

From what is presented above, we find that three broader governance frameworks have existed across time (see Figure 9.13). Traditional, ritual-based governance recognizes ancestors and ritual observations as the major power of protection and source of authority. This was the dominant case in the past. Collaborative governance involves ritual leadership, ancestral spirits and local government engaging in collaborative management. This is an emerging framework at present. What is currently dominating is a national government framework, led by government, and offering national protection schemes. The future, locals hope, appears to rest on such formal state structures to protect sacred sites and biocultural diversity in general. This does not necessarily mean they want to relinquish ritual-based governance and responsibility; the recent forest policy of the region adopted in 2012 provides for community ownership, empowerment and participatory forest management (Proclamation 147/2012). This emanates from the ongoing reality on the ground that leaving sacred forests for ritual leadership alone does not work, as the basic supporting principles and values are declining in power and appeal, on the one hand, and socio-demographic pressures are increasingly putting sacred forests under threat, on the other, as discussed above.

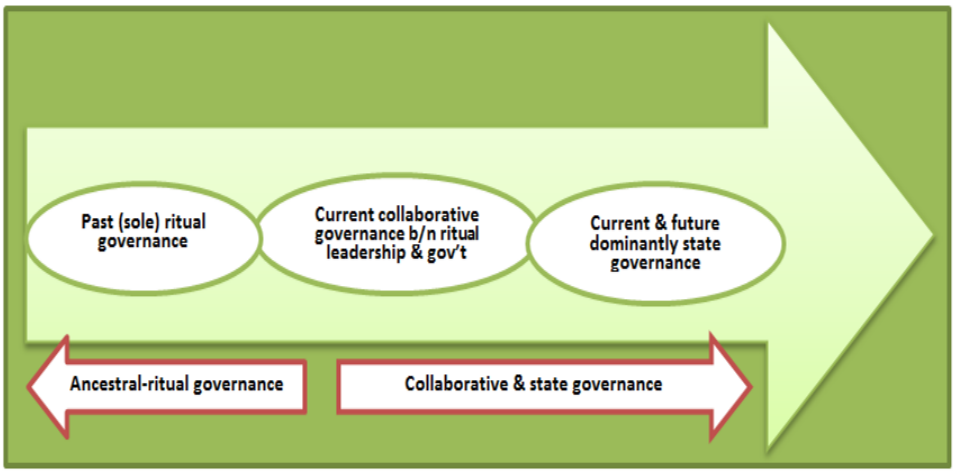


Figure 9-13 Model of sacred forests governance along temporal scale, interviews &FGDs, 2012-2013, Wonsho, Ethiopia
(Note: b/n: between; gov't: government)

Local informants held divergent views regarding the current role of ancestors and rituals in governance and protection of the environment. While the majority (*Figure 9.10 above*) still maintained a general belief in the protection relevance of observing ancestral rituals, the power and role of deceased ancestors, such a perceived role appears to be more symbolic than actual. Local views of how sacred sites need to be protected and managed, therefore, generally emphasize the mundane, and reliance on state legal frameworks. Ideas about stronger government intervention, more and better physical measures of protection such as erecting

fences, and introducing harsher legal punishments for violators were among the frequent comments from household surveys. Thus, even though many local informants still believe in the aura and power of ritual leaders and ancestral spirits as important in protection and management of sacred sites, more and more trust and responsibly appears to be laid on the local government.

In short, physical policing is being preferred much more to the past 'spiritual policing" whereby the pervading sense of the ancestral spirits and their fear served as a form of ever present, powerful 'police'. In general, the overall formal mandate of protecting sacred forests from illegal encroachment, which is a major ongoing threat, is effectively held by the local *government*, while ritual leadership continue to provide the moral and spiritual power for galvanizing grassroots action and support.

9.4 Discussion, summary and conclusion

The preceding sections presented findings on current endangerment of sacred forests, native trees, ancestral values and ethnobotanical traditions in Wonsho, Sidama; local peoples' understandings of the scale, types and drivers of these threats; and governance–protection principles and actions at various scales. In the following paragraphs, I discuss findings in light of these broader contexts.

9.4.1 The facts and process of biocultural diversity endangerment

9.4.1.1 Endangerment of (tree) biodiversity and deforestation

The fact and processes of biocultural diversity erosion in Wonsho, Sidama discussed above may fit into general global as well as national contexts. Globally, biocultural diversity faces increasing endangerments at all scales, the threats are well established (Ramakrishna, 2001) and the loss of diversity is taking place at an alarming and relentless rate (Millennium Ecosystem Assessment, 2005; Harrop, 2011; Sponsel, 2012; Loh & Harmon, 2014). Unless some urgent actions are taken, according to some estimation, 20 per cent of the world's biodiversity will be lost in the near future (Maffi, 2001; IUCN, 2007). For example, over 10 per cent of the world's tree species face the danger of extinction and some 1,000 are critically endangered (Newton, et al, 2003; The Global Trees Campaign, 2014; Sharrock et al., 2014). The CBD's (2009) report on plant conservation states between 60,000 to 100,000 plant species are threatened worldwide.

It is also known that throughout the world, eco-linguistic diversity, considered as a salient indicator for biocultural diversity, has diminished considerably and many native languages of the world's most biodiverse eco-regions have been lost (Muhlhauseler, 2001; Maffi, 2005;

CBD's Aichi Targets, 2013; Loh & Harmon, 2014). Nettle and Romaine (2000) point out that about half of all known languages have been lost in the past 500 years and 90 per cent are poised to disappear in the next century. Ethnobotanical and forest-related knowledge such as those relating to medicinal plant use are becoming obsolete as local communities integrate into mainstream cultures and urbanize (Cotton, 1996; Jenkins, 1996; Ford, 2000). As Balick (2007) argues, cultural erosion now forms the basis for many ethnobotanical and intangible heritage related conservation works around the world. In general, conventional knowledge in anthropology suggests myriad traditional knowledge systems relating to biodiversity, environment and a host of other dimensions have succumbed to modernization and acculturation processes (Quinlan & Quinlan, 2007).

In Wonsho, Sidama, biodiversity in general and plant diversity in particular, especially native trees, face such threats. There was a general understanding among the people that both faunal and floral diversity of the local ecology were threatened; "many wild animals that existed in the past have disappeared," and that many native tree species are so rare that "the coming generation will even fail to know their names." Although locals held divergent views and understandings about the scope and types of tree species under threat, there was an overall agreement as to the fact of existence of such a threat. As shown in the presentation above, the loss and/or rapid decline of about 22 key native woody tree species is a salient indicator of the current threat to tree diversity. According to local understanding and general available information on degradation and deforestation in Sidama and the SNNPRS as a whole, forested lands, including sacred groves, have declined considerably, about twelve native woody species were locally reported as lost while some were on the verge of local extirpation and many were under increasing threat. In Wonsho, while informants report environmental degradation and deforestation trends, studies providing systematically collected data were lacking. At the time of the fieldwork, the District Agriculture Office maintained general information on the current forest types and land use. Figures for the past several decades showing trends in deforestation do not exist. Deforestation and biodiversity information are generally suspect in Ethiopia as a whole, with the lack of an appropriate forest information management system cited as the cause (Wøien, 1995; Reusing, 2000).

The phenomena of biocultural diversity erosion and deforestation in particular have been at play in Wonsho and other parts of Sidama and southern Ethiopia as a whole for the last 110 years, since Sidama was incorporated into the Ethiopian nation-state in 1893 (Hamer, 1972; Berisso, 1995; Tekle et al, 2012; Hameso, 2014). This set in motion a whole new process of change in socio-cultural, politico-economic and ideological organization of the people, sowing the seeds

of change in human-environment relationships (Dessie, 2007; Kumo, 2009; Tekle et al, 2012; Hameso, 2014).

While the policy pursued during the feudalist, imperial regimes up to the fall of Emperor Haile Selassie I (1930-1974) encouraged forceful land appropriation leading to extensive overutilization of forests for commercial logging, especially in the 1940s and 1950s (Breitenbach, 1963; Chaffey, 1979; Negash, 2010), such a trend continued all the more during the Socialist regime (1974-1991), and continued into the post-Socialist era, with introduction of exploitative policies and increasing population (Reusing, 2000). In some parts of Sidama, such a Wondo Genet area, the forest cover declined by 80 per cent between 1972 and 2000, with agricultural expansion contributing over 80 per cent (Dessie, 2007). In other parts of Sidama, the whole of formerly forested lands have been converted to cultivated lands by the late 1990s and early 2000s (Yilma, 2012).

Such processes were similar in SNNPRS and Ethiopia as a whole. The south-western highlands of Ethiopia were completely covered with natural forests until the turn of 20th century. By 1997, only 18.4 per cent of closed high forests were remaining, the greatest damage happening between 1973 and 1997 (Reusing, 2000). The trend continued in the period since 1997 as well (Woldemariam & Fetene, 2010). In the south-western Ethiopian community of Gammo Goffa, a study reported forest cover declined by 23 per cent, while cultivated land expanded by 39 per cent from 1973 until 2006, "with the most significant change from 1986 to 2006," (Assefa, 2012: iii). Some area in central and northern parts of the country experienced as high as 99 per cent forest loss between 1957 and 1982 (Zeleke & Hurni, 2001) and 1973 and 1986 (Garedew et al., 2009). By early 2000, the SNNPRS was losing its cover of high forest at an estimated 80,000 ha per year (Fikadu, 2007; Said & Lemenih, 2013).

Nationally, while deforestation (and afforestation) have been taking place for several centuries (Pankhurst, 1995), the hundred years between the end of 19th C and the early 1990s are seen as the century of phenomenal environmental degradation and deforestation (Kiros, 1993; Berisso, 1995; Grepperud, 1996; Bishaw, 2001; Dessie & Christianson, 2008). By the end of 1990s, the country's forests shrank to a mere 4 per cent, down from an estimated 35- 40 per cent at the turn of the 20th Century (McCann, 1995; Belachew, 1999; Bishaw, 2001; Negash, 2010). Particularly, during the last few decades, Ethiopia has experienced massive environmental degradation (Bielli et al., 2001; Taddese, 2001). The country lost 24,543 km² of forest, constituting about 2.14 per cent of the total, between 1973 and 1990 (Resuing, 2000); and an estimated 21,000 km^2 between 1990 and 2005 alone, to cultivation and other land use types (FAO, 2006; Anon, 2014).

This has created the context for many serious problems of environment and biodiversity throughout the country, including soil degradation, habitat fragmentation, extinctions and fast decline of landraces and native faunal and flora species, among others (Salih and Shibru, 1999; Osman & Sauerborn, 2001; Shibru, 2007; Akililu, 2008; BIE, 2014). Specific cases of animal species in varying scales of endangerment exist and many of the nation's sixteen protected areas focus on these endangered fauna (BEI, 2014). The state of plant diversity perhaps needs some specific note here to provide a context for threats facing sacred forests and native trees. Many of Ethiopia's 6500-7000 plant species, especially woody native trees, are "rare, threatened or critically endangered in the wild" (Getachew, 2004; IBCR, 2009). There is much concern about the conservation status of Ethiopia's native trees, though some disagreement as to what is threatened. Reports on the trees of Ethiopia and Eritrea by Vivero et al (2005, 2006) show that of the 428 endemic and near endemic woody taxa, of which 107 are trees and 321 shrubs, 135 woody taxa were endangered. The study found 46 taxa as Critically Endangered (Shaw, 2014).

The Institute of Biodiversity of Ethiopia also recognizes many of the native tree species on a national list of plants requiring priority in conservation. It estimates about 103 tree and shrub species are threatened (EBI, 2014). Among these are *Podocarpus falcatus, Junniperus procera*, *Prunus africana, Olea europae, Ficus vasta* and *F. sycomorus*. These face serious threats that range from widespread individual tree degradation to local extinction (Negash, 2010). The 22 tree species of Wonsho provided in Table 9.2 are part of this list. Many of these trees are limited to old church compounds, sacred groves or other protected areas such as school premises. They have disappeared from the landscape, condemned to local extinction.

9.4.1.2 Erosion of biodiversity supporting institutions of sacred sites

Wonsho, Sidama sacred forests, useful ancestral traditions and local livelihoods have thus been threatened as the natural resource and biodiversity base, especially native trees, supporting them is endangered. The results of this study have showed how Wonsho, Sidama land teemed with sacred forests in the past with a rich tree biodiversity base and forest habitats. Useful biodiversity supporting values, knowledge systems and institutions have evolved along with the robust biodiversity and ecology. Local cultural and livelihood systems also benefited from these (Chapter 8). Over the course of the last 110 years in general, and the recent four to five decades in particular, however, sacred forests, their supporting socio-cultural systems and dependent livelihoods have faced a range of eroding factors (Hamer, 1970, 1976, 1980). Many of Wonsho-Sidama's sacred forests have disappeared, many more were transformed and the remaining ones have been degraded (Hameso, 2014). With declining scope of sacred forests, useful ancestral

values and institutions that have supported resilient biocultural systems have been subjected to transformations.

The capacity of the ancestral traditions for dynamic adaptations and persistence, discussed above, notwithstanding, ancestral religious values and institutions that make up the centre of the biocultural diversity supporting system have been especially threatened (Hamer, 2002; Kifle, 2007; Kummo, 2009; Tekle et al, 2012). Despite recent attempts to resurrect some of these systems, local values, habits, and norms appear to be more and more adapting, and in some ways giving way to other value systems which are not necessarily supportive of sustainability and resilience of biocultural systems (Hamer, 2002). More specifically, useful tree supporting values, beliefs and knowledge systems that have evolved along, and interdependent, with native trees have been jeopardized as the trees face endangerment. Some useful ethnobotanical knowledge, and biodiversity supporting belief and values related to specific native trees, have already disappeared with the loss of some of the trees and/or are in the process of rapid decline commensurate with that of the trees themselves.

In Ethiopia, sacred sites, native trees and the rich repertoire of traditional knowledge pertaining to biodiversity conservation are generally endangered. Communities across the country have been forced to abandon many of the useful soil conservation and biodiversity management practices (Taddese, 2001). While in many places over the country local communities still hold to ancestral traditions, maintain sacred natural sites and engage in biodiversity supporting lifestyles, these have declined dramatically being replaced with values, lifestyles, and social organizations that increasingly disregard them. Different processes contribute to the weakening of Ethiopia's traditional values, norms and institutions pertaining to sustainable biocultural supporting arrangements (see, for example, Abute, 1997; Getu, 2004; Yntso, 2004; Gebre, 20004; Doffana, 2008; Kummo, 2009). Many ancestral religious values and institutions that support biocultural diversity have faced increasing pressure, which have either been forcing them into a state of creative syncretism, thereby watering down their original strength, or in many instances a complete takeover. Yet, many aspects of the old system still manage to survive under the cloak of introduced values and practices (Hamer, 2002; Girma, 2012), a phenomenon, discussed in several places above, attesting to the persistence of the ancestral institutions.

Globally, sacred sites and their traditional custodian communities, their environments and livelihoods are increasingly endangered (Cunningham, 2001; Igoe, 2004; Johnston, 2006; Verschuuren, et al, 2010; Maffi & Woodley, 2010). More specifically, sacred sites in the developing world, which are known to be the world's most biodiverse regions, face increasing

threats (Sponsel, 2012; Earth Island Institute, 2014). As noted above, the decline in linguistic and religious diversities is a salient dimension of endangerment of cultural diversity. Traditional religious systems of African and other small-scale societies have faced increasing threats of extinction and replacement by modern value systems (Gellar, 2007). The move to integrate native and local communities into mainstream society and 'develop' them has often resulted in negative consequences for the peoples and their biocultural resources and identities (Bodley, 1996, 1999; Durning, 1995; Saleh, 1998; Lewis, 1999; Hilthrust, 2001). The loss of local land races, indigenous trees and endemic animal species in many parts of the world is linked to the loss of traditional knowledge systems related to these species. (See, for example, a study by Brosi et al., 2007 on loss of plant-related knowledge and skills as native species get lost in islands in Micronesia).

9.4.2 Drivers of biocultural diversity erosion in Wonsho, Sidama

Findings presented above show that in Wonsho, Sidama, drivers of biocultural diversity erosion in general and degradation of sacred sites, and decline of native tree in particular, are growing population and resultant agricultural intensification, introduction and intensification of a cash crop economy, government policy interventions and other 'development' projects. Reviews of some studies confirm this (see for example, Hamer & Hamer, 1994; Costantinos & Mohammed, 1999; Dessie, 2007; Yilma, 2012; Hameso, 2014). The policies of successive Ethiopian state regimes in the former 'Sidamo' administrative region, which included Sidama and several other areas in the south, since the 1890s have had significant impacts on the subsequent society-environment-forest relationship and playing a major role in the deforestation process, especially during the 1970s to 1990s (Hoteso, 1990; Beriso, 1995; Grepperud, 1996; Taddese, 2001).

Writing about population increase as a major driver of change in Sidama, Hamer and Hamer (1994; 187) noted that "…population size and density have increased to the point where cultivation has become intensive." As shown in the above presentation, there has been rapid population growth in Sidama between 1970s (0.7 million) and 2014 (3.5 million) (Hamer, 1970, 1976; PHCC Ethiopia, 1991; ESA, 1996; CSA, 2012, 2013; Anon, 2014). Some provide a higher estimate of current Sidama population (4.5 million) (See Hameso, 1998, Anon. 2014). Among other things, high fertility and low outmigration drive the high population density in the area (ESA, 1996; CSA, 2012; Regassa & Stoecker, 2012; Officers, SCRBO, 2012).

In Wonsho, Sidama and other parts of the country, these have been generating changes in the social structures, economic organization, land use and cover types and priorities, including the conversion of formerly forested areas of sacred lands. Farmland scarcity is one of the effects of

this process which is one of the highest in Ethiopia, as noted above (Anon, 2014). These also generate growing socio-economic demands, such as fuel needs and cash to support decreasing food self-sufficiency. The increasing demand for firewood and the allure of gaining cash through sale of charcoal and firewood in local markets for growing urban demands are also related major drivers. In general, a combination of internal and external factors of intensifying subsistence agriculture, changes in socio-cultural organization, changing polices of successive regimes, coupled with fast growing population, account for biocultural diversity endangerment in Wonsho-Sidama.

In Ethiopia, high population growth, entrenched poverty, rapid urbanization, weak policy and institutional frameworks and lack of law enforcement, etc. (Kiros, 1993; Tedla, 2007; Negash, 2010) have been identified as major factors that harm the nation's biodiversity, natural sacred sites, and native tree species. The 2005 National Biodiversity Conservation Strategy Document, recognizing the importance of people as key national resources, underscores that "uncontrolled population growth puts undue pressures on all other national resources," (IBCR, 2005). Ethiopia's population grew from about 11 million in 1900s to the current 94 million (CSA, 2013). The national discourse on environment and biodiversity generally considers deforestation as the root cause of soil erosion, expansion of desertification, disturbance of ecological balance, depletion of biodiversity and reduction of agricultural production, which in turn has been triggered by decades of interconnected factors including rapid population increase and weak government institutions (National Forest Policy, 2007).

Other factors include poaching, encroachments and illegal harvest, fire hazards, introduction of invasive species and climate change (Lemneh, 2008; Negash, 2010; Vaughn, 2010). The increasing problem of invasive species has been getting more pronounced in recent years, posing a veritable threat to native trees and local socio-economic and welfare systems dependent on them (Negash, 2010). The spread of invasive plant species such as *Parthenium hysterophorus*, *Lantana camara*, *Prosopis juliflora* and *Eichhornia crasspes* in the last few years has become a national problem as they affect the ecological relationships among native species, ecosystem function and human health (Tedla, 2007; Admasu, 2008). Ethiopia's 5th country report to CBD also regards invasive species as one of the top six threats to biodiversity, economic wellbeing and society (BIE, 2014**).**

As for erosion of local values, institutions and knowledge systems in Wonsho, Sidama and the nation at large, factors such as religious proselytization, globalization, modern education and development interventions are important drivers of change (Hamer,1976; 2002; Hamer and Hamer, 1994; Getu, 2004; Gebre, 2004). As noted above, traditional religion that forms the core

of tree-supporting beliefs, knowledge and institutions in Wonsho, Sidama has suffered a big loss since the 1950s (Hamer, 1970, 2002; Kummo, 2009; Tekle et al 2012), coinciding with the introduction and expansion of modern religions, particularly Protestant Christianity, which encouraged native converts to distance themselves from ancestral rituals (Hamer, 2002, Kumo, 2009; Tekile et al, 2012). Prior to 1994 there is a dearth of information, but between 1994 and 2007, SAR registered an 11 per cent decline, while Protestant Christianity grew by 21 per cent (ESA, 1996; CSA, 2012) (See Table 9.5). It is assumed that before the introduction of modern religions, SAR was uncontested in Sidama, presumably subscribed to universally.

However, it is also important to note that conversion does not always lead to detachment from ancestral values, and many continue to function under the cloak of modern religions (Hamer 2002). It should also be noted that while the figures show drastic decline, and that outward signs such as participation in rituals, making sacrifices, etc. have dwindled, they do not capture the complex details religious practices that have evolved. The impact of modern religions such as Protestants Christianity on ancestral traditions, therefore, needs cautious treatment. Further, as noted above, projecting SAR as a vulnerable relic from the pre-modern past is untenable; as amply demonstrated above, the ancestral culture is malleable and dynamic. As findings show, Protestant households continued maintaining sacred groves after conversion, and there is a growing tendency among the community, especially educated class, that their Christian worldviews and ancestral values are compatible (Wansamo, 2009). There is a growing understanding among different faith communities of the need for co-existence, respect, and engaging with environmental issues, protecting sacred forests and planting trees.

At a global scale, deforestation is a major problem affecting the environment, biodiversity and human wellbeing. Between 1990 and 2005, deforestation was taking place at an estimated 13 million ha rate per year (FAO, 2006) and most of this was in Africa, Asia and Latin America. East Africa, including Ethiopia, is the second highest in terms of deforestation at 0.94% for 1990–2000 and 0.97% for 2000–2005 (FAO, 2007). These and related processes account for loss of local biodiversity, especially woody tree species including medicinal plants (Balick & Cox, 1996; Narnajo, 1995; Vitousek et al., 1997; Geist & Lambin, 2001). In general, around the world, enculturation into mainstream society, commercialization, religious innovation, modernization, the removal of native communities from their long-held ancestral territories, rapid processes of social change and cultural transformation, etc. contribute to the erosion of biocultural diversity (Bodly, 1972; Durning, 1995; Lewis, 1999; Ossewijer, 2000; Cunningham 2000; Kirsch, 2001; Hilthrust, 2001; Johnston, 2006).

In summary, studies conducted over the past 30-40 years in Ethiopia show that the causes and drivers of biocultural diversity erosion and decline in forests (including sacred ones) are many and complicated. These studies point to the significant role of demographic pressure combined with resultant changing socio-political and economic conditions, weakening biodiversity-supporting economic and social organizations, increasing poverty induced by decreasing productivity, land shortages, and unstable and inefficient government policies (Berisso, 1995; Pankhurst, 1995; Grepperud, 1996; Reusing, 2000; Taddese, 2001; Bishaw, 2001; Dessie, 2007; Stellmacher, 2007; Rahmato, 2008; Lemeneh, 2008).

9.4.3 Governance frameworks and conservation actions

Wonsho, Sidama had maintained an autonomous system of governance and social institutions relating to biodiversity, sacred sites and trees for the past millennia, until their incorporation into the Ethiopian nation-state in the 1890s, which set in motion accelerated external processes of change (Hamer, 1970; Hameso, 1998; Kummo, 2009), despite the ancestral institutions continued to maintain the core of the traditions. Such systems have provided a major mechanism of protection for biodiversity and sacred groves. Similar systems have existed for millennia in Ethiopia among its divergent cultures and peoples, which serve very useful biodiversity conservation and environmental management goals (Kanshie, 2002; Stellmacher, 2007; Woldu, 2009; Desissa, 2009; Balemie & Singh, 2012), however inadvertent these may be.

The ‘ritual leadership’ framework of governance that characterizes Wonsho, Sidama and similar other communities in Ethiopia, is imbued with a range of core principles. Among these are: taboos on protection of habitats and utilization of biodiversity perceived as sacred (such as trees of sacred groves); fear of ancestral spirits believed as inhabiting sacred places; sanctioning of perpetrators through a series of social-psychological and material punishment regimes; belief in the inherent nature of sacred grove institutions ‘to take care of themselves’ and emerge strong even through hard times; the place of ancestors in symbolic yet effective positions of power and authority; and preferential protection treatment for native woody tree species. Traditional values and institutions of authority and power structures such as gerontocratic arrangement, often working within the general context of ancestral religion, are important components in such system of sacred groves and natural resource governance in Wonsho, Sidama and other traditional communities in Ethiopia (Hamer, 2002, 2007; Stellmacher, 2007; Wansamo, 2009; Tekle et al, 2012).

Such a protection and governance system often operates within an ‘eco-centric view of the world’ where people, culture and nature are holistically unified, and sacred landscapes are

mediums of spirit entities and capable of moral agency (Ellen 1999; Århem, 1999; Sponsel, 2008, 2012). It is also a manifestation of a 'theology of the environment' that imbues management and governance principles of traditional community, where their values relating to religion, production, social relationship, and the whole range of societal ethics are intertwined (Cunningham, 2001; Toledo, et al., 2010; Sponsel, 2012; Toledo, 2013). An implicit assumption here is the idea of a harmonious relationship between local cultures and environment. While this may in many compelling ways be the case, there is, however, a need to note also the existence of many local beliefs and management practices that are not so harmonious (Verschuuren et al. eds., 2014).

Though challenged, ancestral governance norms are trying to keep going through a syncretic and collaborative approach whereby traditional and modern values and institutions are incorporated for managing and protecting SNS cultural resources in Wonsho, Sidama. Since the establishment of Wonsho District in 2006, the local government's engagements with custodians of sacred forests and the local community as a whole have increased. Formal state structures have begun playing an increasing role in providing legal protection and support for local traditions and sacred groves. In the collaborative approach, ancestral values, institutions and personages provide symbolic and spiritual structures of governance and protection. Local government looks for the input from ritual leaders to capitalize on their spiritual authority. This provides space for ancestral institutions to dynamically function. However, the current state is predominantly a government-led process. Local people have come to place an increasing level of hope in governance and protection by the government. The future of protection of sacred forests seems to hinge more and more on the government.

In principle, while all land, including sacred forests, belong to the state, both national and regional forest policies (National Forest Policy, 2007; SNNPRS, Proclamation 147/2012) provide for ownership, participation, and empowerment of forest-dependent communities; the latter further recognizes community ownership of forests. However, such initiatives are just emerging after decades of changing and conflicting approaching to natural resource management, and there are concerns about some gaps and weak institutional structures, and integration of efforts to implement policies (Tsegaye, 2007; Damtie, 2008; Taddese, 2008; Said & Lemenih, 2013; Ayana et al., 2013). A form of ambivalence still persists as to the spheres of ownership, power and jurisdiction responsibilities between ritual leadership and the local government, particularly regarding sacred forests. The potential for conflict is latent in the competing values of those who hold supreme power and authority over matters of sacred forests.

In light of the IUCN four-fold governance model for protected areas based on "who holds decision-making and management authority and responsibility about protected areas" (Dudley, 2008:37), the current, main governance model for sacred forests of Wonsho, Sidama may be broadly identified as 'governance by government' (Type A). As noted above, sacred natural sites of Ethiopia, particularly those that have been managed communally, are classified under protected forest areas, and they are "national assets" ultimately under government ownership. This is generally a reflection of the national constitution and land policy of Ethiopia, which espouses state ownership of land and all natural resources (FDRE, House of Representatives, 1995; Gebreselassie, 2006; Wibke et al., 2008). However, the current government (in contrast with the previous two regimes) follows a decentralized governance approach (Vaughan, 2003; Ayana et al., 2013) to natural resource management.

Elements of other governance types also are evident in the current protection framework in Ethiopia. Local communities are recognized as 'primary stakeholders' and thus entitled to 'shared governance.' The national forest policy (National Forest Policy, 2007) provides for involvement of private individuals, farmers' associations, NGOs and other business enterprises in forest development and management; the SNNPRS' most recent policy on forestry (SNNPRS, Proclamation 147/2012) recognizes community ownership and participatory forest management (PFM), in view of the fact that many of the remaining 'natural', 'pristine' forest areas of the country are found in SNNPRS (Resuing, 2000; Fikadu, 2007, Said & Lemenih, 2013). These forests have been under the custodian governance of local, forest dependent communities for several hundreds of years. In view of this, the SNNPRS emerging engagement with the communities through PFM and allowing or, rather, recognizing the already existing community ownership and governance of sacred forests is understandable. Some sacred groves of Wonsho, Sidama were in actuality owned and managed by private households and thus IUCN Private Governance type is also relevant. An element of a fourth governance type, Governance by Indigenous Peoples and Local Communities, is further evident in the way sacred forest have been managed and protected in Wonsho, Sidama, particularly in the past (Hoteso, 1990; Hamer, 1970, 1976; Tekle et al, 2012).

However, the governance of environment, natural resources (including sacred groves) and traditional knowledge systems, in general, faces numerous challenges in Ethiopia and other regions of Africa (IUCN, 2007). There are lacuna in a range of realms including expertise, awareness of international conventions and laws, coordination, integration and active grassroots participation, particularly at regional, sub-regional and district scales (Gebreselassie, 2006; Stellmacher, 2007; Lemenih & Bekele, 2008; Negash, 2010; Ayana et al., 2013; Said &

Lemenih, 2013; EBI, 2014). Such matters are generally thorny in contemporary debates about intellectual property ownership and protection for traditional knowledge systems (Reddy, 2006).

Past state regimes had rather oppressive and marginalizing policy approaches (Chaffey, 1979; Gebre-Kiros, 1993; Dilebo, 1996; Admasie, 2001). As noted above, Ethiopia is currently a party to a number of international conventions and policies on biocultural diversity issues, including the CBD, the UN Convention to Combat Desertification (UNCCD), the UN Framework Convention on Climate Change (UNFCCC), and the Convention on International Trade in Endangered Species (CITES) and is also a pilot country for UN and World Bank REDD^{plus} (Ayana et al, 2013). At a global scale, the creation of numerous, broadly salutary international instruments and polices of protection for SNS, custodian communities and local ecologies should be noted as important contours of change that apparently benefits local communities and their biocultural resources (Posey and Dutfield, 1996; Varese, 1996; Ford, 2001; Harrop, 2005). Wonsho, Sidama communities showed a broadly positive view of current policy and support structures, which are in turn reflections of situations of international efforts. These have resulted in the increasing recognition of local institutions, rights, and values of SNS and their local governance structures. While the recognition and promotion of these systems by national and international actors including IUCN, various UN organs, etc., is considered an important milestone, critics also call attention to a range of subtle dimensions that require further engagement (Igoe 2004, Johnston, 2008; Dudley, 2008; Verschuuren, 2010).

What does current conservation and protection action in Wonsho, Sidama and SNNPRS as a whole look like? How does it fit into the national context and global processes? As noted above, in recent years, biodiversity conservation and environmental rehabilitation actions are expanding and are supported by a range of policies and institutional structures. The present government has designed the ‘Climate Resilient Green Economy Initiative’ (FDRE-the CRGE Initiative, 2011) to serve as a manifesto for development that protects environment and biodiversity, while at the same time developing the economy, with a view to be a middle-income country by 2030. One of the ‘four pillars’ of this documents is “Forestry: Protecting and re-establishing forests for their economic and ecosystem services including as carbon stocks” (FDRE-the CRGE Initiative, 2011:5; Ayana et al., 2013). Some of the country’s efforts and actions have in recent years reportedly resulted in ecological restorations and increased forest cover (Bane et al., 2007; Lemenih & Bekele, 2008; Ayana et al., 2013; Jeffrey, 2014), though this has been questioned and the government’s policies are often criticized for problems in policies and their implementations pertaining to BCD in Ethiopia (Vaughan, 2003; Berhane-Selassie, 2008).

The (Ethiopian) Millennium tree planting initiative is an important national engagement with biocultural diversity conservation relevance through its main work of afforestation and reforestation, including planting of threatened native woody trees. Primarily a national event marking the Ethiopian Millennium (2000 in the Ethiopian Calendar), this has been an effective tool that popularized widespread tree planting and reforestation work that have been increasing since the early 2000s, across the rural and urban landscapes billions of trees have been planted, reportedly resulting in some degree of reversal of the nation's deforestation trend; a threefold increase from the 2000 figure of 3.5 per cent in forest cover was reported (EBI, 2014).

The progress has been noted in some international reports (Blunt, 2007; UNEP, 2009; AFP, 2010; African Economic Outlook, 2013). Millennium tree parks, as observed in Wonsho-Bokaso, have sprung up throughout the country. However, through such actions, exotic trees have been expanding, though such expansion should not summarily be considered as negative. Current tree management actions underemphasize, as evidenced from Wonsho study, some of the most locally endangered native trees such as *Syzygium guineense*, *Pouteria altissima*, *Ekebergia capensis* and others, on account of problems with their manageability (Negash, 2010). Despite national and regional conservation packages addressing in situ and ex situ conservation and management of endangered species of trees and animals, the pace of threats facing native species seems ever surpassing the conservation efforts.

With respect to managing and protecting sacred natural sites as socio-cultural entities and associated ethnobotanical traditions, emerging trends seem encouraging. Following the adoption of the new national constitution of 1995 and a range of international and national polices and laws (FDRE, House of Representatives, 1995; MoCT, 1997; Environmental Protection Authority, 2000; MoCT, 2000; BIE, 2006; FDRE- MoARD, 2008), local custodian communities have been granted power, in principle, to exercise their ancestral rights and institutions. Local, sub-regional and regional governments engage in overseeing, managing, protecting and promoting useful local values and institutions. Reaffirmation of ancestral identities, values and institutions through regional and national fora is positive progress, as seen in Wonsho, Sidama. A recent development is the introduction of participatory management of sacred forests and other community-based commons, a management regime that has been in the form of experimentation through various government and NGO actors and this has claimed to result in positive protection outcomes and local livelihood gains. Since recent years, negotiations among the regional government, NGOs and various actors resulted in SNNPRS updating its forest policy to provide for more power for forest dependent communities, encourage participatory forest management and allow community ownership of forests, which has an important

relevance for sacred forests, their governance and the protection of ritual-based governance norms (Bane et al., 2007; Lemenih & Bekele, 2008; Winberg, 2010).

Across the world, reviewed literature indicates improving management and governance of biocultural diversity and local institutions in recent years. Some good examples are international recognition and empowerment actions through UNESCO's programmes (Schaaf & Rossler, 2010), and the efforts of UNEP, the CBD and IUCN to include issues of local culture and SNS in their management and action priorities (Maffi, 2005; 2007). However, problems exist and local communities have not yet developed full trust in these processes (Moran, 1999; Posey, 2000; Igoe 2004; Johnson, 2006). The idea of biocultural diversity conservation continues to be controversial (Maffi, 2007). In view of this, better governance and management approaches call for an approach that is based on traditional resources rights instead (Posey & Dutfield, 1996; Harrop, 2005). It also calls for 'co-management through long term action' (Godole et al., 2010) and 'ground-up action' of local communities whose sacred sites, languages, and ancestral traditions are threatened by global forces (Maffi, 2005). Conservation and development efforts should be based on 'wider and active participation of current users' and the essential tying of such efforts to improvement of local livelihoods (Jain, 2007) and dynamic SNS institutions (Sheridan, 2008).

9.4.4 Summary and conclusion

The preceding paragraphs outlined findings on the phenomenon, processes and drivers of conservation threats facing local biocultural diversity with a focus on sacred groves and ancestral institutions. The local understandings of the scale and trends of endangerment were discussed followed by major drivers of such endangerment (sections 9.1 to 9.4). In section 9.4-9.5 governance frameworks and conservation actions with respect to dealing with the threats at different scales were discussed.

A major observation drawn from the discussions is the existence of threats to, and resulting in erosions of, local biocultural diversity over the past 110 years, but with an escalation of pressures since the 1950s and 1960s. While the Wonsho, Sidama sacred groves and ancestral institutions supporting them have been resilient through dynamic and creative adaptations and syncretisms, the future seems to hold an increasing challenge to such resilience. While threats generate from a range of internal factors such as population growth and related socio-economic pressures, the external impacts such as changing, weak and poorly resourced government policy and institutions, religious innovations, modern education, urbanization and cultural globalization pose potent challenges.

Across the successive governments in Ethiopia, divergent biocultural diversity conservation and protection policies and actions have been pursued. While erosion of biocultural diversity in the country has continued until today, recent decades have witnessed an improved policy environment with recognition of local communities, enhanced appreciation of environmental and biocultural diversity problems and the cultural rights of local communities, and increased commitment to conservation actions such as ecological restoration. While divergent views exist regarding these recent developments, the Wonsho-case has shown the recent years have been promising, particularly since the establishment of the district as an independent local government unit in 2006. Curtailment of encroachments to sacred forests, collaborative engagements with local community and ritual leadership and cultural revitalization works have created some degree of hope and strength for sacred forests and supporting ancestral institutions.

Governance and protection frameworks have moved over the years along the continuum from predominantly ritual leadership (governance by local communities, IUCN Type D) to mainly governance by government (Type A). Elements of collaborative and private governance exist. However, all current evidence shows positive feedback developing between a growing involvement of local government and modern values and a weakening role of ritual leadership. Thus, as local communities' growing dependence on government policies, power and institutions drive the erosion of local values and institutions, the increasing role of government action becomes more vital to ensure effective containment of the present and imminent conservation threats.

In the foregoing chapters, the geographic, ethnohistorical, sociological and anthropological foundations of sacred forest sites (chapters 4-5); the roles they play in conservation of biodiversity, medicinal plants and supporting local socio-economic, and providing cultural and ecosystem services (chapters 6-8); threats facing Wonsho sacred forests, governance frameworks and protection actions (Chapter 9) were presented and discussed. The final chapter sums up the core findings of the study, examines the implications and suggests a set of recommendations.

Chapter 10. Summary, Conclusion and Recommendation

This final Chapter summarizes the research problem, conceptual framework, methodology, data and their linkages (Section 10.1); collates main findings presented in each data chapter (Section 10.2); examines core issues running across the findings (Section 10.3); and finally identifies implications and recommendations for further research (Section 10.4).

10.1 The research problem-methodology-data interface

This thesis is about understanding the origins and social organization of sacred sites and their custodians, motivations for the former's maintenance, the roles they play in protecting BCD, their conservation status, governance instruments and local perceptions in selected communities of Wonsho, Sidama, southwest Ethiopia. The study addressed six main objectives (see Figure 10.1) to answer the following core questions:

a) What do the origins, social organization and present geography of Wonsho SNS look like?
b) Why are Wonsho SNS maintained and their maintenance so important?
c) What is the BCD conservation consequence of their maintenance?
d) Do community health, herbal medicine and medicinal plants fare well because of maintenance of SNS in Wonsho, Sidama?
e) What is the current state of sacred forests and ancestral traditions?
f) How have the latter been or are being governed and what current conservation actions exist?

The study was qualitative in its approach, the methodological goal being in-depth understanding and "thick description" (Geertz, 1972, 1973) of the perspectives of local people. The design for data generation and analysis was broadly a mixed-methods style, whereby an assortment of qualitative and semi-quantitative data collection and analytical tools were employed. The data were collected over a year of fieldwork (July 2012-June 2013) utilizing multi-scale, multi-stage, purposive sampling of sites, localities, households and people. The quality of fieldwork process and products were ensured through a range of measures detailed in Chapter One. Data management and analysis tasks were handled through the use of Express Scribe and NVivo 10 and SPSS 20/21, respectively, for qualitative and household survey data.

While the foregoing aspects are detailed in Chapter One, Chapter Two summarized literature on the concepts and theoretical framework of biocultural diversity conservation; different approaches to conservation, their merits and demerits; the characteristics, dynamics and role of traditional concepts, knowledge and institutions relating to the botanical world and biodiversity conservation; the nature, role and status of SNS; conservation threats facing biocultural diversity; the nature of informal-formal governance frameworks and conservation actions. Chapter Three introduced study areas and described location, climate, agro-ecology, biocultural diversity profile, socio-demographics, ethnohistory and related information on Ethiopia, SNNPRS and Wonsho, Sidama, with focus on the later.

Data were generated and structured based on the aforementioned guiding questions, and thesis chapters were organized along the three broad issues which are further divided into seven themes as summarized below. A diagrammatic summary showing flows and linkages among the study's core research objectives, empirical chapters and main sub-topics in each chapter is given in Figure 10.1.

10.2 Summary of the empirical chapters

In a nutshell,

(a) Chapters Four and Five discuss the geographic, historical and anthropological foundations of sacred forest sites;

(b) Chapters Six-Eight examine the roles maintenance of sacred groves plays in conserving biodiversity, medicinal plants and supporting local socio-economy, culture, wellbeing and the ecosystem services they generate; and

(c) Chapter Nine explores threats, and drivers thereof, sacred forests and ancestral traditions face, and governance frameworks and protection actions in place. The findings are briefly summarized as follows.

Understanding Wonsho, Sidama sacred forest sites, ancestral values and ethnobotanical institutions requires examination of sacred sites' geographical facts, custodian community's socio-cultural structures, ethnohistorical past and underlying philosophy of ancestral religion. This salient theme is explored in Chapter Four in three sections which discussed national, regional and zonal scales of biocultural diversity areas and sacred sites; accounts of custodian community's ethnohistory, the social organization of ancestral religion; and the local scale of sacred sites, their types, distributions and socio-demographic attributes of custodians.

Having examined the origin of Wonsho sacred groves and custodians, described their social organization and present geography, the thesis then proceeds in Chapter Five to address the important question of why and how sacred forest sites and trees with associated ancestral traditions are maintained. This required examining traditional beliefs, knowledge and practices relating to SNS, woody trees & conservation. Findings along this theme discussed traditional concepts of biodiversity, environment and conservation; local knowledge, attitudes, and preferences vis-à-vis sacred forest sites and trees; local values and beliefs about sacred forest sites and trees; and tree-supporting, and dependent, practices and institutions.

Maintenance of sacred forest sites has certain concrete positive consequences for local biodiversity, health, wellbeing, medicinal plants, livelihood, environment and socio-cultural identity. Chapters Six to Eight addressed this theme. Chapter Six explored the role of maintaining sacred forest sites in conserving fauna and flora, especially native woody trees of economic and socio-cultural significance, outlining local perceptions of such roles, evidence and extent of protected biodiversity species in selected sacred groves and other informal protection areas. Chapter Seven investigated whether and how community health, herbal medicine and medicinal plants fared well due to the maintenance of sacred forests. Chapter Eight examined what role sacred forests and native trees play in local community beyond biodiversity conservation through supporting livelihood, providing ecosystem services, and preserving sociocultural systems. In Chapter Nine, the fact and process of biocultural diversity erosion and its drivers, focusing on sacred forests and native trees and associated ancestral institutions, are discussed, further exploring the governance frameworks and conservation actions at grassroots and macro-scales.

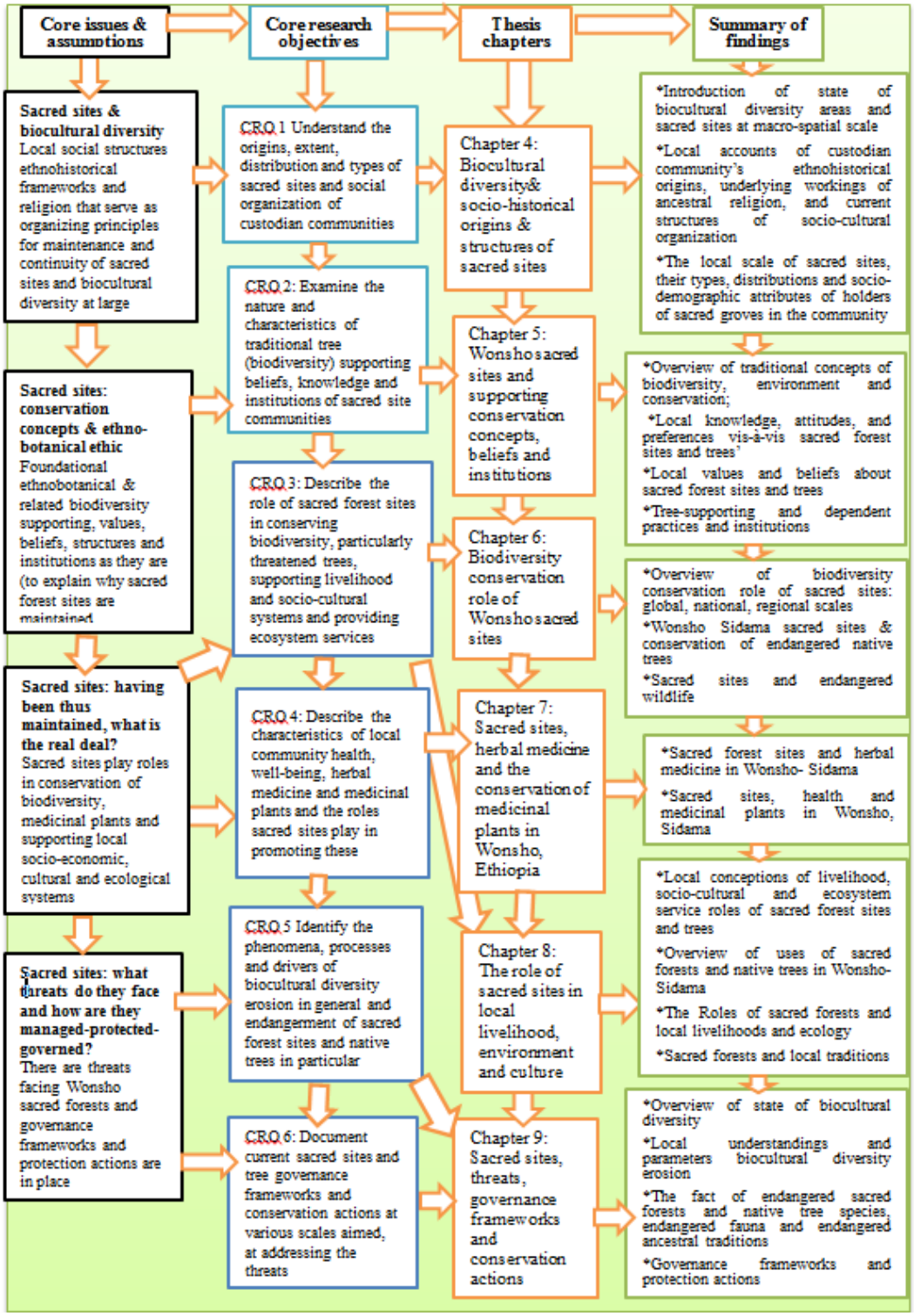


Figure 10-1 Linkages among salient issues, core research objectives (CRO), data and main sub-topics , Wonsho SNS study, 2012-2013, Sidama, Ethiopia

In this flowchart, there is an implicit linear connection among four overarching questions: origin/nature/geography/characterstics—motivation—consequences—threats/protection. The six objectives comprise seven salient themes and they answer to the questions. The six empirical chapters answer to the six objectives, although not in a one-to-one linkage. One objective (e.g. 3) links to two empirical chapters (6 & 8), while two objectives (5 & 6) link to one chapter (9), which of course combines two major themes into one.

10.3 Main findings and conclusions

Sacred forest sites of Wonsho, Sidama exist as evidence of mutual, co-adaptive and dynamic interdependence between forest species (as biodiversity elements) and ancestral sacred grove institutions (Sheridan, 2008; Maffi & Woodley, 2010; Heland & Folke, 2014; Loh & Harmon, 2014). They are a result of human management interventions of their environment in mutualy shaping, dialectical relationship (Balée, ed., 1998; Chouin, 2002; Heckenberger et al., 2007; Balée, 1999, 2006, 2013). The way Wonsho community's worldview, ethnohistory, culture, social structures and economy are organized largely required botanical agencies for their expression and vitality, while at the same time supporting trees and other biodiversity (Sponsel, 2008; Verschuuren et al., 2010).

The current geography of sacred sites (spatial distribution, extent, physical layout, composition, land use patterns, locations, etc.) is linked to cultural landscapes, ethnohistorical past, current socio-cultural and clan organization (Holm & Bowker, 1994; Carmichael et al., 1994; Park, 1994; Chouin, 2002). The ontology of sacred sites and biodiversity is enmeshed with the local-ancestral traditions. In the ethnological and ethnobotanical worldviews, sacred forests, landscapes and individual native woody trees are 'mirror images' of local community, their identity embodying their past, present and future (Rival, 1998; Nazarea, 1998; Mathewson, 2000; Fincke & Oviedo, 2008; Ross, 2008; Baindur, 2009 Sponsel, 2012). Divine entities and ancestral spirits inhabiting sacred landscapes become not only vital parts but also are foundational cornerstones of this ontological reality for the local custodian community. From a local viewpoint, therefore, Wonsho sacred landscapes, sacred forests and ritual trees may be defined as 'living entities in the social-spiritual realm,' entities that mirror the ancestors, the ethnohistorical past, the present identity and their ethnic future. An implicit idea that equates sacred forests and other sacred entities with one's own identity, ancestors and historic past binds tree biodiversity with cultural diversity (Nazarea, 1998; Nazarea, ed., 1999). Sacred forests are likened to ancestors, embodying and enlivening the local custodian community's sense of identity and concretizing their spatial-temporal existence (Hamer, 1976).

Sacred forest sites and native trees of Wonsho, Sidama are maintained, therefore, in a very important philosophical sense, to reinforce this time-honored identity, protect and demarcate this sacred spatial-temporal reality, show continued allegiance to ancestral spirits, placate and acknowledge them (Dafni, 2007). In an important sense, therefore, the existence of sacred groves is founded on the socio-cultural and cosmological values and needs, not with a conscious desire for conserving biodiversity. The maintenance values, knowledge, practices and

institutions all fall into, primarily, this quintessentially socio-spiritual framework (Rival, 1998; Toldeo, 2002; Sponsel, 2012). Sacred forests are maintained as part of the community's cultural call and necessity, whereby the physical entities are kept for their ancestral-community identity representation values (Rival, 1998). The 'social-spiritual forests' are, therefore, maintained as sacred and hallowed entities. Maintenance of sacred forest sites and protecting native trees is both a solemn end in itself and a social, sacred process for the local community. It is a social enterprise, a sacred institution in itself (Toledo, 2013b). Through it the community meets its deepest theological quests, reaffirms its identity, reinforces its values, commemorates its ancestors, and placates its deities (Ivakhiv, 2007; Dafni, 2007; Toledo, 2013).

There is also a naturally materialistic and practically instrumentalist purpose in the equation apart from this spiritual-ecological dimension. Maintenance of sacred forest sites and ancestral traditions is also an instrument that leads to an important, positive consequence; it generates key conservation outcomes for biodiversity. Sacred groves and ancestral rituals are important biodiversity conservation instruments (Prain et al., 1999; Dudley et al., 2009), although they are not necessarily the traditional counterparts of the modern conservation mechanisms, because their goal are based on an entirely different vision (Sheridan & Nyamweru, 2008; Siebert, 2008). This is mainly an inadvertent action, something which the local community does not engage in with conservation of trees or biodiversity in mind; their values and institution are neither inherently nor necessarily pro-biodiversity (Balée, 1998, 2006), but they turn out to be largely conservative, like that of many indigenous peoples and local communities around the world (Fincke & Oviedo, 2008; Sobrevila, 2008; UN-DESA, 2009; Dudley et al., 2009; Toledo, et al., 2010; Toledo, 2013a). This is so because their cultural importance derives from, and requires maintenance of, biodiversity (Posey, 1999; Johnston, 2006; Maffi, & Woodley, 2010; Verschuuren, et al, 2010; Sponsel, 2012).

In Wonsho, Sidama, therefore, some of their cultural trees have literally survived in 'the socio-spiritual space,' as it were, 'growing on the body of deceased ancestors themselves.' Continued enactment of ancestral rituals and values has ensured the conservation of otherwise threatened as well as endangered native woody tree and animal species. The best plausible way, for example, to explain why and how otherwise endangered trees of *Podocarpus falcatus, Olea capensis spp*, *Syzygium guineense*, *Prunus africana*, among others, are conserved, is the maintenance of sacred forest sites. Hundreds of plant species, many of which are medicinal, and some fauna benefit from this conservation outcome of such maintenance. Resilience of tree-supporting ancestral traditions often imbued with animistic, nature dependent religious worldviews, maintained under the context of SNS has, therefore, helped preservation of sacred groves and threatened native woody trees and some wild animals. These informal protection

areas, together with other similar contexts, are, therefore, 'islands of biocultural diversity' in Wonsho, Sidama and Ethiopia at large (Eshete, 2007; Desissa, 2009; Negash, 2010; Heide, 2012; Massey et al., 2014). This Wonsho, Sidama case, therefore, gives strong support for recognizing the importance of linking cultural and biological diversity, and the argument that the role of local peoples, traditional systems and SNS is critical in supporting biodiversity conservation (Sponsel, 2008; Mallarach & Papayannis, 2009; Stolton & Dudley, 2010; Higgins-Zogib et al., 2010; Verschuuren et al., 2010; Loh & Harmon, 2014; Githitho, n.d.).

The maintenance of sacred sites as a social-cultural enterprise further generates a range of services beyond biodiversity conservation. As noted above, the ontological foundation for the maintenance of sacred forest sites is the need for ensuring continuity of identity, making sense of the cosmos, validating historical origin, reaffirming ethnographic present, and defining their own place in the wider spatio-temporal and socio-political spectrum (Maffi & Woodley, 2010; Toledo, et al., 2010; Toledo, 2013a). The progressive narrowing down and decline of such a spectrum over the past hundred years has made the need for such validation and affirmation very important (Hamer, 2002, 2007). Sacred forest sites and trees so maintained play a key instrumental role in preserving culture, ordering social life, structuring community organization, meeting socio-economic, political, health, welfare and aesthetic needs, and providing ecosystem services. These livelihood functions and 'cultural ecosystem services' are, therefore, very important in supporting societal stability and promoting the overall health and well-being of the human groups, whose maintenance of sacred sites and trees ensure these services (DeGroot, et al., 2005; Sponsel, 2012; Gatzweiler & Hagedorn, 2013; Heland & Folke, 2014; Verschuuren et al eds. , 2014).

To state sacred forests face threats at the present while at the same time they are resilient smacks of an apparent contradiction in this research. In an important sense, demonstrated amply in this thesis, these sacred forests, woody native trees and associated ancestral institutions *are* resiliently conserved. In another sense, highlighted in Chapter 9, there are many drivers of changes lined up against and impinging upon their continuity, as are facing many similar systems and their custodian communities across the world (Igoe, 2004; Redford & Brosius, 2006; Maffi, 2005; Maffi & Woodley, 2010; Orphée & Bienvenu, 2012; Sponsel, 2013; Loh & Harmon, 2014; Githitho, n.d.). This apparently conveys a message that both preserving and disrupting tendencies are inherent in local traditions. However, it is not intended to argue the same custodian communities and ancestral values that conserve forests and biodiversity at large are also working towards their erosion. Arguments so far presented indicate what positive contributions an ideal type, a more traditional Wonsho, Sidama ancestral system have generated and, if undisturbed, might continue to do, keeping in mind, though, as noted above, that a

people's way of life is inherently neither pro- nor anti-biodiversity (Balée, 1998, 2006); However, although ancestral institutions might be more biodiversity-friendly in their 'original', 'undisturbed' state, they are also dynamic enough to change and develop through exposures and interactions across spatial and temporal scales. Their exposure to pressures does not necessarily make them susceptible (Shridan and Nyamweru, 2008); as demonstrated in the study, they persist through creative adaptations and syncretism.

What is argued so far might best be taken as something that, in the majority, largely describes the ethnographic past of Wonsho, Sidama. What exists in the ethnographic present may not be necessarily similar. While the past may be characterized as largely biocultural diversity friendly, at present, contradictions and tensions, exist, having been in the making over the past 110 years since the Sidama were incorporated into the Ethiopian nation-state (Hameso 1998, 2014; Hamer, 2007; Kumo, 2009a). Amidst the resilience of sacred forest and ancestral traditions, there exist threats. These threats affect both biodiversity and cultural diversity. They emanate from both internal and external processes. They are both natural and anthropogenic. The last recent decades have particularly witnessed increasing loss of sacred forest sites, local trees and erosion of biodiversity supporting ethnobotanical traditions (Hameso, 2006; Kumo, 2009a; Tekile et al., 2012). While threats to sacred sites generate from a range of factors, the anthropogenic impacts of population growth and related socio-economic factors, coupled with changing, weak and poorly resourced government policy and institutions to deal with biocultural diversity and forestry issues, have been posing a growing challenge.

Ageing sacred forests have been 'left to take care of themselves,' as long established taboos have discouraged reforestation and related management actions, until very recently. Many existing sacred forests are, therefore, aged, lacking sustainable management regimes. The local perceptions of the biological nature of some native trees put them at more risk. These were perceived as difficult to manage due to difficulty in obtaining their seeds or propagating their seedlings. These conditions, therefore, contribute to their endangerment.

Factors such as religious innovations, modern education, urbanization and cultural globalization pose potent challenges to biodiversity supporting ancestral institutions, putting a particularly growing pressure on SAR—the core of the ancestral traditions—over the past 110 years in general, and since the mid-20th century in particular, causing its drastic decline (Hamer, 2002; Kumo, 2009b; Tekile et al., 2012), a fact that quite well aligns with similar processes around the world (Bodley, 1996, 1999; Cunningham, 2001; Igoe, 2004; Johnston, 2006). On the one hand, existing sacred forests and natives trees are thus declining, with their associated ancestral traditions, and on the other, creation of new ones are largely limited as the community

succumbs to these eroding factors, on top of other socio-demographic pressures, such as ever decreasing land. Beneath the outward and statistical facts of the decline of SAR and ancestral institutions, though, there exist dynamic processes whereby syncretism and interactions among the diverse worldviews sometimes happen to support ancestral institutions, adding to its continuity.

Governance frameworks and conservation actions exist and current attempts seem to reverse some endangerment states to an extent. Ancestral governance frameworks which have existed as dominant protection tools for millennia currently continue in a weakened state as shifts are being made to slightly collaborative and dominantly government-led governance actions and the latter are taking increasing power and responsibility; local community appear to put growing trust in this. Through collaborative arrangements in recent years, a range of adverse beliefs and practices have been curbed and sacred forest sites' reforestation actions are emerging.

It is, however, something of a grave concern as local communities' growing dependence on government policies, power and institutions may further heighten erosion of local values and institutions, despite the increase in government actions, increasingly vital in the wake of weakening 'spirit policing' leading the risk of growing encroachments, to ensure effective containment of the present and imminent conservation threats.

In general, there is a delicate and complex dimension to the *resilience versus vulnerability* narrative presented above with respect to the SNS and the local ancestral traditions. On the one hand, the results and analysis above provide a strong case for the fact that Wonsho SNS and ancestral biodiversity supporting institutions have been, and still are, *resilient*, in the sense of the definition adopted in this study, as amply demonstrated by the persistence and adaptive, creative developments of these systems incorporating new elements and retaining core ancestral values, amidst complex perturbations in their close to 400 years' existence and intensification of these perturbations in the last 100 years. On the other, the all the-more-intensifying factors challenging these systems heighten their vulnerability, so much so that for many local informants, the future is forebodingly uncertain, particularly certain elements of the system, such as some more vital ancestral rituals of cattle sacrifice. However, the findings lead us to consider Wonsho sacred groves and ancestral institutions as complex, dynamic entities, inherently neither resilient nor vulnerable.

Before winding up, it may be perhaps fitting here to sum up briefly how the findings contribute to the literature in seven salient themes presented in this study:

1. This study shows Wonsho SNS and ancestral institutions are *resilient social-ecological systems*, created and maintained dynamically as *cultural landscapes* in *historical ecological* framework through human–environment interactions over several centuries' period. Interpretation of the historicity, origins and current geography of SNS as essentially linked to custodian community's specific socio-cultural and ethnohistorical past and ethnographic present is this study's important contribution to the field. This is a contribution to the understanding in the literature that sacred groves are not relics from the primeval past, but are human artifacts and historically changing landscapes shaped by human actions over time (Sheridan & Nyamweru, 2008). They are ecologically and socially dynamic and complex, with changing meanings and compositions (Hellerman, 2009).

2. The question of why SNS are maintained and what the motivations of custodians in maintaining them occupy an important place in the field of SNS and biocultural diversity conservation. This study has shown Wonsho SNS and associated institutions exist and are maintained for motivations that are best understood in the community's 'cosmos-corpus-praxis' complex relating to the natural and botanical world. This supports the growing debate in the literature that "sacredness [and sacred groves do not necessarily] equal conservation" (Sheridan & Nyamweru, 2008; Siebert, 2008).

3. The role SNS play in conserving biodiversity has been amply emphasized in the biocultural diversity research. This study contributes to this growing field by adding local scales from a heretofore under-represented geographical region in this field. Further, it contributes by providing in-depth studies of the role of SNS is conserving cultural diversity as well.

4. The conservation of medicinal plants in SNS is another area of research that currently surfaces in the literature. This study contributes to this aspect of the biocultural diversity research. It has demonstrated the local perceptions and experiences regarding the association between maintenance of SNS and good community health and wellbeing as well as traditional herbal medicine. As the study has shown, where SNS exist, medicinal plants *and* herbal medicine *and* community health fare well.

5. This study makes some contribution to the current literature on role SNS play in cultural diversity conservation and cultural ecosystem services they provide. It has demonstrated, in qualitatively rich analytical framework, how maintenance of SNS works towards preserving local culture, promotes livelihood and wellbeing and provides ecosystem services.

6. SNS and ancestral institutions face a host of internal and external challenges and this is another important area of literature. This study contributes to this dimension through its

detail, both emically and etically rich analysis of processes, drivers and trends at both the local and regional-national scales. The analysis of local parameters and indicators adds important dimension to this.

7. Finally, this study's conclusion also makes important contribution through detail analysis of the national policy frameworks in historical perspective; the local/informal and national/formal governance and management principles and actions; how SNS have historically been governed and what their future holds in this aspect.

In sum, the *novelties* of this study's conclusions lie in the following areas which appear to be under-represented in the literature:

1 Shows the role of SNS in conserving both BD *and* cultural diversity in Wonsho, Sidama;
2 Provides *nuanced, detailed context and analysis* of *why and how* the SNS are maintained and how they actually work towards conserving BCD;
3 Provides detailed anthropological analysis, to uncover *local models, parameters* and *indicators* of the role of SNS, their values and endangerment of species. Most of other studies offer the formal, official version;
4 Makes a contribution to our understanding of *what constitutes 'biocultural diversity'* and the indicators for cultural diversity when this concept is applied at a local scale; and
5 Brings *interdisciplinary conceptual and analytical tools* to understand the socio-ecological and biocultural systems embodied in sacred sites; and collect and analyse data, by combining concepts and methods from a range of social and natural sciences, notably anthropology, ethnobiology, ecology and conservation biology.

10.4 Implications and recommendations

1. Sacred forest sites with their supporting traditions foster biodiversity in general and endangered native tree species find refuge therein amidst biodiversity eroding factors. This calls for, primarily, widespread recognition by all concerned actors and concrete efforts in promoting and protecting sacred forests and ancestral traditions. Despite in recent years such recognition and support are growing, there persist ignorance and neglect about sacred forests, the 'natural' connections that exist between ancestral values and biodiversity, and the concrete roles these play in conservation. Intervention actions are, therefore, needed to increase awareness among all concerned stakeholders. This will help promote the biodiversity conservation relevance of sacred forest sites and especially the vital connections that exist between biodiversity and ancestral values and institutions.

2. For this to occur with a hope of success, there is a need for a multi-disciplinary, large-scale investigation to make a fully comprehensive documentation and inventory of the (tree) biodiversity of the Wonsho, Sidama sacred forests—with appropriate international standard conservation status assessments. Local versions of endangerment of biodiversity and their reports of the existence and loss of some species in the sacred forests may require a confirmation informed by conservation biology tools. Similarly, the types, extent and current state of medicinal plants species' reported existence in sacred forests may also need further inquiries through interdisciplinary studies. The local perceptions of positive health profiles (measured locally in terms of low occurrence of certain public health problems, low mortality, allegedly better mental and general psychosocial wellbeing) may also be important areas of future research through inter-disciplinary social sciences and quantifiable biomedical, public health and environmental psychology studies. Studies in such thematic areas are emerging and similar studies may, therefore, help to replicate or test them in the Wonsho, Sidama context (Kaplan, 1995; Ouellette et al., 2005; O'Brien & Perlis, 2006; Kassam et al., 2010; Irvine et al., 2013; Wijsen & Marcos, 2010; Verschuuren et al. eds, 2014).

3. There is also a need for attempting resuscitation of declining (and some lost) biodiversity-supporting values and practices, and new ways of diffusing these values far and wide.
    a. But to be able to do this, there is first a need for conducting quantitative assessments to measure the extent, pace and trends in loss or retention of traditional ecological beliefs, knowledge and practices, employing some internationally recognized tools such as the Terralingua's VITEK (Vitality Index for Traditional Ecological Knowledge) (Terralingua, 2014).

    b. The (tree) biodiversity supporting values and governance principles inherent in the maintenance of sacred forest sites may further be tested for emulation and application in wider contexts by concerned conservationists and policy makers in the region and the country at large. The model of sacred forests and ancestral principles of their management may usefully inform the current and future biodiversity conservation works (Bhagwat & Rutte, 2006; McIvor et al., 2008; Sponsel, 2008; Sobrevila, 2008). However, the inherent difficulty in truly modelling the spiritual and cultural values embodied in sacred groves maintenance, or even the attempt at resuscitating such weakening or lost values should be taken into account. In Wonsho, the core of these entities is embodied in the essence and practice of SAR. A true copying for diffusion, application and scaling up, or an attempt in resuscitating thus will require careful understanding of the nature of the SAR in its

'original' ontology, working closely and empathically with ritual leaders. Even so, this will prove to be extremely difficult (Orphée & Bienvenu, 2012; Githitho, n.d.; GVI Kenya, n.d.).

c. This being the case, however, aiming at copying the ancestral principles in their 'originality' may not necessarily be a priority or a must; rather, useful principles may be adopted in syncretized manner, which is what is already happening, and as long as this benefits conservation of BCD, it may be pursued.

d. While carrying out attempts of reaffirming and resuscitating, it should be emphasized that the current emerging collaborative governance and conservation actions should continue in a more systematic, participatory and sustainable approach. Such actions may further consider supporting ritual leaders and other custodians in developing and complementing their biodiversity management knowledge so as to diffuse certain beliefs that do not help sacred groves and to bolster sustained protection of the threatened sacred forests. These interventions are important in view of the current and imminent forces eroding biocultural diversity.

4. A growing shift from biodiversity-supporting to materialist consumer values is one of challenging phenomena at the present in Wonsho, Sidama. Added to this is an increasing generation gap in the realm of ascribing to biodiversity-supporting ancestral values and ethnobotanical traditions. Rituals and their enactment are less frequently held among the younger generation, despite in recent years some success at countering the rampant idea that 'sacred forest sites are places where idol worship is practiced, that such practice is backward, unhygienic and uneconomical.' There is, though, a grave concern as active, regular practitioners continue declining through ageing, conversions and other factors.

   a. Programs of systematic re-education of the younger generation at schools, community-based learning forums, and devising and introducing apprenticeship programs whereby interested people may spend some time learning from ritual leaders and other SAR practitioners may help strengthen the SAR and its biodiversity-supporting values.

   b. Appropriate training materials and curricula may be designed along the concept of biocultural diversity, sacred forests and native trees and their role in conservation, ecosystem services, overall community welfare and development, and need streamlined into curricula of schools and universities.

c. Further, grassroots organizations, school clubs, neighbourhood groups, etc. may be created and organized in the work of better promoting vulnerable values. This, however, may be apparently impractical and finding actors that will take up the challenge and initiative will require immense efforts and resources.

5. This study has shown defections from SAR overwhelmingly to other modern religions, particularly Protestant Christianity, have occurred especially in the past seventy or so years—entailing adverse effect on the continuity of ancestral values. However, the study has also shown existence of a tendency among Protestant Christian custodians of sacred groves who, while they may no longer subscribe to the underlying SAR values and rituals, do protect sacred groves.

   a. Perhaps, a Sidama or even an SNNPRS- wide investigation into the relationship between conversion to modern religions and decline of sacred forests might help arrive at a better understanding. Such investigation might also shed light on any direct link (e.g. in the form of removing groves) and indirect impacts (e.g. in terms of discontinuing allegiance to ancestral rituals).

   b. On the other hand, in recent years a local dynamic of dialogue about religious co-existence, the compatibility of ancestral values and rituals with modern religious values, is emerging. However, such actions appear piecemeal, fragmented, unsystematic and unsustainable and therefore require remedial actions.

Bibliography

Aadland, O. (2002). Sera: Traditionalism or Living Democratic Values? A Case Study Among the Sidama of South Ethiopia. In: *Ethiopia: The Challenge of Democracy from Below*. Uppsala : Addis Ababa: Forum for Social Studies, pp. 29–43.

Abbink, J. (1997). The shrinking cultural and political space of East African pastoral societies. *Nordic journal of African studies*. 6 (1). pp. 1–17.

Abbute, W.-S. (2004). Impact of resettlement in Beles Valley, Metekel. In: A. Pankhurst & F. Piguet (eds.). *People, space and the state: migration, resettlement and displacement in Ethiopia : proceedings of the workshop held by the Ethiopian Society of Sociologists, Social Workers and Anthropologists and the United Nations Emergencies Unit for Ethiopia, 28-30 January 2003, including reviews of the 2003 resettlement experience*. Addis Ababa, Ethiopia: Ethiopian Society of Sociologists, Social Workers and Anthropologists.

Abebe, D. (1986). Traditional Medicine in Ethiopia: The Attempts being made to promote it for effective and better utilization. *SINET Ethiop. J. sci*. 9. pp. 61–69.

Abebe, T., Wiersum, K.F. & Bongers, F. (2010). Spatial and temporal variation in crop diversity in agroforestry homegardens of southern Ethiopia. *Agroforestry Systems*. 78 (3). pp. 309–322.

Abraham, A., Sommerhalder, K. & Abel, T. (2010). Landscape and well-being: a scoping study on the health-promoting impact of outdoor environments. *International Journal of Public Health*. [Online]. 55 (1). pp. 59–69. Available from: http://link.springer.com/article/10.1007/s00038-009-0069-z. [Accessed: 19 October 2014].

Admasu, D. (2008). *Invasive Plants and Food Security: the case of Prosopis juliflora in the Afar region of Ethiopia*. [Online]. Available from: http://dax-directview.comscore.com/directview-server-proxy/http/cmsdata.iucn.org/downloads/invasive_plants_and_food_security___final.pdf.

Adugna, A. (2014). *Southern Nations Nationalities and Peoples Demography and Health*. [Online].. Available from: www.EthioDemographyAndHealth.Org. [Accessed: 21 October 2014].

AFP (2010). *Ethiopia's forest cover triples: ministry*. [Online]. 18 July 2010. The Independent. Available from: http://www.independent.co.uk/environment/ethiopias-forest-cover-triples-ministry-2029508.html. [Accessed: 18 October 2014].

African Economic Outlook (2013). *African Economic Outlook 2012 Ethiopia*. [Online]. AfDB, OECD, UNDP, UNECA. Available from: http://www.africaneconomicoutlook.org/fileadmin/uploads/aeo/PDF/Ethiopia%20Full%20PDF%20Country%20Note.pdf. [Accessed: 17 October 2014].

Alcron, J.B. (1995). The Scope and Aim of Ethnobotany in a Developing World. In: R. E. Schultes & S. von Reis (eds.). *Ethnobotany: evolution of a discipline*. London: Chapman & Hall.

Eshete, A.W. (2007). *Ethiopian church forests: opportunities and challenges for restoration*. PhD thesis. [Online]. Wageningen, the Netherlands: Wageningen University. Available from: https://www.wageningenur.nl/en/show/Ethiopian-church-forests-opportunities-and-challenges-for-restoration.htm. [Accessed: 28 October 2014].

Alexander, V.D. (2013). Views of the neighbourhood: A photo-elicitation study of the built environment. *Sociological Research Online*. [Online]. 18 (1). p.p. ?–? Available from: http://www.socresonline.org.uk/18/1/contents.html. [Accessed: 12 September 2014].

Alexiades, M.N. (1999). *Alexiades, M.N. 1999. Ethnobotany of the Ese Eja: Plants, Health, and Change In An Amazonian Society*. PhD Dissertation. [Online]. The City University of New York. Available from: https://www.academia.edu/446959/Alexiades_M.N._1999._Ethnobotany_of_the_Ese_Eja_Plants_Health_and_Change_In_An_Amazonian_Society. [Accessed: 3 October 2014].

allAfrica.com. (2014). Ethiopia to Finalize Sustainable Tourism Master Plan. *Addis Standard*. [Online]. 7 October. Available from: http://allafrica.com/stories/201408042509.html. [Accessed: 7 October 2014].

allAfrica.com (2012). Ethiopia: 7th NNP Day to Be Celebrated in Memorial of Late Prime Minister Meles. *Government of Ethiopia*. [Online]. Available from: http://allafrica.com/stories/201210230011.html. [Accessed: 12 October 2014].

Amanor, K. (2002). Shifting Tradition: Forest Resources Tenure in Ghana. In: C. Toulmin, P. Lavige, & D. S. Traore (eds.). *The Dynamics of Resource Tenure in West Africa*. James Currey, p. Oxford.

Andersen, R. & Winge, T. (2005). *The Access and Benefit-Sharing Agreement on Teff Genetic Resources*. [Online]. Available from: https://69.90.183.227/financial/bensharing/ethiopia-teff.pdf. [Accessed: 15 September 2014].

Anderson, D.G. & Berglund, E.K. (2003). *Ethnographies of Conservation: Environmentalism and the Distribution of Privilege*. Berghahn Books.

Anderson, D.M., Salick, J., Moseley, R.K. & Xiaokun, O. (2005). Conserving the Sacred Medicine Mountains: A Vegetation Analysis of Tibetan Sacred Sites in Northwest Yunnan. *Biodiversity and Conservation*. [Online]. 14 (13). pp. 3065–3091. Available from: http://link.springer.com/10.1007/s10531-004-0316-9. [Accessed: 18 September 2014].

Anderson, E.N. (2002). Biodiversity Conservation: A New View from Mexico. In: J. R. Stepp, F. S. Wyndham, & R. K. Zarger (eds.). *Ethnobiology and Cultural diversity. The International Society of Ethnobiology*. Athens, Georgia.

Anderson, E.N. (1996). *Ecologies of the Heart : Emotion, Belief, and the Environmen*. Oxford University Press.

Anon (2015). Danakil Depression. Wikipedia, the free encyclopaedia. [Online]. Available from: http://en.wikipedia.org/w/index.php?title=Danakil_Depression&oldid=651213898. [Accessed: 4 April 2015].

Anon (2015). Ethiopia - Climate. Encyclopaedia of Nations. [Online]. Available from: http://www.nationsencyclopedia.com/Africa/Ethiopia-CLIMATE.html. [Accessed: 4 April 2015].

Anon (2015). Geography of Ethiopia. Wikipedia, the free encyclopaedia. [Online]. Available from: http://en.wikipedia.org/w/index.php?title=Geography_of_Ethiopia&oldid=648494362. [Accessed: 4 April 2015].

Anon (2014a). *Culture and menstruation*. [Online]. Available from: http://en.wikipedia.org/w/index.php?title=Culture_and_menstruation&oldid=620060059. [Accessed: 26 September 2014].

Anon (2014b). *Ethiopia*. [Online]. Available from: http://en.wikipedia.org/w/index.php?title=Ethiopia&oldid=629048469. [Accessed: 10 October 2014].

Anon (2013). *Ethiopian coffee ritual great for bonding*. [Online]. 24 March 2013. World News. Available from: http://article.wn.com/view/2013/03/25/Ethiopian_coffee_ritual_great_for_bonding/. [Accessed: 3 October 2014].

Anon (2014c). *File:Biosphere Reserves.svg*. [Online]. Available from: http://en.wikipedia.org/wiki/File:Biosphere_Reserves.svg. [Accessed: 21 October 2014].

Anon (2014d). *ICCA Consortium*. [Online]. 17 September 2014. ICCA Consortium. Available from: http://iccaconsortium.wordpress.com/. [Accessed: 17 September 2014].

Anon (2014e). *Indigenous and community conserved area*. [Online]. Available from: http://en.wikipedia.org/w/index.php?title=Indigenous_and_community_conserved_area&oldid=593727154 [Accessed: 17 September 2014].

Anon (2014f). List of World Heritage Sites in Ethiopia. *Wikipedia, the free encyclopaedia*. [Online]. Available from: http://en.wikipedia.org/w/index.php?title=List_of_World_Heritage_Sites_in_Ethiopia&oldid=622774986. [Accessed: 28 October 2014].

Anon (2014g). *Sidama Zone*. [Online]. Available from: http://en.wikipedia.org/w/index.php?title=Sidama_Zone&oldid=610761745. [Accessed: 10 October 2014].

Anon (2014h). *Southern Nations, Nationalities, and Peoples' Region*. [Online]. Available from: http://en.wikipedia.org/w/index.php?title=Southern_Nations,_Nationalities,_and_Peoples%27_Region&oldid=622346106. [Accessed: 10 October 2014].

Araya, Y. (2007). Contribution of Trees for Oral Hygiene in East Africa. *Ethnobotanical Leaflets*. [Online]. 2007 (1). Available from: http://opensiuc.lib.siu.edu/ebl/vol2007/iss1/8.

Århem, K. (1996). Cosmic food web: human-nature relatedness in northwest Amazon. In: P. Descola & G. Pálsson (eds.). *Nature and society: anthropological perspectives*. London; New York: Routledge.

Asfaw, Z. & Ågren, G.I. (2007). Farmers' local knowledge and topsoil properties of agroforestry practices in Sidama, Southern Ethiopia. Agroforestry Systems. [Online]. 71 (1). pp. 35–48. Available from: http://link.springer.com/article/10.1007/s10457-007-9087-0. [Accessed: 28 October 2014].

Asfaw, Z. (2003). *Tree species diversity, topsoil conditions and arbuscular mycorrhizal association in the Sidama traditional agroforestry land use, southern Ethiopia*. [Online]. 2003. Available from: http://pub.epsilon.slu.se/214/. [Accessed: 15 September 2014].

Assefa, E. (2012). *Landscape Dynamics and Sustainable Land Management in Southern Ethiopia*. Masters. [Online]. Graduate School Human Development in Landscape Institute of Ecosystem Research and Geoarchaeology. Available from: http://d-nb.info/1027100139/34.

Assefa, E. & Bork, H.-R. (2014). Deforestation and Forest Management in Southern Ethiopia: Investigations in the Chencha and Arbaminch Areas. *Environmental Management*. [Online]. 53 (2). pp. 284–299. Available from: http://link.springer.com/10.1007/s00267-013-0182-x. [Accessed: 14 October 2014].

Association of Social Anthropologists of the UK & and the Commonwealth (ASA) (2011). *Ethical Guidelines for good research practice*. [Online]. Available from: www.theasa.org.

Atleo, R.E. (2005). Preface. In: D. Deur & N. J. Turner (eds.). *Keeping It Alive: Traditions of Plant Use and Cultivation on the Northwest Coast of North America*. Seattle: University of Washington Press.

Ayana, A.N., Arts, B. & Wiersum, K.F. (2013). Historical development of forest policy in Ethiopia: Trends of institutionalization and deinstitutionalization. *Land Use Policy*. [Online]. 32. pp. 186–196. Available from: http://www.sciencedirect.com/science/article/pii/S0264837712001962. [Accessed: 24 September 2014].

Azene, B.-T. & Tengnäs, B. (2007). *Useful Trees and Shrubs of Ethiopia: Identification, Propagation, and Management for 17 Agroclimatic Zones*. RELMA in ICRAF Project, World Agroforestry Centre, Eastern Africa Region.

Baindur, M. (2009). Nature as Non-terrestrial : Sacred Natural Landscapes and Place in Indian Vedic and Purānic Thought. *History*. 6. p.pp. 43–58.

Balée, W.L. (2013). *Cultural Forests of the Amazon: A Historical Ecology of People and Their Landscapes*. 1st Edition. Tuscaloosa: University Alabama Press.

Balée, W.L. (2006). The Research Program of Historical Ecology. *Annual Review of Anthropology*. [Online]. 35 (1). pp. 75–98. Available from: http://dx.doi.org/10.1146/annurev.anthro.35.081705.123231. [Accessed: 18 October 2014].

Balée, W.L. (1999). *Footprints of the Forest: Ka'apor Ethnobotany-The Historical Ecology of Plant Utilization by an Amazonian People*. Columbia University Press.

Balée, W. L., ed. (1998). *Advances in Historical Ecology*. New York: Columbia University Press.

Balemie, K. & Singh, R.K. (2012). Conservation of socioculturally important local crop biodiversity in the Oromia region of Ethiopia: A case study. *Environmental Management*. 50 (3).pp. 352–364.

Balick, M.J. (2007). Traditional knowledge: lessons from the past, lessons for the future. *Biodiversity and the Law: Intellectual Property, Biotechnology and Traditional Knowledge*. [Online].pp. 280–296. Available from: http://books.google.com/books?hl=..... [Accessed: 15 September 2014].

Balick, M.J. & Cox, P.A. (1996). *Plants, People and Culture: Science of Ethnobotany*. Scientific American Library.

Banana, A.Y., Bahati, J., Gombya-Ssembajjwe, W. & Vogt, N. (2008). Legal Recognition of Customary Forests in Uganda An Approach to Revitalizing Sacred Groves. In: M. J. Sheridan & C. Nyamweru (eds.). *African sacred groves: ecological dynamics and social change*. Athens, GA; London: Ohio University Press; James Currey.

Bane, J., Nune, S., Mekonnen, A. & Bluffstone, R. (2007). *Policies to increase forest cover in Ethiopia*. In: [Online]. 2007, Addis Ababa, Ethiopia: Ethiopian Development Research Institute (EDRI), pp. 18–19. Available from: http://manage.www.efdinitiative.org.zope.sizeit.se/www.efdinitiative.org/research/publications/.... [Accessed: 15 September 2014].

Bekalo, T.H., Woodmatas, S.D. & Woldemariam, Z.A. (2009). An ethnobotanical study of medicinal plants used by local people in the lowlands of Konta Special Woreda, southern nations, nationalities and peoples regional state, Ethiopia. *Journal of Ethnobiology and Ethnomedicine*. [Online]. 5 (1). p.p. 26. Available from: http://www.ethnobiomed.com/content/5/1/26/abstract. [Accessed: 2 October 2014].

Bekele, Endashaw, (2007). *Actual Situation of Medicinal Plants in Ethiopia*. [Online]. 2007. Scribd. Available from: http://www.scribd.com/doc/83507057/Actual-Situation-of-Medicinal-Plants-in-Ethiopia. [Accessed: 15 September 2014].

International Society of Ethnobiology (1988). *Declaration of Belém (1988). [Online]. Available from: http://www.ethnobiology.net/what-we-do/core-programs/global-coalition/declaration-of-belem/. [Accessed: 02April 2015].*

Van der Beken, C. (2013). Federalism in a Context of Extreme Ethnic Pluralism: The Case of Ethiopia's Southern Nations, Nationalities and Peoples Region. *Abhandlungen / Articles*. [Online]. Available from: http://www.vrue.nomos.de/fileadmin/vrue/doc/Aufsatz_VRUE_13_01.pdf.

Belachew, M. (1999). A Spatio-Temporal Analysis of Deforestation in Ethiopia: With Particular Reference to the Environs of Addis Ababa. *Journal of Ethiopian Studies*. 32 (1). pp. 89–131.

Berahne-Selassie, T. (2008). The Socio-politics of Ethiopia Sacred Groves. In: African Sacred Groves: Ecological Dynamics and Social Change. Athens, GA; London: Ohio University Press: James Currey.

Berisso, T. (2004). Planning resettlement in Ethiopia : the experience of the Guji-Oromo of the Nech Sar National Park. In: A. Pankhurst & F. Piguet (Eds.). *People, space and the state: migration, resettlement and displacement in Ethiopia : proceedings of the workshop held by the Ethiopian Society of Sociologists, Social Workers and Anthropologists and the United Nations Emergencies Unit for Ethiopia, 28-30 January 2003, including reviews of the 2003 resettlement experience*. Addis Ababa: Ethiopian Society of Sociologists, Social Workers and Anthropologists.

Berisso, T. (1995). Deforestation and Environmental Degradation in Ethiopia: The Case of Jam Jam Province. *Northeast African Studies*. [Online]. 2 (2). pp. 139–155. Available from: http://www.africabib.org/rec.php?RID=151879907&DB=p. [Accessed: 14 October 2014].

Berkes, F. (1999). *Sacred Ecology: Traditional Ecological Knowledge and Resource Management*. Taylor & Francis.

Berlin, B. (1992). *Ethnobiological classification : principles of categorization of plants and animals in traditional societies*. Princeton University Press.

Bernard, H.R. (2005). *Research Methods in Anthropology: Qualitative and Quantitative Approaches*. 4th Edition. Lanham, MD: Altamira Press, U.S.

Bernbaum, E. (1999). Mountains: The Heights of Biodiversity. In: D. A. Posey (ed.). *Cultural and Spiritual Values of Biodiversity*. Nairobi: United Nations Environment Program.

Beyene, S.T. (2011). *An Ethnobotanical Study of Medicinal Plants in Wondo Genet Natural Forest and Adjacent Kebeles, Sidama Zone, Snnp Region, Ethiopia*. Master Thesis. Addis Ababa: Addis Ababa University School Of Graduate Studies Plant Biology And Biodiversity Management Program Unit. Available from: [Accessed: 10 February 2013].

Bhagwat, S.A., Dudley, N. & Harrop, S.R. (2011). Religious following in biodiversity hotspots: challenges and opportunities for conservation and development. *Conservation Letters*. [Online]. 4 (3). pp. 234–240. Available from: http://onlinelibrary.wiley.com/doi/10.1111/j.1755-263X.2011.00169.x/abstract. [Accessed: 27 October 2014].

Bhagwat, S.A. (2009). Ecosystem Services and Sacred Natural Sites: Reconciling Material and Non-material Values in Nature Conservation. *Environmental Values*. [Online]. 18 (4). pp. 417–427. Available from: http://oro.open.ac.uk/37017/. [Accessed: 28 October 2014].

Bhagwat, S.A. & Rutte, C. (2006). Sacred groves: potential for biodiversity management. *Frontiers in Ecology and the Environment*. [Online]. 4 (10). pp. 519–524. Available from: http://www.esajournals.org/doi/abs/10.1890/1540-9295%282006%294%5B519%3ASGPFBM%5D2.0.CO%3B2. [Accessed: 23 September 2014].

Bhagwat, S.A., Kushalappa, C.G., Williams, P.H. & Brown, N.D. (2005). A Landscape Approach to Biodiversity Conservation of Sacred Groves in the Western Ghats of India. *Conservation Biology*. [Online]. 19 (6). pp. 1853–1862. Available from: http://doi.wiley.com/10.1111/j.1523-1739.2005.00248.x. [Accessed: 23 September 2014].

Bicker, A., Sillitoe, P. & Pottier, J. (2004). *Development and local knowledge : new approaches to issues in natural resources management, conservation, and agriculture*. Studies in environmental anthropology ; v. 9. [Online]. New York: Routledge. Available from: http://www.loc.gov/catdir/toc/fy0610/2003046680.html. [Accessed: 18 September 2014].

BIE (2014). *Ethiopian Institute of Biodiversity » Conservation and Sustainable Use of Medicinal Plants Project (CSMPP)*. [Online]. Available from: http://www.ibc.gov.et/biodiversity/conservation/projects/conservation-and-sustainable-use-of-medicinal-plants-project-csmpp. [Accessed: 3 October 2014].

BEI (2014). *Ethiopia's Fifth National Report to the Convention on Biological Diversity*. [Online]. Addis Ababa, Ethiopia: Ethiopian Biodiversity Institute. Available from: http://www.cbd.int/doc/world/et/et-nr-05-en.pdf.

BIE (2006). *Proclamation No. 482/2006 Access to Genetic Resources and Community Knowledge , and Community Rights Proclamation*. [Online]. Available from: http://www.farmersrights.org/pdf/Africa/Ethiopia/Ethiopia-proclamation482.pdf. [Accessed: 8 October 2014].

Bielli, C., Berhanu, G., Isaias, A. & Orasi, A. (2001). *In-Depth Studies from the 1994 Population and Housing Census in Ethiopia Population Growth and Environment in Ethiopia*. Addis Ababa, Roma: Central Statistical Authority (CSA).

Biodiversity Indicators Development National Task Force (2010). *Ethiopia Overview of Selected Biodiversity Indicators*. [Online]. Addis Ababa: Biodiversity Indicators Development National Task Force. Available from:http://www.bipindicators.net/LinkClick.aspx?fileticket=RmYDgsxN_0Y%3d&tabid=432. [Accessed: 10 October 2014].

Biodiversity Indicators Partnership (2013). *The CBD's Aichi Targets Passport*. [Online]. Available from: http://www.bipindicators.net/resource/aichipassport.

Birdlife International (2014). *Ruspoli's Turaco, Tauraco ruspolii*. [Online]. 2014. Available from: http://www.birdlife.org/datazone/speciesfactsheet.php?id=2131. [Accessed: 30 September 2014].

Birhan, W., Giday, M. & Teklehaymanot, T. (2011). The contribution of traditional healers' clinics to public health care system in Addis Ababa, Ethiopia: a cross-sectional study. *Journal of Ethnobiology and Ethnomedicine*. [Online]. 7 (1). p.p. 39. Available from: http://www.ethnobiomed.com/content/7/1/39/abstract. [Accessed: 1 October 2014].

Biruktayet, A., Glatzel, G. & Christine, B. (2010). Ethnomedicinal uses of Hagenia abyssinica (Bruce) J.F. Gmel. among rural communities of Ethiopia. *Journal of Ethnobiology and Ethnomedicine*. [Online]. 6 (20). Available from: http://www.ethnobiomed.com/content/6/1/20.

Bishaw, B. (2001). Deforestation and Land Degradation in the Ethiopian Highlands: A Strategy for Physical Recovery. *Northeast African Studies*. [Online]. 8 (1). pp. 7–25. Available from: http://muse.jhu.edu/journals/nas/summary/v008/8.1bishaw.html. [Accessed: 15 September 2014].

Bishaw, M. (1991). Promoting traditional medicine in Ethiopia: A brief historical review of government policy. *Social Science & Medicine*. [Online]. 33 (2). pp. 193–200. Available from: http://www.sciencedirect.com/science/article/pii/027795369190180K. [Accessed: 1 October 2014].

Bishaw, M. (1990). Current Status and Future Directions of Socio-cultural Studies in Ethiopia. In: *Proceedings of the Symposium of Silver Jubilee Anniversary of the institute of Ethiopian Studies.* 1990, Addis Ababa: Addis Ababa University Press.

Blunt, E. (2007). *Ethiopia set for millennium party*. [Online]. 5 June. Available from: http://news.bbc.co.uk/1/hi/world/africa/6725073.stm. [Accessed: 18 October 2014].

Bodley, J.H. (1999). *Victims of progress*. Fourth Edition. Mountain View, California: Mayfield Pub. Co.

Bodley, J.H. (1996). *Anthropology and Contemporary Human Problems*. Mountain View, California: Mayfield Publishing Company.

Braukámper, U. (2002). *Islamic History and Culture in Southern Ethiopia: Collected Essays*. LIT Verlag Münster.

Braukámper, U. (1992). Aspects of Religious Syncretism in Southern Ethiopia. *Journal of Religion in Africa*. [Online]. 22 (3). p.p. 194. Available from: http://www.jstor.org/discover/10.2307/1580916?uid=2134&uid=2129&uid=3738032&uid=2484355473&uid=2&uid=70&uid=3&uid=2484355463&uid=60&sid=21104721792763. [Accessed: 22 September 2014].

Braukámper, U. (1978). The Ethnogenesis of Sidama. Paris. *Abbay*. (9). pp. 123–130.

Braukámper, U. (1973). The Correlation of Oral Traditions and Historical Records in Southern Ethiopia: A Case Study of the Hadiya/Sidamo Past. *Journal of Ethiopian Studies*. 11 (2). pp. 29–50.

Breitenbach, F. von (1963). *The Indigenous Trees of Ethiopia*. Second Edition. Addis Ababa: Ethiopian Forestry Association.

Brøgger, J. (1986). *Belief and experience among the Sidamo: A case study towards an anthropology of knowledge*. Oslo: Norwegian University Press.

Brosius, J. Peter, & Sarah L. Hitchner (2010). Cultural diversity and conservation. In: *International Social Science Journal*. Volume 61, Issue 199, pages 141–168. [Online]. Available from: http://onlinelibrary.wiley.com/doi/10.1111/j.1468-2451.2010.01753.x/abstract. [Accessed: 01/04/2015].

Brosius, J. Peter & Kent H. Redford (2006). Diversity and homogenization in the endgame. In*: Editorial / Global Environmental Change 16 (2006) 317–319.*

Brown, H.C. (2000). Folk Classification. In: *Ethnobotany A Reader*. Norman: University of Oklahoma Press.

Brown, P. (1992). *Medicinal Plants, Indigenous Medicine and Conservation of Biodiversity in Ghana*. Norwich: UEA.

Brush, S.B. (1992). Ethnoecology, Biodiversity, and Modernization in Andean Potato Agriculture. *J. Ethnobiol.* [Online]. 12 (2).pp. 161–185. Available from: http://ethnobiology.org/sites/default/files/pdfs/JoE/12-2/Brush.pdf.

Bryman, A. (2012). *Social Research Methods*. Oxford: Oxford University Press.

Burhardt, M. (2013). Coffee and culture in Ethiopia. *The In-Flight Magazine of Ethiopian Airlines*. [Online]. Available from: http://selamtamagazine.com/stories/roots-and-ritual.

Byers, B.A., Cunliffe, R.N. & Hudak, A.T. (2001). Linking the conservation of culture and nature: A case study of sacred forests in Zimbabwe. *Human Ecology*. 29. pp. 187–218.

Carmichael, D.L., Hubert, J., Reeves, B. & Schacht, A. (1994). *Sacred sites, Sacred Places*. London: Routledge.

Cerulli, E. (1956). *Peoples of South-West Ethiopia and its borderland*. International African Institute.

Chaffey, D.H. (1979). *Southwest Ethiopia Forest Inventory Project. A Reconnaissance Inventory of Forest in Southwest Ethiopia*. Tolsworth Tower, Surbiton, Surrey, England: Land resource Development Centre.

Chouin, G. (2008). Archaeological Perspectives on Sacred Groves in Ghana. In: M. J. Sheridan & C. Nyamweru (eds.). African Sacred Groves: Ecological Dynamics and Social Change. Athens, GA; London: Ohio University Press: James Currey.

Chouin, G. (2002). Sacred Groves in History: Pathways to the Social Shaping of Forest Landscapes in Coastal Ghana. *IDS Bulletin*. [Online]. 33 (1). Available from: https://www.academia.edu/502137/Sacred_Groves_in_History_Pathways_to_the_Social_Shaping_of_Forest_Landscapes_in_Coastal_Ghana. [Accessed: 19 October 2014].

Cocks, M. (2006). Biocultural Diversity: Moving Beyond the Realm of 'Indigenous' and 'Local' People. *Human Ecology*. [Online]. Available from: http://www.bioculturaldiversity.co.za/publications/Biocultural%20Diversity%20Moving%20Beyond%20the%20Realm.pdf. [Accessed: 01 April 2015].

Convention & On Biological Diversity (1992). *Convention on Biological Diversity United Nations 1992*. [Online]. Available from: http://www.cbd.int/doc/legal/cbd-en.pdf.

Costantinos, B. & Mohammed, Z. (1999). *Natural Resource Competition, Conflicts and Their Managements: Case Study From Wondo Genet, South-Central Ethiopia*. [Online]. Addis Ababa: Centre for Human Environment and Development. Available from: http://www.lemethiopia.org.et/Natural%20resource%20competition.pdf.

Cotton, C.M. (1996). *Ethnobotany: principles and applications*. Chichester, New York: John Wiley & Sons.

Creswell, J.W. (2013). *Qualitative, Quantitative, and Mixed Methods Approaches 4th edition*. Fourth Edition. Thousand Oaks: SAGE Publications, Inc.

Croll, E. & Parkin, D.J. (1992). *Bush Base, Forest Farm: Culture, Environment and Development*. London and New York: Routledge.

CSA (2013). *Population Projection of Ethiopia for All Regions at Wereda Level from 2014 – 2017*. [Online]. Available from: http://www.csa.gov.et/images/general/news/pop_pro_wer_2014-2017_final. [Accessed: 10 October 2014].

CSA (2012). *2007 Population and Housing Census of Ethiopia Summary Report*. [Online]. Addis Ababa. Available from: http://www.ethiopianvision.com/2007Census.pdf.

Csete, J. (2014). *European policy on khat: Drug policy lessons not learned*. [Online]. Available from: http://www.swansea.ac.uk/media/European%20Policy%20on%20khat-%20Drug%20Policy%20lessons%20not%20learned.pdf.

Cunningham, A. B. (2001). *Applied Ethnobotany: People, Wild Plant Use and Conservation*. London: Routledge.

Dafni, A. (2007a). Rituals, ceremonies and customs related to sacred trees with a special reference to the Middle East. *Journal of ethnobiology and ethnomedicine*. 3. p. 28.

Dafni, A. (2007b). The supernatural characters and powers of sacred trees in the Holy Land. *Journal of Ethnobiology and Ethnomedicine*. [Online]. 3. p.p. 10. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1820775/. [Accessed: 17 September 2014].

Damtie, M. (2008). *Communal Ownership of Forests: The Legal Regime*. [Online]. 25 November 2008, Addis Ababa, Ethiopia: MELKA Mahiber: Addis Ababa. Available from: http://www.bing.com/search?q=8.%09Mulugeta+Lemeneh%2C+%E2%80%9CAnalysis+of+Drivers+of+Deforestation+and+Forest+Degradation+in+Ethiopia. [Accessed: 18 October 2014].

Davis, E.W., Schultes, E. & Reis, R. S. von (1995). Ethnobotany: An Old Practice, a New Discipline. In: *Ethnobotany: evolution of a discipline*. London: Chapman & Hall.

Decher, J. (1997). Conservation, Small Mammals, and the Future of Sacred Groves in West Africa. *Biodiversity and Conservation*. [Online]. 6 (7). pp. 1007–1026. Available from: http://link.springer.com/10.1023/A:1018991329431. [Accessed: 23 September 2014].

Deil, Ulrich, B.Frosch & Holger Jackle (2009). A geobotanical analysis of forest patches on sacred sites in Northern Morocco. *Berichte der Reinhold-Tüxen-Gesellschaft*. 21. pp. 174–195.

Deil, U., Heike, C. & Mohamed, B. (2008). Sacred Groves in Morocco Vegetation Mosaics and Biological values. In: *African Sacred Groves: Ecological Dynamics and Social Change*. Athens, GA; London: Ohio University Press; James Currey.

Dejene, A. (2014). New ministry and its overarching tasks ahead. *The Ethiopian Herlad*. [Online]. 15 October. Available from: http://www.ethpress.gov.et/herald/index.php/herald/development/4055-new-ministry-and-its-overarching-tasks-ahead. [Accessed: 15 October 2014].

Descola, P. (1996). Constructing Natures Symbolic Ecology and Social Practice. In: P. Descola & G. Pálsson (eds.). *Nature and society: anthropological perspectives*. London; New York: Routledge.

Descola, P. & Palsson, G. (1996). *Nature and Society: Anthropological Perspectives*. London; New York: Routledge.

Desissa, D. (2009). *Indigenous Sacred Sites and Biocultural Diversity: A Case Study from South-western Ethiopia*. [Online]. Available from: http://www.terralingua.org/bcdconservation/?p=62.

Dessie, G. & Christianson, C. (2008). Forest decline and its causes in the south-central rift valley of Ethiopia: human impact over a one hundred year perspective. *Ambio*. 37 (4). pp. 263–271.

Dessie, G. (2007). *Forest decline in South Central Ethiopia: extent, history and process*. PhD Dissertation. Stockholm: Stockholm University Department of Physical Geography and Quaternary Geology.

Dilebo, L.G. (1999). *The Historical Fundamentals and Instruments of Being Ethiopians (in Amharic)*. Addis Ababa: Commercial Printing Press.

Dilebo, L.G. (1996). *The Italo-Ethiopian War of 1887 – 1896, From Dogali to Adowa*. Addis Ababa, Ethiopia: Artistic Printing Press.

Dobson, A. P. (1996). *Conservation and Biodiversity*. First Edition. New York: W H Freeman & Co.

Doffana, Z.D. (2011). *The Ethnohistory & Culture of Ţambaro Nationality of Ethiopia*. Report. Hawassa/ Addis Ababa: Council of Nationalities, Southern Regional Government of Ethiopia. [Online]. Available from: http://www.scribd.com/doc/181366908/The-Ethnohistory-Culture-of-Tambaro-Nationality-of-Ethiopia. [Accessed: 11 September 2014].

Doffana, Z.D. (2010a). *The Ethnohistory of the Baskeś of Southwest Ethiopia*. [Online]. Report . Hawassa, Ethiopia: Council of Nationalities, Southern Regional Government of Ethiopia/ UNDP. Available from: https://www.scribd.com/doc/244633095/The-Ethno-history-of-Baske%C5%A1-of-Southwest-Ethiopia.

Doffana, Z.D. (2008). *Crisis in fishing livelihood & ethno-ichthyological traditions in Ethiopia: the case of Zay of Lake Zway Islands*. Report. University of Hawassa & the Christensen Fund. [Online]. Available from: https://www.researchgate.net/publication/266003153_Crisis_in_fishing_livelihood__ethno-ichthyological_traditions_in_Ethiopia_the_case_of_Zay_of_Lake_Zway_islands.

Doffana, Z.D. (2007). *An Ethnographic Overview of Ensete [Ensete ventricosom] Producing Peoples of Ethiopia*. [Online]. Report. Hawassa: University of Hawassa, Ethiopia. Available from: https://www.researchgate.net/publication/267337306_an_ethnographic_overview_of_enset_producing_peoples_of_ethiopia.

Donald, D. & James, W. (1986). *The Southern Marches Of Imperial Ethiopia. Essays in History and Social Anthropology*. Cambridge: Cambridge University Press.

Dove, M. R. & Carpenter, C. (2008). Introduction: Major Historical Currents in Environmental Anthropology. In: M. R. Dove & C. Carpenter (eds.). *Environmental Anthropology A Historical Reader*. Malden, MA, USA: Blackwell Publishing Ltd.

Dudley, N., Higgins-Zogib, L. & Mansourian, S. (2009). The links between protected areas, faiths, and sacred natural sites. *Conservation Biology*. 23. pp. 568–577.

Durkheim, E. (1965). *The elementary forms of the religious life.* The Free Press.

Durning, A.T. (1995). Supporting Indigenous Peoples. In: J. Macionis & N. Benakraitis (eds.). *Seeing Ourselves. Classic, Contemporary and Cross - cultural Readings in Sociology*. Englewood Cliffs: Prentice Hall.

Dutfield, G. & Posey, D.A. (1999). Rights, Resources and Responses. In: *Cultural and Spiritual Values of Biodiversity*. Nairobi: United Nations Environment Program.

Eaton, P. (2005). *Land Tenure, Conservation and Development in Southeast Asia*. London and New York: Rutledge-Curzon.

Egbe, S. (2002). Forest Tenure and Access to Forest Resources in Cameroon. In: C. Toulmin, P. Lavige, & D. S. Traore (eds.). *The Dynamics of Resource Tenure in West Africa*. Oxford: James Currey.

Ellen, R.F. (2006a). *The categorical impulse : essays on the anthropology of classifying behaviour*. Berghahn Books.

Ellen, R.F. (2006b). *Ethnobiology and the science of humankind*. Oxford; London: Blackwell: Royal Anthropological

Institute.

Ellen, R..F. (1996a). Putting plants in their place: Anthropological approaches to understanding the ethnobotanical knowledge of rainforest populations. In: D. S. Edwards, W. E. Booth, & S. C. Choy (eds.). *Tropical Rainforest Research — Current Issues*. [Online]. Dordrecht: Springer Netherlands, pp. 457–465. Available from: http://kar.kent.ac.uk/19160/. [Accessed: 26 September 2014].

Ellen, R.F. (1996b). The cognitive geometry of nature A contextual approach. In: P. Descola & G. Palsson (eds.). *Nature and Society Anthropological Perspectives*. London and New York: Rutledge.

Ellen, R.F. & Fukui, K. (1996). *Redefining Nature: Ecology, Culture and Domestication*. Oxford, UK ; Washington, D.C: Berg.

Embassy of the Republic of Kenya (2011). *Kenya Is Represented at the Nation, Nationalities and Peoples Day of Ethiopia*. [Online]. 9 December 2011. Available from: http://www.kenyaembassyaddis.org/index.php?option=com_content&view=article&id=127:kenya-is-represented-at-the-nation-nationalities-and-peoples-day-of-ethiopia-9th-december-2011&catid=4:front-page-stories&Itemid=88.

Encyclopedia of Nations (2014). Ethiopia – Climate. [Online]. Available from: http://www.nationsencyclopedia.com/Africa/Ethiopia-CLIMATE.html. [Accessed: 03April 2015].

Eric, E. S. (2002). On the co-evolution of cultural, biological and linguistic diversity. In: L. Maffi (ed.). *On biocultural diversity: linking language, knowledge, and the environment*. Washington, [D.C.]: Smithsonian Institution Press.

Ermias Lulekal, Ensermu Kelbessa, Tamrat Bekele & Haile Yinege (2008). An ethnobotanical study of medicinal plants in Mana Angetu District, south-eastern Ethiopia. *Journal of Ethnobiology and Ethnomedicine*. [Online]. 4 (10). Available from: http://www.ethnobiomed.com/content/4/1/10.

ESA (1996). *1994 Population and Housing Census of Ethiopia: Results for Southern Nations, Nationalities and Peoples' Region, Vol. 2, Table 2.20*. [Online]. Available from: http://www.csa.gov.et/newcsaweb/images/documents/surveys/Population%20and%20Housing%20Census%201994/survey0/data/docs/report/Statistical_Report/K07/K07_partIII.pdf. [Accessed: 10 October 2014].

Estabrook, G.F. (1994). Choice of Fuel for Bagaco Still Helps Maintain Biological Diversity in a Traditional Portuguese Agricultural System . Norman: Oklahoma University Press. *J. EthnobioI.* [Online]. 14 (1). pp. 43–57. Available from: http://ethnobiology.org/sites/default/files/pdfs/JoE/14-1/Estabrook.et.al.pdf.

Etkin, N.L. (1986). *Plants in indigenous medicine & diet: biobehavioral approaches*. Bedford Hills, N.Y.: Redgrave Pub. Co.

Ewuketu, L.M., Zebene, A. & Solomon, Z. (2014). Plant species diversity of homegarden agroforestry in Jabithenan District, North-Western Ethiopia. *International Journal of Biodiversity and Conservation*. [Online]. 6 (4). pp. 301–307. Available from: http://www.academicjournals.org/journal/IJBC/article-abstract/5A65AD446753. [Accessed: 29 September 2014].

Fairhead, J. & Leach, M. (2008). False Forest History, Complicit Social Analysis: Rethinking Some West African Environmental Narratives. In: M. R. Dove & C. Carpenter (eds.). *Environmental Anthropology A Historical Reader*. Malden, MA, USA: Blackwell Publishing Ltd.

FAO (2007). *State of the World's Forests 2007 Food and Agriculture Organization of the United Nations Rome, 2007*. [Online]. Rome. Available from: http://www.fao.org/docrep/009/a0773e/a0773e00.htm. [Accessed: 14 October 2014].

FAO (2006). *Global Forest Resources Assessment 2005 Progress towards sustainable forest management*. [Online]. Rome. Available from: ftp://ftp.fao.org/docrep/fao/008/A0400E/A0400E00.pdf. [Accessed: 14 October 2014].

Fassil, H. (2005). *Beyond Plants, Professionals & Parchments: The role of Home-based Medicinal Plant Use and Traditional Health Knowledge in Primary Health Care in Ethiopia*. [Online]. Available from: http://scholarspace.manoa.hawaii.edu/handle/10125/152. [Accessed: 1 October 2014].

FDRE, House of Representatives (1995). *Proclamation of the Constitution of the Federal Democratic Republic of Ethiopia*. [Online]. Available from: http://www.refworld.org/docid/3ae6b5a84.html. [Accessed: 20 September 2014].

FDRE, MoARD (2008). *Forest Development Conservation and Utilization Policy and Strategy*. [Online]. Available from: http://www.docstoc.com/docs/74936815/Forest-Development_-Conservation-and-Utilization-Policy-and-Strategy. [Accessed: 15 September 2014].

FDRE MoARD (2002). *Rural & Agricultural Development Policies & Strategies of Ethiopia*. [Online]. Available from: http://www.gcao.gov.et/index.php?option=com_jdownloads&Itemid=220&view=finish&cid=136&catid=14&m=0&lang=en.

FDRE, PCC (2008). *Summary and Statistical Report of the 2007*. [Online]. Addis Ababa, Ethiopia: Ethiopian Statistical Authority. Available from: https://www.scribd.com/doc/28289334/Summary-and-Statistical-Report-of-the-2007. [Accessed: 10 October 2014].

FDRE-the CRGE Initiative (2011). *Ethiopia's Climate-Resilient Green Economy Green economy strategy*. [Online]. Addis Ababa: The Prime Minister's Office, the Environmental Protection Authority, and the Ethiopian Development Research Institute. Available from: http://www.epa.gov.et/Download/Climate/Ethiopia%27s%20Climate-Resilient%20Green%20economy%20strategy.pdf.

Fikadu, T. (2007). Overview of natural resources in SNNPRS. In: *Policies to increase forest cover in Ethiopia*. [Online]. 2007, Addis Ababa, Ethiopia: Ethiopian Development Research Institute (EDRI). Available from: http://www.efdinitiative.org/sites/default/files/forest_workshop_proceedings_080227_am.pdf. [Accessed: 14 October 2014].

Ford, R.I. (2001). Introduction: Ethnobiology at the Crossroads. In: R. I. Ford (ed.). *Ethnobotany at the Millennium: Past Promise and Future Prospects*. Ann Arbour, Michigan: The Regents of the University of Michigan.

Ford, R.I. (2000). Agriculture: An Introduction. In: P. A. Minnis (ed.). *Ethnobotany: A Reader*. Norman: Oklahoma University Press.

Ford, R.I. & Nazarea, V.D. (1999). Ethnoecology Serving the Community A Case Study from Zuni Pueblo, New Mexico. In: *Ethnoecology Situated Knowledge/Local Lives*. Tucson: The University of Arizona Press.

Fowler, C. S. (2002). Altar Rituals in Thirdspace. In: J. R. Stepp, F. S. Wyndham, & Rebecca K. Zarger (eds.). *Ethnobiology and Cultural diversity*. Athens, Georgia: The International Society of Ethnobiology.

Freedman, F.B. (2010). Shamanic Plants and Gender in the Healing Forest. In: E. Hsu & S. Harris (eds.). *Plants, Health and Healing On the Interface of Ethnobotany and Medical Anthropology*. New York/ Oxford: Berghahn Books.

Fullas, F. (2007). The role of indigenous medicinal plants in Ethiopian healthcare. *African Renaissance*. [Online]. 4 (1). pp. 76–80. Available from: http://www.africabib.org/rec.php?RID=316007935&DB=p. [Accessed: 1 October 2014].

Funk, C., Rowland, J., Eilerts, G., Kebebe, E., Biru, N., White, L. & Galu, G. (2012). A climate trend analysis of Ethiopia. US Geological Survey, Fact Sheet. [Online]. 3053. Available from: http://pubs.usgs.gov/fs/2012/3053/FS12-3053_ethiopia.pdf. [Accessed: 4 April 2015].

Gadgil, M. & Vartak, V.D. (1976). The sacred groves of Western Ghats in India. *Economic Botany*. [Online]. 30 (2). pp. 152–160. Available from: http://link.springer.com/10.1007/BF02862961. [Accessed: 23 September 2014].

García, L.H. & Vanessa (2013). Autonomy, the body, and the resurgence of traditional medicine. *Mujeres, healing and autonomy reclaiming our bodies means restoring indigenous wellness practices and healing ceremonies*. [Online]. Available from: http://ejfood.blogspot.co.uk/2013/03/autonomy-body-and-resurgence-of.html. [Accessed: 1 October 2014].

Garedew, E., Sandewall, M., Söderberg, U. & Campbell, B.M. (2009). Land-Use and Land-Cover Dynamics in the Central Rift Valley of Ethiopia. *Environmental Management*. [Online]. 44 (4). pp. 683–694. Available from: http://link.springer.com/article/10.1007/s00267-009-9355-z. [Accessed: 12 October 2014].

Garibaldi, A. & Turner, N. (2004). Cultural keystone species: implications for ecological conservation and restoration. *Ecology and Society*. [Online]. 9 (3). Available from: http://www.ecologyandsociety.org/vol9/iss3/art1/.

Gatzweiler, F.W. & Hagedorn, K. (2013). Biodiversity and Cultural Ecosystem Services. In: S. A. Levin (ed.).

Encyclopaedia of Biodiversity (Second Edition). [Online]. Waltham: Academic Press, pp. 332–340. Available from: http://www.sciencedirect.com/science/article/pii/B9780123847195004238. [Accessed: 6 October 2014].

Gebre, A. (2004). The effect of development projects on the Karayu in Metahara area. In: A. Pankhurst & F. Piguet (eds.). *People, space and the state: migration, resettlement and displacement in Ethiopia : proceedings of the workshop held by the Ethiopian Society of Sociologists, Social Workers and Anthropologists and the United Nations Emergencies Unit for Ethiopia, 28-30 January 2003, including reviews of the 2003 resettlement experience*. Addis Ababa, Ethiopia: Bole Printing Enterprise.

Gebreselassie, S. (2006). *Land, Land Policy and Smallholder Agriculture in Ethiopia*. Future Agricultures. [Online]. Available from: http://www.future-agricultures.org/publications/research-and-analysis/policy-briefs/129-land-land-policy-and-smallholder-agriculture-in-ethiopia-1/file. [Accessed: 17 October 2014].

Geertz, C. (1973). *Thick Description: Toward an Interpretive Theory of Culture*. [Online]. 1973. Available from: http://www.sociosite.net/topics/texts/Geertz_Thick_Description.php. [Accessed: 18 October 2014].

Geertz, C. (1972). *Clifford Geertz - Deep Play: Notes on the Balinese Cockfight (1972)*. [Online]. 1972. Scribd. Available from: https://www.scribd.com/doc/68122987/Clifford-Geertz-Deep-Play-Notes-on-the-Balinese-Cockfight-1972. [Accessed: 18 October 2014].

Geissler, P.W. & Prince, R.J. (2010). Persons, Plants and Relations: Treating Childhood Illness in a Western Kenyan Village. In: E. Hsu & S. Harris (eds.). *Plants, Health and Healing On the Interface of Ethnobotany and Medical Anthropology*. New York/ Oxford: Berghahn Books.

Geist, H.J. & Lambin, E.F. (2001). *What Drives Tropical Deforestation? A meta-analysis of proximate and underlying causes of deforestation based on subnational case study evidence*. LUCC Report Series. [Online]. Louvain-la-Neuve Belgium: University of Louvain LUCC International Project Office. Available from: https://www.pik-potsdam.de/members/cramer/teaching/0607/Geist_2001_LUCC_Report.pdf.

Gellar, S. (2007). *Varieties of Religious Doctrines and Institutions in Africa and Their Impact on Democratization Processes*. [Online]. Indiana university. Available from: http://dlc.dlib.indiana.edu/dlc/handle/10535/4171. [Accessed: 15 September 2014].

Getachew, T. (2004). "the Role of Botanic Gardens in Conservation of Plant biodiversity" In Theodros Mulatu, Ed. 2004. In: M. Theodros (ed.). *A Symposium on Ecology and Paleo-anthropology in Ethiopia*. Bilon Lodge, Afaar, Ethiopia: Walt Information Centre, Afar Regional Government of Ethiopia and Ministry of Tourism and Culture.

Getahun, A. (1974). The role of wild plants in the native diet in Ethiopia. *Agro- Ecosystems n°*. [Online]. 1. pp. 45–56. Available from: http://onlinelibrary.wiley.com/doi/10.1111/j.1095-8339.2011.01154.x/full#b2. [Accessed: 8 October 2014].

Getu, M. (2004). The Effect of Investment on the Livelihoods of the Tsamako of the Woito Valley. In: A. Pankhurst & F. Piguet (eds.). *People, space and the state: migration, resettlement and displacement in Ethiopia : proceedings of the workshop held by the Ethiopian Society of Sociologists, Social Workers and Anthropologists and the United Nations Emergencies Unit for Ethiopia, 28-30 January 2003, including reviews of the 2003 resettlement experience*. Addis Ababa, Ethiopia: Ethiopian Society of Sociologists, Social Workers and Anthropologists.

Girma, G. (2011). *Protection of Traditional Knowledge under International and Ethiopian Law with a Particular Reference to Traditional Medical Knowledge: Current Trends, prospects and Challenges*. LL. M. Degree in Public International Law. [Online]. Addis Ababa, Ethiopia: Addis Ababa University School Of Graduate Studies School Of Law Public International Law. Available from: https://chilot.files.wordpress.com/2013/05/protection-of-traditional-knowledge-under-international-and-ethiopian-law.pdf. [Accessed: 1 October 2014].

Girma, M. (2012). *Understanding Religion and Social Change in Ethiopia*. [Online]. New York: Palgrave Macmillan. Available from: http://www.bing.com/search?q=Understanding+Religion+and+Social+Change+in+Ethiopia+Toward+a+Hermeneutic+of+Covenant+Mohammed+Girma&pc=MOZI&form=MOZLBR.

Githitho, A. N. (n.d.). *The Sacred Mijikenda Kaya Forests of Coastal Kenya and Biodiversity Conservation*. [Online]. Available from: http://www.sacredland.org/PDFs/Mijikenda_Kaya.pdf.

Godole, A., Punde, S. & Samaik, J. (2014). Culture-based Conservation of Sacred Groves: Experiences from the

North Western Ghats, India. In: B. Verschuuren (ed.). *Sacred Natural Sites: Conserving Nature and Culture*. [Online]. Available from: https://www.academia.edu/5990541/Sacred_Natural_Sites_Conserving_Nature_and_Culture. [Accessed: 15 September 2014].

Gold, A.G. (2001). Story, Ritual and Environment in Rajasthan. In: P. P. Arnold & A. G. Gold (eds.). *Sacred Landscapes and Cultural Politics Planting a Tree*. Aldershot, England: Ashgate Publishing Limited.

Goodman, A.H. (1998). *Building a New Biocultural Synthesis: Political-economic Perspectives on Human Biology*. Ann Arbour: The University of Michigan Press.

Gottlieb, U. (2008). Loggers v. Spirits in the Beng Forest, Cote d'Ivoire. In: M. J. Sheridan & C. Nyamweru (eds.). African sacred groves: ecological dynamics and social change. Athens, GA; London: Ohio University Press; James Currey.

Gray, A. (1999). Indigenous People, Their Environments and Territories. In: D. A. Posey (ed.). *Cultural and Spiritual Values of Biodiversity*. Nairobi: United Nations Environment Program.

Greaves, T. (1996). Tribal Rights Valuing Local Knowledge; Indigenous People and Intellectual Property Rights. In: S. B. Brush & D. Stabinsky (eds.). *Valuing Local Knowledge; Indigenous People and Intellectual Property Rights*. Washington, D. C: Island Press.

Grepperud, S. (1996). Population pressure and land degradation: the case of Ethiopia. *Journal of environmental economics and management*. 30 (1). pp. 18–33.

De Groot, R., Muller, D.S., Kulenthran, T., Berg, A.V.D., Ramakrishnan, P.S., Wascher., D. & Millennium Ecosystem Assessment (2005). Cultural and Amenity Services (Chapter 17). In: *Ecosystems and Human Well-Being: Current State and Trends Assessment Findings of the Condition and Trends Working Group*. Washington, D.C., USA.: Island Press, pp. 455–476.

GVI Kenya (2014). *Conservation status and threats facing Shimoni forest*. [Online]. Available from: https://www.scribd.com/doc/49772778/Conservation-status-and-threats-facing-Shimoni-forest. [Accessed: 22 October 2014].

Hakansson, N.T. & Brokensha, D. (1981). Indicators of rural inequality. *World Development*. [Online]. 9 (5). pp. 401–427. Available from: https://www.academia.edu/4821028/Indicators_of_rural_inequality. [Accessed: 26 September 2014].

Hamer, J. H. (2007). Decentralization as a Solution to the Problem of Cultured Diversity: An Example from Ethiopia. *Africa*. [Online]. 77 (02). pp. 207–225. Available from: http://www.africabib.org/rec.php?RID=305858572&DB=p. [Accessed: 28 October 2014].

Hamer, J. H. (2002). The Religious Conversion Process among the Sidāma of North-East Africa. *Africa: Journal of the International African Institute*. [Online]. 72 (4). pp. 598–627. Available from: http://www.jstor.org/stable/3556703. [Accessed: 22 September 2014].

Hamer, J.H. & Hamer, I (1998). Gerontocracy as a tradition and a mirror for the future. *The Sidama Concern*. 3. pp. 3:5–11.

Hamer, J.H. & Hamer, I. (1994). Impact of a Cash Economy on Complementary Gender Relations among the Sadāma of Ethiopia. *Anthropological Quarterly*. [Online]. 67 (4). pp. 187–202. Available from: http://www.jstor.org/stable/3317418. [Accessed: 22 September 2014].

Hamer, J. H. (1980). Preference, Principle, and Precedent: Dispute Settlement and Changing Norms in Sidamo Associations. *Ethnology*. [Online]. 19 (1). pp. 89–109. Available from: http://www.jstor.org/stable/3773321. [Accessed: 22 September 2014].

Hamer, J. H. (1976). Myth, Ritual and the Authority of Elders in an Ethiopian Society. *Africa: Journal of the International African Institute*. [Online]. 46 (4). pp. 327–339. Available from: http://www.jstor.org/stable/1159297. [Accessed: 22 September 2014].

Hamer, J. H. (1972). Dispute Settlement and Sanctity: An Ethiopian Example. *Anthropological Quarterly*. [Online]. 45 (4). pp. 232–247. Available from: http://www.jstor.org/stable/3317063. [Accessed: 22 September 2014].

Hamer, J.H. (1970). Sidamo generational class cycles. A political gerontocracy. *Africa*. 40. pp. 50–70.

Hameso, S. (2014). *The Sidama Nation: An Introduction*. [Online]. Available from: https://www.academia.edu/3043889/The_Sidama_Nation_An_Introduction. [Accessed: 11 September 2014].

Hameso, S. (1998). The Coalition of Colonized Nations: the Sidama Perspective A. Jaleta (ed.). *Journal of Oromo Studies*. 5 (1 & 2). pp. 105–133. [Online]. Available from: https://zelalemkibret.files.wordpress.com/2013/07/jos-volume-5-numbers-12-1998.pdf. [Accessed: 15 October 2014].

Hamill, F.A. (2002). Strength from Traditions a Selection of Medicinal and Toxic Plants of Uganda for Joint Public Health Effect. In: J. R. Stepp, F. S. Wyndham, & R. K. Zarger (eds.). *Ethnobiology and biocultural diversity: proceedings of the Seventh International Congress of Ethnobiology*. Athens, GA: International Society of Ethnobiology.

Hamilton, A. C. (2004). Medicinal plants, conservation and livelihoods. *Biodiversity & Conservation*. [Online]. 13 (8). pp. 1477–1517. Available from: http://link.springer.com/article/10.1023/B%3ABIOC.0000021333.23413.42. [Accessed: 3 October 2014].

Hammond, P. B. (1971). *Introduction to Cultural and Social Anthropology*. Collier Macmillan Ltd.

Harmon, D. (2001). On the meaning and moral of imperative of diversity. In: L. Maffi (ed.). *On biocultural diversity: linking language, knowledge, and the environment*. Washington, [D.C.]: Smithsonian Institution Press.

Harmon & Loh, J. (2005). A Global Index of Biocultural Diversity. *Ecological Indicators*. [Online]. 5 (3). pp. 231–241. Available from: http://www.sciencedirect.com/science/article/pii/S1470160X0500018X.

Harper, D. (2002). Talking about pictures: A case for photo elicitation. *Visual Studies*. [Online]. 17 (1). pp. 13–26. Available from: http://www.bing.com/search?q=Harper%2C+Douglas.... [Accessed: 12 September 2014].

Harris, S. (2010). Non Native Plants and Their Medicinal Uses. In: E. Hsu & S. Harris (eds.). *Plants, Health and Healing On the Interface of Ethnobotany and Medical Anthropology*. New York/ Oxford: Berghahn Books.

Harrop, S.R. (2011). 'Living In Harmony With Nature'? Outcomes of the 2010 Nagoya Conference of the Convention on Biological Diversity. *Journal of Environmental Law*. [Online]. 23 (1). pp. 117–128. Available from: http://jel.oxfordjournals.org/content/23/1/117. [Accessed: 26 October 2014].

Harrop, S.R. (2009). Globally Important Agricultural Heritage Systems: An Examination of Their Context in Existing Multilateral Instruments Dealing with Conservation and Land Tenure. *Journal of International Wildlife Law & Policy*. 12. pp. 127–165.

Harrop, S.R. (2007). Traditional agricultural landscapes as protected areas in international law and policy. *Agriculture, Ecosystems & Environment*. [Online]. 121 (3). pp. 296–307. Available from: http://www.sciencedirect.com/science/article/pii/S0167880906004579. [Accessed: 27 October 2014].

Harrop, S.R. (2004). Indigenous peoples, traditional ecological knowledge and the perceived threat of the intellectual property rights regime. *Law, Science and Policy*. [Online]. 2. pp. 207–239. Available from: http://kar.kent.ac.uk/206/. [Accessed: 20 October 2014].

Harrop, S.R. (2003). Human diversity and the diversity of life: international regulation of the role of indigenous and rural human communities in conservation. *Malayan Law Journal*. [Online]. 4. pp. xxxviii–lxxx. Available from: http://kar.kent.ac.uk/205/. [Accessed: 27 October 2014].

Heckenberger, M.J., Christian Russell, J., Toney, J.R. & Schmidt, M.J. (2007). The legacy of cultural landscapes in the Brazilian Amazon: implications for biodiversity. *Philosophical Transactions of the Royal Society B: Biological Sciences*. [Online]. 362 (1478). pp. 197–208. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2311456/. [Accessed: 18 October 2014].

Heckler, S. (2009). *Landscape, Process and Power : Re-evaluating Traditional Environmental Knowledge*. 1st Ed. New York, NY: Berghahn Books.

Heide, F. zur (2012). *Feasibility Study for a Lake Tana Biosphere Reserve, Ethiopia*. [Online]. Bonn, Germany: Bundesamt für Naturschutz (BfN) / Federal Agency for Nature Conservation. Available from: http://www.bfn.de/fileadmin/MDB/documents/service/Skript_317.pdf. [Accessed: 11 February 2014].

Heland, von J. & Folke, C. (2014). A social contract with the ancestors—Culture and ecosystem services in southern Madagascar. *Global Environmental Change*. [Online]. 24. pp. 251–264. Available from:

http://www.sciencedirect.com/science/article/pii/S0959378013001957. [Accessed: 23 September 2014].

Hellermann, V.P. (2009). African sacred groves: ecological dynamics and social change. Journal of the Royal Anthropological Institute. 15 (2). pp. 428–U46. Available from: http://onlinelibrary.wiley.com.chain.kent.ac.uk/doi/10.1111/j.1467-9655.2009.01566_18.x/epdf. [Accessed: 2 April 2015].

Henze, P.B. (2000). *Layers of Time: History of Ethiopia*. First UK Edition edition. London: C Hurst & Co Publishers Ltd.

Herbert, E.W. (1994). *Iron, Gender, and Power: Rituals of Transformation in African Societies*. Indiana University Press.

Higgins-Zogib, L., Dudley, N., Mallarach, J.-M. & Mansourian, S. (2010). *Beyond belief: Linking faiths and protected areas to support biodiversity conservation*. [Online]. Earthscan. Available from: http://espace.library.uq.edu.au/view/UQ:238018. [Accessed: 17 September 2014].

Hirch, M. (2011). *Traditional Healing and Indigenous Sovereignty: Assessment and evaluation of current potential, development and deficits of Indigenous mental health care provision in Washington State, USA*. text.thesis.doctoral. [Online]. Universität zu Köln. Available from: http://kups.ub.uni-koeln.de/4424/. [Accessed: 1 October 2014].

Hofmann, A. (1995). Medical Chemistry's Debt to Ethnobotany. In: R. E. Schultes & S. V. Reis (eds.). *Ethnobotany: evolution of a discipline*. London: Chapman & Hall.

Holm, J. & Bowker, J. (1994). *Sacred Place*. London: Pinter.

Horning, N.R. (2008). Behind Sacredness in Madagascar Rules, Local Interests and Forest Conservation in Bara Country. In: M. J. Sheridan & C. Nyamweru (eds.). African sacred groves: ecological dynamics and social change. Athens, GA London: Ohio University Press: James Currey.

Howell, S., Descola, P. & Palsson, G. (1996). Nature in Culture or Culture in Nature: Chewong Ideas of 'humans' and Other Species. In: *Nature and Society Anthropological Perspectives*. London and New York: Rutledge.

Hoteso, B. (1990). *Sidama: Its people and its culture [in Amharic]*. Addis Ababa: Bole Printing Press.

Hsu, E. (2010a). Introduction. Plants in Medical Practice and Common Sense: On the Interface of Ethnobotany and Medical Anthropology. In: E. Hsu & S. Harris (eds.). *Health and Healing On the Interface of Ethnobotany and Medical Anthropology*. New York/ Oxford: Berghahn Books.

Hsu, E. (2010b). Quing hao (Herba Artemisae annuae) in the Chinese Materia Medica. In: E. Hsu & S. Harris (eds.). *Health and Healing On the Interface of Ethnobotany and Medical Anthropology*. New York/ Oxford: Berghahn Books.

Hundera, K. (2007). Traditional Forest Management Practices in Jimma Zone, South West Ethiopia. *Ethiopian Journal of Education and Sciences*. [Online]. 2 (2). pp. 1–10. Available from: http://www.ajol.info/index.php/ejesc/article/view/41982. [Accessed: 15 September 2014].

Hunn, E. (2002). Traditional Environmental Knowledge Alienable or Inalienable Intellectual Property . In: J. R. Stepp, F. S. Wyndham, & R. K. Zarger (eds.). *Ethnobiology and Cultural diversity.* Athens, Georgia: The International Society of Ethnobiology.

Institute of Biodiversity Conservation & Research (2009). *Convention on Biological Diversity (CBD) Ethiopia's 4th Country Report*. [Online]. Addis Ababa, Ethiopia. Available from: www.cbd.int/doc/world/et/et-nr-04-en.pdf.

Institute of Biodiversity Conservation & Research (2005). *National Biodiversity Strategy and Action Plan*. [Online]. Available from: http://www.cbd.int/doc/world/et/et-nbsap-01-en.pdf. [Accessed: 24 September 2014].

Igoe, J. (2004). *Conservation and globalization: a study of the national parks and indigenous communities from East Africa to South Dakota*. Belmont, CA, USA: Thomson/Wadsworth.

Ingold, T. (1992). Culture and the Perception of the Environment. In: E. Croll & D. Parkin (eds.). *Bush Base: Forest Farm Culture, Environment and Development*. London and New York: Rutledge.

International Society of Ethnobiology (2006). *ISE Code of Ethics (with 2008 additions)*. [Online]. Available from: http://ethnobiology.net/code-of-ethics/.

Irvine, K.N., Warber, S.L., Devine-Wright, P. & Gaston, K.J. (2013). Understanding Urban Green Space as a Health Resource: A Qualitative Comparison of Visit Motivation and Derived Effects among Park Users in Sheffield, UK. *International Journal of Environmental Research and Public Health*. [Online]. 10 (1). pp. 417–442. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3564151/. [Accessed: 19 October 2014].

Ishihara, M. (2009). *Spirit Possession and Pilgrimage The Formation and Configuration of the Tijjānī Cult in Western Oromoland*. In: [Online]. 2009, pp. 505–15. Available from: http://portal.svt.ntnu.no/sites/ices16/Proceedings/Volume%202/Minako%20Ishihara-%20Spirit%20Possession%20and%20Pilgrimage.pdf. [Accessed: 15 September 2014].

IUCN & UNESCO (2008). *Sacred Natural Sites. Guidelines for Protected Area Managers*. [Online]. Available from: www.iucn.org/themes/wcpa/pubs/guidelines.htm.

Ivakhiv, A. (2007). Religion, Nature and Culture: Theorizing the Field. *Journal for the Study of Religion, Nature and Culture*. pp. 47–57.

Jacobs, S., Haest, B., de Bie, T., Deliège, G., Schneiders, A. & Turkelboom, F. (2013). Chapter 3 - Biodiversity and Ecosystem Services. In: S. J. D. Keune (ed.). *Ecosystem Services*. [Online]. Boston: Elsevier, pp. 29–40. Available from: http://www.sciencedirect.com/science/article/pii/B9780124199644000032. [Accessed: 6 October 2014].

Jain, P. (2007). *Preserving Cultural Landscapes: A Cross-Cultural Analysis*. [Online]. Available from: http://arizona.openrepository.com/arizona/handle/10150/190653. [Accessed: 15 September 2014].

Jeffrey, J. (2014). Ethiopia Shows Developing World How to Make a Green Economy Prosper. *IPS-Inttre Press Service News Agecy*. [Online]. 16 October. Available from: http://www.ipsnews.net/2014/10/ethiopia-shows-developing-world-how-to-make-a-green-economy-prosper/. [Accessed: 16 October 2014].

Johnston, A.M. (2006). *Is the Sacred for Sale? Tourism and Indigenous Peoples.* London: Earthscan.

Jordan, M. (2012). Ethiopians Trade Holy Water for AIDS Drugs. *Wall Street Journal*. [Online]. 6 March. Available from: http://online.wsj.com/articles/SB10001424052970203806504577182932291514986. [Accessed: 28 October 2014].

Junsongduang, A., Balslev, H., Inta, A., Jampeetong, A. & Wangpakapattanawong, P. (2013). Medicinal plants from swidden fallows and sacred forest of the Karen and the Lawa in Thailand. *Journal of Ethnobiology and Ethnomedicine*. [Online]. 9 (1). pp. 1–10. Available from: http://link.springer.com/article/10.1186/1746-4269-9-44. [Accessed: 3 October 2014].

Kandari, L.S., Bisht, V.K., Bhardwaj, M. & Thakur, A.K. (2014). Conservation and management of sacred groves, myths and beliefs of tribal communities: a case study from north-India. *Environmental Systems Research*. [Online]. 3 (1). pp. 1–10. Available from: http://link.springer.com/article/10.1186/s40068-014-0016-8. [Accessed: 3 October 2014].

Kanshie, T.K. (2002). *Five thousand years of sustainability? A case study on Gedeo land use (Southern Ethiopia)*. PhD Dissertation. [Online]. The Netherlands: Wageningen University. Available from: http://edepot.wur.nl/198428. [Accessed: 10 March 2014].

Kaplan, S. (1995). The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology*. [Online]. 15 (3). pp. 169–182. Available from: http://www.sciencedirect.com/science/article/pii/0272494495900012. [Accessed: 19 October 2014].

Kassam, K.-A. (2014). *Indigenous Knowledge and Health Sovereignty*. [Online]. 2014. Available from: http://ethnobiology.net/indigenous-knowledge-and-health-sovereignty/.

Kassam, K.-A., Karamkhudoeva, M., Ruelle, M. & Baumflek, M. (2010). Medicinal Plant Use and Health Sovereignty: Findings from the Tajik and Afghan Pamirs. *Human Ecology*. [Online]. 38 (6). pp. 817–829. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3003150/. [Accessed: 1 October 2014].

Kassaye, K., Amberbir, A., Getachew, B. & Mussema, Y. (2006). A historical overview of traditional medicine practices and policy in Ethiopia. *Ethiopian Journal of Health Development*. [Online]. 20 (2). pp. 127–134. Available from: http://www.popline.org/node/174509.

Kebede, K. (2004). "The Social Dimensions and Development Induced resettlement: the case of the Gilgel Gibe Hydroelectric Dam in Southwest Ethiopian. In: A. Pankhurst & F. Piguet (eds.). *People, space and the state: migration, resettlement and displacement in Ethiopia : proceedings of the workshop held by the Ethiopian Society of Sociologists, Social Workers and Anthropologists and the United Nations Emergencies Unit for Ethiopia, 28-30 January 2003, including reviews of the 2003 resettlement experience*. Addis Ababa, Ethiopia: Ethiopian Society of Sociologists, Social Workers and Anthropologists.

Keesing, R.M. (1981). *Cultural Anthropology: A Contemporary Perspective*. Rev edition. New York: Thomson Learning.

Khongsdier, R. (2007). Bio-cultural Approach: The Essence of Anthropological Study in the 21st Century. *The Anthropologist*. [Online]. (Special Issue 3). pp. 39–50. Available from: http://www.krepublishers.com/06-Special%20Volume-Journal/T-Anth-00-Special%20Volumes/T-Anth-SI-03-Anth-Today-Web/Anth-SI-03-05-Khongsdier-R/Anth-SI-03-5-Khongsdier-R-Ab.pdf.

Kibret, D.T. (n.d.) An Overview of The Role Of Traditional Medicine In Ethiopia. *Abhinav Journal Of Research In Arts & Education*). Volume No. 2, Issue No. 4 [Online]. Available from: http://www.abhinavjournal.com/images/Arts_&_Education/Apr13/5.pdf.

Kibrework, L. (2011). Discourses of ethnolinguistic diversity; the case of Ethiopia. *International Conference on Management, Economics and Social Sciences*. [Online]. Available from: psrcentre.org/images/extraimages/1211708.pdf.

Kiros, F.G. (1993). *The subsistence crisis in Africa: The case of Ethiopia : root causes and challenges of the 1990s and the new century*. 1st edition. Addis Ababa: Organization for Social Science Research in Eastern Africa.

Kloos, H. (1998). Primary health care in Ethiopia under three political systems: Community participation in a war-torn society. *Social Science & Medicine*. [Online]. 46 (4–5). pp. 505–522. Available from: http://www.sciencedirect.com/science/article/pii/S0277953697001949. [Accessed: 1 October 2014].

Kumo, W.L. (2009a). *The Sidama People of Africa: An Overview of History, Culture and Economy: Part I*. [Online]. Available from: http://worancha.blogspot.co.uk/2013/02/the-sidama-people-of-africa-overview-of.html. [Accessed: 13 October 2014].

Kumo, W.L. (2009b). The Sidama people of Africa: The Institution of Cimeessa - The Respected Elder. *Afro Articles*. [Online]. Available from: http://www.afroarticles.com/article-dashboard/Article/The-Sidama-people-of-Africa--The-Institution-of-Cimeessa---The-Respected-Elder/167572. [Accessed: 14 October 2014].

Lancaster, F.M. (2005). Genetic and Quantitative Aspects of Genealogy. [Online]. Available from: http://www.genetic-genealogy.co.uk/index.html.

Latorre, J.G. & Latorre, J.G.(2012). "Globalization, Local Communities and Traditional Forest Related Knowledge. In: J. A. Parrotta & R. L. Troper (Eds.). *Traditional Forest Related Knowledge Sustaining Communities, Ecosystems and Biocultural Diversity*. New York: Springer.

Lauren, A. (2007). *Faith as a Means of Healing: Traditional Medicine and the Ethiopian Orthodox Church In and Around Lalibela*. [Online]. Villanova University. Available from: http://digitalcollections.sit.edu/cgi/viewcontent.cgi?article=1104&context=isp_collection. [Accessed: 15 September 2014].

Lebbie, A. & Guries, R.P. (2008). The Role of Sacred Groves in Biodiversity Conservation in Sierra Leone. In: M. J. Sheridan & C. Nyamweru (eds.). African sacred groves: ecological dynamics and social change. Athens, GA London: Ohio University Press: James Currey.

Lebbie, A.R. & Guries, R.P. (1995). Ethnobotanical value and conservation of sacred groves of the Kpaa Mende in Sierra Leone. *Economic Botany*. [Online]. 49 (3). pp. 297–308. Available from: http://link.springer.com/article/10.1007/BF02862349. [Accessed: 3 October 2014].

Lemeneh, M. (2008). *Analysis of Drivers of Deforestation and Forest Degradation in Ethiopia*. In: [Online]. 25 November 2008, Addis Ababa, Ethiopia: MELKA Mahiber: Addis Ababa. Available from: http://www.bing.com/search?q=8.%09Mulugeta+Lemeneh%2C+%E2%80%9CAnalysis+of+Drivers+of+Deforestation+and+Forest+Degradation+in+Ethiopia. [Accessed: 18 October 2014].

Lemenih, M. & Bekele, M. (2008). Participatory forest management best practices, lesson learnt and challenges encountered. *The Ethiopian and Tanzanian Experiences FARM-Africa/SOS-Sahel*. [Online]. Available from:

http://theredddesk.org/sites/default/files/resources/pdf/PFM%20lessons,%20challenges%20and%20best%20practices.pdf. [Accessed: 15 September 2014].

Levine, D. N. (2000). *Greater Ethiopia: The Evolution of a Multi-ethnic Society*. University of Chicago Press.

Leyew, Z. (2011). *Wild Plant Nomenclature and Traditional Botanical Knowledge among Three Ethnolinguistic Groups in North-western Ethiopia — African Books Collective*. [Online]. Addis Ababa, Ethiopia: OSSREA. Available from: http://www.africanbookscollective.com/books/wild-plant-nomenclature-. [Accessed: 15 September 2014].

Li, T.M. (2000). Locating indigenous Environmental Knowledge in Indonesia. In: P. Peter, R. F. Ellen, & A. Bicker (eds.). *Indigenous environmental knowledge and its transformations: critical anthropological perspectives*. Amsterdam: Harwood Academic.

Lizcano, G., C. McSweeney & M. New (2008). UNDP Climate Change Country Profiles: Ethiopia. [Online]. Oxford. Available from: http://country-prof iles.geog.ox.ac.uk.[Accessed: 4 April 2015].

Loh, J. & Harmon, D. (2014). *Biocultural Diversity Threatened species, endangered languages*. [Online]. Zeist, The Netherlands: WWF Netherlands. Available from: http://biocultural.webeden.co.uk. [Accessed: 16 September 2014].

Maffi, L. & Woodley, E. (2010). *Biocultural diversity conservation: a global sourcebook*. London; Washington, D.C.: Earthscan.

Maffi, L. (2007). Biocultural Diversity and Sustainability. In: J. Pretty, H. Ward, S. B. Andrew, T. Benton, J. S. Guivant, D. Orr, D. R. Lee, & M. J. Pfeffer (eds.). The SAGE Handbook of Environment and Society. [Online]. London: SAGE Publications Ltd. Available from: http://knowledge.sagepub.com/view/hdbk_envirosociety/n18.xml. [Accessed: 15 September 2014].

Maffi, L. (2005). Linguistic, Cultural, and Biological Diversity. *Annual Review of Anthropology*. [Online]. 34 (1). pp. 599–617. Available from: http://dx.doi.org/10.1146/annurev.anthro.34.081804.120437. [Accessed: 23 September 2014].

Maffi, L. (2001). Introduction. In: L. Maffi (ed.). *On biocultural diversity Linking language, knowledge and the Environment*. Washington and London: The Smithsonian Institution.

Malhotra., K.C., Yogesh Gokhale, Sudipto Chatterjee & Sanjeev Srivastava (2001). Cultural And Ecological Dimensions Of Sacred Groves In India Indian National Science Academy, New Delhi. [Online]. New Delhi & Bhopal: Indian National Science Academy & Indira Gandhi Rashtriya Manav Sangrahalaya. Available from: http://himalayanconnections.org/wp-content/uploads/pdf/Malhotra_2001_CultureEcologySacredGrovesIndia_IAS.pdf. [Accessed: 7 April 2015].

Mallarach, J.-M. & Papayannis, T. (2009). *The Sacred Dimension of Protected Areas: Proceedings of the Second Workshop of the Delos Initiative, Ouranoupolis 2007*. Gland, Switzerland: Athens, Greece: World Conservation Union.

Marcus, H. G. (1994). *A History of Ethiopia*. Berkeley and Los Angeles: University of California Press.

Martin, Gary, Diana Mincyte & Ursula Münster (2012). Why Do We Value Diversity? Biocultural Diversity in a Global Context. *RCC Perspectives.Rachel Carson Centre for Environment and Society. [Online]. Available from: http://www.english.illinois.edu/-people-/faculty/schaffner/Schaffner.2012.RCC%20Perspectives.pdf. [Accessed: 03/04/2015]*.

Massey, A., Bhagwat, S. & Minnis, K. (2014). Religious Forest Sites. *Biodiversity Institute*. [Online]. Available from: http://www.biodiversity.ox.ac.uk/researchthemes/biodiversity-beyond-protected-areas/religious-forest-sites/. [Accessed: 24 September 2014].

Mathewson, K. (2000). The Social Life of Trees: Anthropological Perspectives on Tree Symbolism, Edited by Laura Rival. Oxford: Berg. 1998 Book review. *Ecumene 7*. [Online]. (7). p.p. 2. Available from: https://www.academia.edu/238283/The_Social_Life_of_Trees_Anthropological_Perspectives_on_Tree_Symbolism_. [Accessed: 26 September 2014].

McAlvay, A. (2013). *Sidama Traditional Medicinal Plants: An ethnobotanical study from south-western Ethiopia*. [Online]. University of Wisconsin - Madison 600 Highland Avenue Madison, WI USA: University of Wisconsin - Madison. School of Medicine & Public Health Department of Surgery. Available from:

http://www.surgery.wisc.edu/system/assets/1950/Common_River_Medicinal_Plant_Handbook_FINAL4.pdf?1389376053.

McIvor, A., Fincke, A. & Oviedo, G. (2008). *Bio-Cultural Diversity and Indigenous Peoples Journey Report from the 4th IUCN World Conservation Congress Forum, 6-9 October 2008, Barcelona, Spain*. [Online]. Barcelona, Spain: IUCN. Available from: http://cmsdata.iucn.org/downloads/bcd_ip_report_low_res.pdf.

Metcalfe, K., Ffrench-Constant, R. & Gordon, I. (2009). Sacred sites as hotspots for biodiversity: the Three Sisters Cave complex in coastal Kenya. *Fauna & Flora International, Oryx, The International Journal of Conservation*.

Mgumia, F.H. & Oba, G. (2003). Potential role of sacred groves in biodiversity conservation in Tanzania. *Environmental Conservation*. [Online]. 30 (3). p.pp. 259–265. Available from: http://www.journals.cambridge.org/abstract_S0376892903000250. [Accessed: 23 September 2014].

Millennium Ecosystem Assessment (2005). *Ecosystems and human well-being: Synthesis (Millennium Ecosystem Assessment)*. [Online]. Washington, D.C., USA: World Resources Institute Island Press. Available from: https://www.scribd.com/doc/5250332/MILLENNIUM-ECOSYSTEM-ASSESSMENT-2005. [Accessed: 6 October 2014].

Minnis, P.E. (2000). Introduction. In: P. E. Minnis (Ed.). *Ethnobotany a Reader*. Norman: University of Oklahoma Press.

MoCT (2000). *Proclamation No.209/2000 Research and Conservation of Cultural Heritage Proclamation.* [Online]. Available from: http://chilot.files.wordpress.com/2011/08/proc-no-209-2000-research-and-conservation-of-cultural-heritage.pdf.

MoCT (1997). *The Federal Democratic Republic of Ethiopia Cultural Policy*. [Online]. Available from: http://chilot.files.wordpress.com/2011/08/national-culture-policy.pdf.

Moerman, D. E. (1998). *Native American Ethnobotany*. First Edition. Portland, Or: Timber Press.

Moges, A., Dagnachew, M. & Yimer, F. (2013). Land Use Effects on Soil Quality Indicators: A Case Study of Abo-Wonsho Southern Ethiopia. *Applied and Environmental Soil Science*. [Online]. p.p. e784989. Available from: http://www.hindawi.com/journals/aess/2013/784989/abs/. [Accessed: 29 September 2014].

Monjane, M. (2010). External Agency and Local Authority: Facilitating CBNRM in Mahel, Mozambique. In: F. Nelson (ed.). *Community, Conservation and Contested Land. The Politics of Natural Resource Governance in Africa*. London, Washington, DC: Earthscan.

Moran, K. & Nazarea, V.D. (1999). Toward Compensation Returning Benefits from Ethnobotanical Drug Discovery to Native Peoples. In: *Ethnoecology Situated Knowledge/Local Lives*. Tucson: The University of Arizona Press.

Mūhlhãusler, P. (2001). Eco-linguistics, linguistic diversity, ecological diversity. In: L. Maffi (Ed.). *On biocultural diversity Linking language, knowledge and the Environment*. Washington and London: The Smithsonian Institution.

Munro-Hay, S. (2002). *Ethiopia, the Unknown Land: A Cultural and Historical Guide*. London ; New York: I.B.Tauris.

Nabhan, G.P., Pynes, P. & Joe, T. (2002). Where Biological and Cultural Diversity Converge: Safeguarding Endemic Species and Language in the Colorado Plateau. In: J. R. Stepp, F. S. Wyndham, & R. K. Zarger (eds.). *Ethnobiology and Cultural diversity*. Athens, Georgia: The International Society of Ethnobiology.

Nabhan, G.P., Joaquin, Jr, A., Laney, N. & Dahl, K. (1996). Sharing the Benefit of Plant Resources and Indigenous Scientific Knowledge. In: S. B. Brush & D. Stabinsky (eds.). *Valuing Local Knowledge; Indigenous People and Intellectual Property Rights*. Washington, D.C.: Island Press.

Narnajo, P. (1995). The Urgent Need for the Study of Medicinal Plants. In: R. E. Schultes & S. von Reis (Eds.). *Ethnobotany: evolution of a discipline*. London: Chapman & Hall.

National Forest Policy (2007). *Forest Development, Conservation and Utilization Proclamation a Proclamation to Provide for the Development Conservation and Utilization of Forests*. [Online]. Available from: http://faolex.fao.org/docs/pdf/eth95247.pdf. [Accessed: 14 October 2014].

Nazarea, V. D. (ed.) (1999). *Ethnoecology: situated knowledge/located lives*. Tucson: University of Arizona Press.

Nazarea, V.D. (1998). *Cultural memory and biodiversity*. Tuscon: University of Arizona Press.

Negash, L. (2010). *A Selection of Ethiopia's Indigenous Trees: Biology, Uses and Propagation Techniques. Ethiopia*. Addis Ababa: Addis Ababa University Press.

Nelson, F. (2010). Introduction: The Politics of Natural Resource Governance in Africa. In: F. Nelson (ed.). *Community, Conservation and Contested Land. The Politics of Natural Resource Governance in Africa*. London: Washington, DC: Earthscan.

Nelson, R. (1998). Understanding Eskimo Science. In: *Anthropology. Annual Editions*. Slvice Dock: Dushkin/ McGraw–Hill.

Nettle, Daniel & Suzanne Romaine (2000). *Vanishing Voices: The Extinction of the World's Languages*. Oxford: Oxford University Press.

Newing, H. (2010). *Conducting Research in Conservation: Social Science Methods and Practice*. 1st Ed. London: Routledge.

Niglas, K. (2004). *The Combined Use of Qualitative and Quantitative Methods in Educational Research*. Doctoral Dissertations on Social Sciences. [Online]. Estonia: Tallinn Pedagogical University. Available from: http://e-ait.tlulib.ee/66/1/niglas_katrin2.pdf. [Accessed: 12 July 2014].

Nyamweru, C., Kibet, S., Pakia, M. & Cooke, J.A. (2008). The Kaya Forests of Coastal Kenya 'Remnant Patches' or Dynamic Entities? In: M. J. Sheridan & C. Nyamweru (eds.). African Sacred Groves: Ecological Dynamics and Social Change. Athens; London: Ohio University Press; James Currey.

O'Brien, L. & Perlis, A. (2006). 'Strengthening heart and mind': using woodlands to improve mental and physical well-being. *An international journal of forestry and forest industries Food and Agriculture Organization of the United Nations*. [Online]. 57 (224). pp. 56–62. Available from: ftp://ftp.fao.org/docrep/fao/009/a0789e/a0789e.pdf. [Accessed: 19 October 2014].

Orlove, B.S. & Brush, S.B. (1996). Anthropology and the Conservation of Biodiversity. *Annual Review of Anthropology*. [Online]. 25 (1). pp. 329–352. Available from: http://dx.doi.org/10.1146/annurev.anthro.25.1.329. [Accessed: 17 September 2014].

Ormsby, A.A. & Bhagwat, S.A. (2010). Sacred forests of India: a strong tradition of community-based natural resource management. *Environmental Conservation*. 37 (3). pp. 320–326.

Orphée, L.A. & Bienvenu, B. (2012). *Satoyama Initiative » Benin's Experience in the Management of Sacred Forests for Biodiversity Conservation*. [Online]. IPSI, the International Partnership for the Satoyama Initiative. Available from: http://satoyama-initiative.org/en/benins-experience-in-the-management-of-sacred-forests-for-biodiversity-conservation/. [Accessed: 19 October 2014].

Osseweijer, M. (2000). We wander in our ancestors' yard: sea cucumber gathering in Aru, Eastern Indonesia. *Studies in Environmental Anthropology*. 5. pp. 55–78.

Ostrom, E. (1990). *Governing the Commons: the Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.

Ouellette, P., Kaplan, R. & Kaplan, S. (2005). The monastery as a restorative environment. *Journal of Environmental Psychology*. [Online]. 25 (2). pp. 175–188. Available from: http://www.sciencedirect.com/science/article/pii/S0272494405000368. [Accessed: 19 October 2014].

Padgett, D.K. (1998). *Qualitative Methods in Social Work Research: Challenges and Rewards*. Thousand Oaks, Calif: SAGE Publications, Inc.

Palsson, G. (1996). Human-Environmental Relations: Orientalism, Paternalism and Communalism. In: P. Descola & G. Palsson (eds.). *Nature and Society Anthropological Perspectives*. London and New York: Rutledge.

Pankhurst, R. (2000). *The Ethiopians: A History*. New Edition. Oxford ; Malden, Mass: Wiley-Blackwell.

Pankhurst, R. (1995). The History of Deforestation and Afforestation in Ethiopia Prior to World War I. *Northeast African Studies*. [Online]. 2 (1). pp. 119–133. Available from:

http://www.africabib.org/rec.php?RID=142271969&DB=p. [Accessed: 14 October 2014].

Pankhurst, R. (1991). *An Introduction to the Medical History of Ethiopia*. Trenton, N.J: Red Sea Press.

Pankhurst, R. (1990). Some Notes in foreign Historiography on Ethiopia. In: *Proceedings of the Symposium of Silver Jubilee Anniversary of the lES*. Addis Ababa: Addis Ababa University Press.

Parajuli, P. (2001). No Nature Apart: Adivasi Cosmovision and Ecological Discourses in Jharkhand, India. In: P. P. Arnold & A. G. Gold (eds.). *Sacred Landscapes and Cultural Politics Planting a Tree*. Aldershot, England: Ashgate Publishing Limited.

Park, C.C. (1994). *Sacred Worlds: An Introduction to Geography and Religion*. London/ New York: Routledge.

Pedersen, L. (2002). Ambiguous Bleeding: Purity and Sacrifice in Bali (1). *Ethnology*. [Online]. 41 (4). p.p. 303. Available from: http://www.questia.com/library/journal/1G1-97235903/ambiguous-bleeding-purity-and-sacrifice-in-bali-1. [Accessed: 26 September 2014].

Pei, S. (2002). Ethnobotany and modernisation of Traditional Chinese Medicine. In: *Workshop on Wise Practices and Experiential Learning in the Conservation and Management of Himalayan Medicinal Plants, Kathmandu, Nepal, 15-20 December 2002*. 2002, Ministry of Forest and Soil Conservation, Nepal, the WWF-Nepal Program.

Pennacchio, M., Jefferson, L. & Havens, K. (2010). *Uses and Abuses of Plant-Derived Smoke: Its Ethnobotany as Hallucinogen, Perfume, Incense, and Medicine*. New York, N.Y: Oxford University Press.

PHCC Ethiopia (1991). *The 1984 Population and Housing Census of Ethiopia Analytical Report at National Level*. [Online]. Addis Ababa: Central Statistical Authority. Available from: http://catalog.ihsn.org/index.php/catalog/3599.

Pilgrim, S., Pretty, J., Adams, B., Berkes, F., de Athayde, S.F., Dudley, N., Hunn, E., Maffi, L., Milton, K., Rapport, D., Robbins, P., Sterling, E., Stolton, S., Tsing, A. & Vintinnerk, E. (2009). The Intersections of Biological Diversity and Cultural Diversity: Towards Integration. *Conservation and Society*. [Online]. 7 (2). p.p. 100. Available from: http://www.conservationandsociety.org/text.asp?2009/7/2/100/58642.

Pilgrim, S. & Pretty, J.N. (2010). *Nature and Culture: Rebuilding Lost Connections*. Routledge.

Plenderleith, K. (1999). Traditional Agriculture and Soil Management. In: D. A. Posey (ed.). *Cultural and Spiritual Values of Biodiversity*. Nairobi: United Nations Environment Program.

Plotkin, M.J. (1993). *Tales of a Shaman's Apprentice: An Ethnobotanist Searches for New Medicines in the Amazon Rain Forest*. New York: Viking Pr.

Posey, D.A. (2002). *Kayapó ethnoecology and culture*. Studies in environmental anthropology. Routledge.

Posey, D.A. (2000). Ethnobiology and Ethnoecology in the Context of National Laws and International Agreements Affecting Indigenous and Local Knowledge, Traditional Resources and Intellectual Property Rights. In: R. F. Ellen, P. Parkes, & A. Bicker (eds.). *Indigenous environmental knowledge and its transformations: critical anthropological perspectives*. Amsterdam: Harwood Academic.

Posey, D.A. (1999). Introduction: Culture and Nature—the Inextricable Link. In: D. A. Posey (Ed.). *Cultural and Spiritual Values of Biodiversity*. Nairobi: United Nations Environment Program.

Posey, D.A. & Dutfield, G. (1996). Includes bibliographical references and index. *Beyond intellectual property : toward traditional resource rights for indigenous peoples and local communities / Darrell A. Posey and Graham Dutfield*. Ottawa: International Development Research Centre.

Prain, G., Fujisaka, S. & Warren, M.D. (1999). *Biological and Cultural Diversity: the Role of Indigenous agricultural experimentation in development*. IT Studies in Indigenous Knowledge and Development. London: Intermediate Technology Publications.

Proclamation No. 120/1998. *A Proclamation to Provide for the Establishment of the Institute of Biodiversity Conservation and Research*. (1998). [Online]. Available from: http://faolex.fao.org/docs/pdf/eth43997.pdf. [Accessed: 20 September 2014].

Pungetti, G., Oviedo, G. & Hooke, D. (2012). *Sacred Species and Sites: Advances in Biocultural Conservation*. Cambridge ; New York: Cambridge University Press.

Rahmato, D. (1991). *Famine and Survival Strategies: A Case Study from Northeast Ethiopia*. Uppsala: Nordiska Afrikainstitutet.

Rahmato, D. (2008). *The Peasant and the State: Studies in Agrarian Change in Ethiopia 1950s - 2000s*. Addis Ababa: CreateSpace Independent Publishing Platform.

Ramakrishna, P.S. (2001). Increasing population and declining biological resources in the context of global change and globalization. *Journal of Biosciences*. 26 (4). pp. 465–479.

Rao, R. (2002). Tribal Wisdom and Conservation of Biological Diversity: the Indian scenario. In: J. R. Stepp, F. S. Wyndham, & R. K. Zarger (Eds.). *Ethnobiology and biocultural diversity: proceedings of the Seventh International Congress of Ethnobiology*. Athens, GA: International Society of Ethnobiology : Distributed by the University of Georgia Press.

Reddy, S. (2006). Making Heritage Legible: Who Owns Traditional Medical Knowledge? *International Journal of Cultural Property*. [Online]. 13 (02). Available from: http://www.journals.cambridge.org/abstract_S0940739106060115. [Accessed: 15 September 2014].

Redford, K.H. & Brosius, J.P. (2006). Diversity and homogenization in the endgame. *Global Environmental Change*. [Online]. 16 (4). pp. 317–319. Available from: http://linkinghub.elsevier.com/retrieve/pii/S0959378006000665.

Regassa, N. & Stoecker, B.J. (2012). Household food insecurity and hunger among households in Sidama district, southern Ethiopia. *Public Health Nutrition*. 15 (7). pp. 1276–1283.

Reshad, M., Asfaw, Z. & Abebe, T. (2013). *Diversity in agroforestry systems of southern Ethiopia*. Saarbrücken: LAP LAMBERT Academic Publishing.

Reusing, M. (2000). Change Detection of Natural High Forests in Ethiopia Using Remote Sensing and Gis Techniques. *International Archives of Photogrammetry and Remote Sensing*. [Online]. XXXIII (Part B7). p.p. Amsterdam. Available from: http://www.isprs.org/proceedings/XXXIII/congress/part7/1253_XXXIII-part7.pdf. [Accessed: 13 October 2014].

Richards, L. (2009). *Handling Qualitative Data: A practical Guide*. London: SAGE.

Rival, L. (1998). *The Social Life of Trees: Anthropological Perspectives on Tree Symbolism*. Oxford, UK: New York: Berg 3PL.

Ross, E.S. (2008). Palaver Trees Reconsidered in Senegalese Landscape Arboreal Monuments and Memorials. In: M. J. Sheridan & C. Nyamweru (eds.). African Sacred Groves: Ecological Dynamics and Social Change. Athens, GA; London: Ohio University Press: James Currey.

Ruck, C.A.P. (1995). Gods and Plants in the Classical World. In: *Ethnobotany: evolution of a discipline*. London: Chapman & Hall.

Ruelle, M. (2014). *Healing Agriculture: Medicinal Plants in the Semien Mountains of Ethiopia*. [Online]. Available from: http://ethnobiology.net/healing-agriculture-medicinal-plants-in-the-semien-mountains-of-ethiopia/. [Accessed: 1 October 2014].

Sacred Land Film Project (2014). *Map of Sacred Lands*. [Online]. Available from: http://www.sacredland.org/home/resources/sacred-lands-interactive-map/. [Accessed: 21 October 2014].

Al Sadhan, R.I. & Almas, K. (1999). Miswak (chewing stick): a cultural and scientific heritage. *Saudi dental journal*. [Online]. 11 (2). pp. 80–87. Available from: http://repository.ksu.edu.sa/jspui/handle/123456789/7086. [Accessed: 11 September 2014].

Said, A. & Lemenih, M. (2013). *Forest Policy Development: Engaging PFM to Support Policy Making: The Case of Forest Proclamation of SNNPR*. [Online]. NTFP-PFM. Available from: http://wetlandsandforests.hud.ac.uk/forests/BN%206%20Forest%20Policy%20Development%20in%20SNNPRS.pdf. [Accessed: 15 October 2014].

Salick, J., Amend, A., Anderson, D., Hoffmeister, K., Gunn, B. & Zhendong, F. (2007). Tibetan sacred sites conserve

old growth trees and cover in the eastern Himalayas. *Biodiversity and Conservation*. [Online]. 16 (3). pp. 693–706. Available from: http://link.springer.com/10.1007/s10531-005-4381-5. [Accessed: 23 September 2014].

Salick, J., Anja, B., Anthony, A., Bee, G., Wayne, L. & Heidi, S. (2006). Tibetan Medicine Plurality. *Economic Botany*. [Online]. 60 (3). pp. 227–253. Available from: http://www.scribd.com/doc/24574900/Salick-J-et-al-Tibetan-Medicine-Plurality. [Accessed: 18 September 2014].

Salick, J., Biun, A., Martin, G., Apin, L. & Beaman, R. (1999). Whence useful plants? A direct relationship between biodiversity and useful plants among the Dusun of Mt. Kinabalu. *Biodiversity & Conservation*. [Online]. 8 (6). pp. 797–818. Available from: http://link.springer.com/article/10.1023/A%3A1008853413930. [Accessed: 27 October 2014].

Saundry, P. (2011). *Impacts of tourism and recreation in Africa*. [Online]. Available from: http://www.eoearth.org/view/article/153782/.

Schaefer, R.T. (2003). *Sociology*. 8th Ed. Boston: McGraw-Hill.

Schlee, G. (1992). Ritual topography and ecological use: The Gabra of the Kenyan/Ethiopian borderlands. In: E. Croll & D. Parkin (Eds.). *Bush Base: Forest Farm Culture, Environment and Development*. London and New York: Rutledge.

Schultes, R.E. & Reis, S.V. (1995). *Ethnobotany: evolution of a discipline*. London: Chapman & Hall.

Schultes, R.E. & Raffauf, R.F. (1992). *Vine of the Soul: Medicine Men, Their Plants and Rituals in the Colombian Amazonia*. Oracle, Arizona: Synergetic Press Inc., U.S.

Secretariat of the Convention on Biological Diversity (2009). *The Convention on Biological Diversity Plant Conservation Report : A Review of Progress in Implementing the Global Strategy of Plant Conservation (GSPC)*. [Online]. Montreal: the Secretariat of the Convention on Biological Diversity. Available from: http://www.cbd.int/doc/publications/plant-conservation-report-en.pdf. [Accessed: 10 February 2012].

Senanayake, R. & Posey, D.A. (1999). Voices of the Earth. In: *Cultural and Spiritual Values of Biodiversity*. Nairobi: United Nations Environment Program.

Sharrock, S., Oldfield, S. & Wilson, O. (2014). *Plant Conservation Report 2014: A Review of Progress Towards the Global Strategy for Plant Conservation 2011-2020*. [Online]. Richmond, UK: Secretariat of the Convention on Biological Diversity, Montréal, Canada and Botanic Gardens Conservation International,. Available from: http://www.cbd.int/doc/publications/cbd-ts-81-en.pdf. [Accessed: 8 October 2014].

Shaw, K. (2014). *Threatened trees of Ethiopia*. [Online]. 8 April 2014. Global Trees. Available from: http://globaltrees.org/news-blog/threatened-trees-ethiopia/. [Accessed: 12 October 2014].

Shen, X., Lu, Z., Li, S. & Chen, N. (2012). Tibetan Sacred Sites: Understanding the Traditional Management System and Its Role in Modern Conservation. *Ecology and Society*. [Online]. 17 (2). Available from: http://www.ecologyandsociety.org/vol17/iss2/art13/. [Accessed: 23 September 2014].

Sheridan, J. M. (2008). The Dynamics of African Sacred Groves Ecological, Social and Symbolic Processes. In: M. J. Sheridan & C. Nyamweru (eds.). African Sacred Groves: Ecological Dynamics and Social Change. Athens, GA; London: Ohio University Press; James Currey.

Sheridan J., M. & Nyamweru, C. (2008). Introduction. In: African Sacred Groves: Ecological Dynamics and Social Change. Athens: London: Ohio University Press: James Currey.

Shinde, K. (2007). Pilgrimage and the Environment: Challenges in a Pilgrimage Centre. *Current Issues in Tourism*. [Online]. 10 (4). pp. 343–365. Available from: http://www.tandfonline.com/doi/abs/10.2167/cit259.0. [Accessed: 23 September 2014].

Shiva, V. (1998). *Biopiracy: The Plunder of Nature and Knowledge*. London: The Gaya Foundation.

Sidama Zone Culture, Tourism and Government Affairs Department (2012). *Sidama Zone Culture, Tourism and Government Affairs Department. 2012. Visit Sidama, Tour Guide Book.*

Siebert, U. (2008). Are Sacred Forests in Northern Benin 'Traditional Conservation Areas'? Examples from the Bassila Region. In: M. J. Sheridan & C. Nyamweru (eds.). African Sacred Groves: Ecological Dynamics

and Social Change. Athens; London: Ohio University Press; James Currey.

Sillitoe, P. (2007). *Local science vs. global science : approaches to indigenous knowledge in international development / edited by Paul Sillitoe*. Studies in environmental anthropology and ethnobiology; v. 4. [Online]. New York: Berghahn Books. Available from: http://www.loc.gov/catdir/toc/ecip0616/2006019694.html. [Accessed: 18 September 2014].

Snape III, W. J. (1996). Biodiversity Law: Where Science and Policy Meet. In: *Biodiversity and the Law*. Washington, DC: Island Press.

SNNPRS, Council of Nationalities (2008). *Profile of Nations, Nationalities and Peoples of South Ethiopia.* Hawassa/ Addis Ababa: SNNPRS, Council of Nationalities, Culture, Language and History Studies.

SNNPRS Office of the President (2014). *About SNNPRS*. [Online]. 2014. 2014 Southern Nations Nationalities & People's Regional State Office of the President. Available from: http://www.snnprs.gov.et/about.html. [Accessed: 21 October 2014].

Sobrevila, C. (2008). *The Role of Indigenous Peoples in Biodiversity Conservation: the Natural but Often Forgotten Partners*. [Online]. The World Bank. Available from: http://siteresources.worldbank.org/INTBIODIVERSITY/Resources/RoleofIndigenousPeoplesinBiodiversityConservation.pdf.

Soejarto, D.D. (2002). The Evolution of University of Illinois' Policy of Benefit –Sharing in Research on Natural Products . In: J. R. Stepp, F. S. Wyndham, & R. K. Zarger (eds.). *Ethnobiology and Cultural diversity.* Athens, Georgia: The International Society of Ethnobiology.

SOS Sahel Ethiopia (n.d.). *Pastoralism in Ethiopia: Its Total Economic Values and Development Challenges*. [Online]. Available from: http://cmsdata.iucn.org/downloads/ethiopia_tev.pdf.

Spencer, J. (2010). Modernism, modernity and modernization. J. Spencer & A. Barnard (Eds.). *Encyclopaedia of Social Anthropology*. pp. 476–479.

Sponsel, L.E. (2013). Human Impact on Biodiversity, Overview. In: S. A. Levin (Ed.). *Encyclopaedia of Biodiversity (Second Edition)*. [Online]. Waltham: Academic Press, pp. 137–152. Available from: http://www.sciencedirect.com/science/article/pii/B9780123847195002501. [Accessed: 23 September 2014].

Sponsel, L.E. (2012). *Spiritual Ecology: A Quiet Revolution*. Santa Barbara: Praeger Publishers Inc.

Sponsel, L.E. (2008). *Spiritual Ecology, Sacred Places, and Biodiversity Conservation*. [Online]. Available from: http://www.eoearth.org/view/article/51cbeecf7896bb431f69a6f4. [Accessed: 29 September 2014].

Stanley, S. (1966). The political system of the Sidama. In: *The Proceedings of the Third International Conference on Ethiopian Studies*. Addis Ababa.

Stellmacher, T. (2007). The historical development of local forest governance in Ethiopia: from imperial times to the military regime of the Derg. *Africa Spectrum*. [Online]. 42(3). pp. 519–530. Available from: http://www.africabib.org/rec.php?RID=314425918&DB=p. [Accessed: 15 September 2014].

Stephenson, Jr, D.J. (1999). A Practical Primer on Intellectual Property Rights in a Contemporary Ethnoecological Context. In: V. D. Nazarea (Ed.). *Ethnoecology Situated Knowledge/Local Lives*. Tucson: The University of Arizona Press.

Stockholm Resilience Centre (2014). W*hat is resilience? An introduction to social-ecological research*. Online]. Available from: http://www.stockholmresilience.org/21/research/what-is-resilience.html. [Accessed; 01 April 2015].

Stolton, S. & Dudley, N. (2010). *Arguments for Protected Areas: Multiple Benefits for Conservation and Use*. First Edition. London ; Washington: Routledge.

Taddese, G. (2001). Land Degradation: A Challenge to Ethiopia. *Environmental Management*. [Online]. 27 (6). pp. 815–824. Available from: https://cgspace.cgiar.org/handle/10568/32893. [Accessed: 29 October 2014].

Taddese, T. (2008). *Participatory Forest Management (PFM) in Ethiopia: Achievements, Opportunities and Challenges, by Mr.* In: [Online]. 25 November 2008, Addis Ababa, Ethiopia: MELKA Mahiber: Addis

Ababa. Available from: http://www.bing.com/search?q=8.%09Mulugeta+Lemeneh%2C+%E2%80%9CAnalysis+of+Drivers+of+Deforestation+and+Forest+Degradation+in+Ethiopia. [Accessed: 18 October 2014].

Tadelle, F. (2004). Urban Development and Displacement of Rural Communities around Addis Ababa. In: A. Pankhurst & F. Piguet (Eds.). *People, space and the state: migration, resettlement and displacement in Ethiopia : proceedings of the workshop held by the Ethiopian Society of Sociologists, Social Workers and Anthropologists and the United Nations Emergencies Unit for Ethiopia, 28-30 January 2003, including reviews of the 2003 resettlement experience*. Addis Ababa, Ethiopia: Ethiopian Society of Sociologists, Social Workers and Anthropologists.

Tadesse, K. (2012). *Trees of Ethiopia (A Photographic Guide and Description)*. Addis Ababa: Washera Publishers.

Tekile, M., Tsegay, Z., Dingato, G.G., Garsamo, D. & Bada, B. (2012). *The History and Culture of the Sidama Nation [in Amharic]*. Addis Ababa, Ethiopia: Sidama Zone Culture, Tourism & Government Communication Affairs Department, Hawassa.

Teklehaymanot, T. & Giday, M. (2010). Ethnobotanical study of wild edible plants of Kara and Kwego semi-pastoralist people in Lower Omo River Valley, Debub Omo Zone, SNNPRS, Ethiopia. *Journal of Ethnobiology and Ethnomedicine*. [Online]. 6 (1). p.p. 23. Available from: http://www.ethnobiomed.com/content/6/1/23/abstract. [Accessed: 15 September 2014].

Tengö, M., Johansson, K., Rakotondrasoa, F., Lundberg, J., Andriamaherilala, J.-A., Rakotoarisoa, J.-A. & Elmqvist, T. (2007). Taboos and Forest Governance: Informal Protection of Hot Spot Dry Forest in Southern Madagascar. *AMBIO: A Journal of the Human Environment*. [Online]. 36 (8). pp. 683–691. Available from: http://www.bioone.org/doi/abs/10.1579/0044-7447%282007%2936%5B683%3ATAFGDP%5D2.0.CO%3B2. [Accessed: 23 September 2014].

Terralingua (2014). *Vitality Index of Traditional Environmental Knowledge An Introductory guide.[Online]. Available from:* www.terralingua.org/vitek. [Accessed: 12 April, 2015]

Teshome, D.S. (2009). *A study of a local religious institution among the Sidama of southern Ethiopia*. [Online]. 2009. Available from: www.humanosphere.cseas.kyoto-u.ac.jp/.../report/2009_fs_dilu_e.pdf. [Accessed: 30 September 2014].

The Christensen Fund (2014). *African Rift Valley*. [Online]. 2014. Available from: http://www.christensenfund.org/programs/african-rift-valley/. [Accessed: 23 September 2014].

Theil, R. (2014). *Is Omotic Afroasiatic? A Critical Discussion.* [Online]. Available from: https://www.academia.edu/338457/Is_Omotic_Afroasiatic. [Accessed: 19 September 2014].

The Reporter (2013). *English Edition - New Ministry for environment, forest*. [Online]. 22 June 2013. Available from: http://thereporterethiopia.com/index.php/news-headlines/item/639-new-ministry-for-environment-forest. [Accessed: 15 October 2014].

Tilahun, S. (2004). *The Creation and Human Responsibility: A Christian Survey Focusing on the Ethiopians [In Amharic]*. Addis Ababa, Ethiopia: Birana Printing Enterprise.

Toledo, V.M. (2013a). Indigenous Peoples and Biodiversity. In: S. A. Levin (ed.). *Encyclopaedia of Biodiversity (Second Edition)*. [Online]. Waltham: Academic Press, pp. 269–278. Available from: http://www.sciencedirect.com/science/article/pii/B9780123847195002999. [Accessed: 23 September 2014].

Toledo, V.M. (2013b). Community Conservation and Ethnoecology: The Three Dimensions of Local-Level Biodiversity Maintenance. In: L. Porter-Bolland, I. Ruiz-Mallén, C. Camacho-Benavides, & S. R. McCandless (eds.). *Community Action for Conservation*. [Online]. Springer New York, pp. 13–24. Available from: http://link.springer.com/chapter/10.1007/978-1-4614-7956-7_2. [Accessed: 3 October 2014].

Toledo, V.M., Boege, E. & Barrera-Bassols, N. (2010). *The Biocultural Heritage of Mexico: an overview*. [Online]. 2010. Biocultural Diversity Conservation. Available from: http://www.terralingua.org/bcdconservation/?p=1120. [Accessed: 3 October 2014].

Toledo, V. (2002). Ethnoecology: a conceptual framework for the study of indigenous knowledge of nature. In: Stepp JR et al (ed.). *Ethnobiology and biocultural diversity*. [Online]. Athens, GA: International Society of Ethnobiology, pp. 511–522. Available from:

http://download.springer.com/static/pdf/636/chp%253A10.1007%252F978-1-4614-7956-7_2.pdf?auth66=1412526638_0772baf271eefeea8a5ce9cbac0b38ec&ext=.pdf.

Townsend, P.K. (2013). *Environmental Anthropology: From Pigs to Policies*. 2nd Edition. Waveland Press, Inc.

Tremblay, M. & Vézina, H. (2000). New estimates of intergenerational time intervals for the calculation of age and origins of mutations. *American Journal of Human Genetics*. 66 (2).pp. 651–658.

Turner, N.J. (2000). General Plant Categories in Thompson (Nlaka'pamux) and Lillooet (Stl'atlimx), Two Interior Salish Languages of British Columbia. In: *Ethnobotany A Reader*. Norman: University of Oklahoma Press.

Turner, N.J., Smith, R. & Jones, J.T. (2005). A Fine Line between Two Nations' Ownership Patterns for Plant Resources among Coast Indigenous Peoples. In: D. Deur & N. J. Turner (eds.). *Keeping It Alive: Traditions of Plant Use and Cultivation on the Northwest Coast of North America*. Seattle: University of Washington Press.

UN-DESA (2009). *State of World's Indigenous Peoples 2009*. [Online]. New York: Department of Economic and Social Affairs Division for Social Policy and Development Secretariat of the Permanent Forum on Indigenous Issues. Available from: http://issuu.com/frankjrmolley/docs/sowip_web. [Accessed: 26 September 2014].

UNEP (2009). Tree Planting Campaign Hits Four Billion Mark. *Environment for development*. [Online]. Available from: http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=589&ArticleID=6200&l=en. [Accessed: 18 October 2014].

UNESCO (2014a). *Ethiopia - UNESCO World Heritage Centre*. [Online]. Available from: http://whc.unesco.org/en/statesparties/ET/documents/. [Accessed: 20 September 2014].

UNESCO (2014b). *UNESCO World Heritage Centre - Interactive Maps*. [Online]. Available from: http://whc.unesco.org/en/interactive-map/. [Accessed: 21 October 2014].

UNESCO (2014c). *Yayu Biosphere Reserve*. [Online]. Ecological Sciences for Sustainable Development. Available from: http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/africa/ethiopia/yayu/.

UNESCO World Heritage Centre (2014). *Dirre Sheik Hussein Religious, Cultural and Historical Site - UNESCO World Heritage Centre*. [Online]. Available from: http://whc.unesco.org/en/tentativelists/5649/. [Accessed: 28 October 2014].

UNESCO's World Heritage List (2011). *Sites in Ethiopia, Kenya and Viet Nam inscribed on UNESCO's World Heritage List*. [Online]. Available from: http://whc.unesco.org/en/news/773. [Accessed: 22 October 2014].

UNESCO World Heritage Centre (2011). *Konso Cultural Landscape - UNESCO World Heritage Centre*. [Online]. 2011. Available from: http://whc.unesco.org/en/list/1333. [Accessed: 22 October 2014].

UNESCO (2001). *UNESCO Universal Declaration on Cultural Diversity*. *UNESCO Universal Declaration on Cultural Diversity, 2 November 2001*. [Online]. Available from: http://www.refworld.org/docid/435cbcd64.html. [accessed 04 April 2015].

UNITED NATIONS (1992). *The Convention on Biological Diversity*. [Online]. Available from: http://www.cbd.int/doc/legal/cbd-en.pdf. [Accessed: 26 October 2014].

Van, B., Walter, E.A. & Banga, P.M. (1992). The Dogon and Their Trees. In: *Bush Base, Forest Farm: Culture, Environment and Development*. London and New York: Routledge.

Varese, S., Brush, S.B. & Stabinsky, D. (1996). The New Environmentalist Movement of Latin American Indigenous People. In: *Valuing Local Knowledge; Indigenous People and Intellectual Property Rights*. Washington, D.C., USA.: Island Press.

Vaughan, S. (2003). *Ethnicity and Power in Ethiopia*. PhD Dissertation. [Online]. Edinburgh: The University of Edinburgh. Available from: https://www.era.lib.ed.ac.uk/bitstream/1842/605/2/vaughanphd.pdf. [Accessed: 12 July 2014].

Vaughn, C. (2010). *Sheka Project Assessment.* Addis Ababa: MELKA Mahiber, Ethiopia.

Verschuuren, B. & Hiemstra, W. (2014). *Community Well-being in Biocultural Landscapes: Are we living well?* Practical Action Publishing.

Verschuuren, B., R. Wild, J. McNealy, & G. Oviedo (eds.) (2010). *Sacred Natural Sites: Conserving Nature and Culture*. London ; Washington, D.C: Routledge.

Vitousek, P.M., Mooney, H.A., Lubchenco, J. & Melillo, J.M. (1997). Human Domination of Earth's Ecosystems. *Science*. [Online]. 277 (5325). pp. 494–499. Available from: http://www.sciencemag.org/content/277/5325/494. [Accessed: 13 October 2014].

Vivero, J.L., Ensermu, K. & Sebsebe, D. (2006). Progress on the Red List of plants of Ethiopia and Eritrea: conservation and biogeography of endemic flowering taxa. In: G. S.A. & B. H.J. (Eds.). *Taxonomy and ecology of African plants, their conservation and sustainable use*. Kew: Royal Botanic Gardens, pp. 761–778.

Vivero, J.L., Kelbessa, E. & Demissew, S. (2005). *The Red List of Endemic Trees & Shrubs of Ethiopia and Eritrea*. [Online]. Cambridge, UK.: Published by Fauna & Flora International. Available from: https://www.academia.edu/1440709/The_Red_List_of_Endemic_Trees_and_Shrubs_of_Ethiopia_and_Eritrea. [Accessed: 15 September 2014].

Voeks, R.A. (2013). Ethnobotany of Brazil's African Diaspora: The Role of Floristic Homogenization. In: R. Voeks & J. Rashford (eds.). *African Ethnobotany in the Americas*. [Online]. Springer New York, pp. 395–416. Available from: http://link.springer.com/chapter/10.1007/978-1-4614-0836-9_14. [Accessed: 3 October 2014].

Voeks, R.A. (2004). Disturbance Pharmacopoeias: Medicine and Myth from the Humid Tropics. *Annals of the Association of American Geographers*. [Online]. 94 (4). pp. 868–888. Available from: http://www.jstor.org/stable/3694102. [Accessed: 3 October 2014].

Wabe, N. & Mohammed, M. (2011). What science says about khat (Catha edulis Forsk): Overview of chemistry, toxicology and pharmacology. *Journal of Experimental and Integrative Medicine*. [Online]. Available from: http://www.scopemed.org/?jft=4&ft=4-1316535359. [Accessed: 3 October 2014].

Wadley, R.L. & Colfer, C.J.P. (2004). Sacred Forest, Hunting, and Conservation in West Kalimantan, Indonesia. *Human Ecology*. [Online]. 32 (3). pp. 313–338. Available from: http://link.springer.com/10.1023/B:HUEC.0000028084.30742.d0. [Accessed: 23 September 2014].

Walker, Sue, Yohannes G/Eyesus, Kindie Tesfaye, Girma Mamo, Abebe Yeshanew & Endalkachew Bekele (2015). The Use Of Agroclimatic Zones As A Basis For Tailored Seasonal Rainfall Forecasts For The Cropping Systems In The Central Rift Valley Of Ethiopia. Conference Paper. [Online]. Available from http://www.researchgate.net/publication/237778710_the_use_of_agroclimatic_zones_as_a_basis_for_tailored_seasonal_rainfall_forecasts_for_the_cropping_systems_in_the_central_rift_valley_of_ethiopia

Wansamo, Kifle (2009). *Introduction to Sidama Religion*. [Online]. Available from: http://www.afrikaworld.net/afrel/sidama.htm. [Accessed: 22 September 2014].

Wassihun, B., Asfaw, Z. & Demissew, S. (2014). *Ethnobotanical Study of Useful Plants in Daniio Gade (home-Gardens) in Southern Ethiopia*. [Online]. Addis Ababa, Ethiopia: Institute of Biodiversity Conservation. Available from: http://www.ibc.gov.et/ibc/pubn/files/Ethnobotanical_study_of_Useful_plants_in.htm.

Weckerle, C.S., Timbul, V., Blumenshin, P., Hsu, E. & Harris, S. (2010). Medicinal, Stimulant and Ritual Plant Use: an Ethnobotany of Caffeine Containing Plants. In: *Plants, Health and Healing On the Interface of Ethnobotany and Medical Anthropology*. New York/ Oxford: Berghahn Books.

Whistler, W.A. (2000). *Plants in Samoan culture: the ethnobotany of Samoa*. Honolulu, Hawaii, USA: Isle Botanica.

WHO (2014). *WHO | Traditional and complementary medicine*. [Online]. 2014. WHO Medicines. Available from: http://www.who.int/medicines/areas/traditional/en/. [Accessed: 1 October 2014].

WHO (2013). *WHO traditional medicine strategy: 2014-2023*. [Online]. Geneva 27, Switzerland: WHO Press. Available from: http://apps.who.int/iris/bitstream/10665/92455/1/9789241506090_eng.pdf?ua=1. [Accessed: 1 October 2014].

WHO (2008). *WHO | WHO Congress on Traditional Medicine,7-9 November 2008, Beijing, China*. [Online]. 2008. WHO. Available from: http://www.who.int/medicines/areas/traditional/congress/en/. [Accessed: 1 October 2014].

WHO (2005). *National policy on traditional medicine and regulation of herbal medicines Report of a WHO global survey*. [Online]. Geneva: World Health Organization. Available from: http://apps.who.int/medicinedocs/pdf/s7916e/s7916e.pdf.

WHO (2001). *Legal Status of Traditional Medicine and Complementary/Alternative Medicine: A Worldwide Review*. World Health Organization.

Wibke, C., Benedikt, K. & Ayalneh, B. (2008). *Land Tenure in Ethiopia: Continuity and Change, Shifting Rulers, and the Quest For State Control*. CAPRi Working Paper 91. [Online]. Washington, DC: International Food Policy Research Institute. Available from: http://www.ifpri.org/publication/land-tenure-ethiopia. [Accessed: 17 October 2014].

Wily, L.A. (2008). Are Sacred Groves in Sub-Saharan Africa Safe? The Legal Status of Forests. In: M. J. Sheridan & C. Nyamweru (eds.). African Sacred Groves: Ecological Dynamics and Social Change. Athens, GA; London: Ohio University Press; James Currey.

Winberg, E. (2010). *Participatory Forest Management in Ethiopia, Practices and Experiences*. Addis Ababa: Food and Agriculture Organization Sub Regional Office for Eastern Africa (SFE).

Wø ien, H. (1995). Deforestation, Information and Citations: A Comment on Environmental Degradation in Highland Ethiopia. *GeoJournal*. 37 (4).pp. 501–511.

Woldemariam, T. & Fetene, M. (2010). *Forests of Sheka: Ecological, social, legal and economic dimensions of recent landuse/landcover changes-- overview and synthesis,*. In: [Online]. MELCA Mahiber and the African Biodiversity Network. Available from: http://www.bing.com/search?q=Forests+of+Sheka....

Woldu, Z. (2009). *Biodiversity Conservation Through Traditional Practices in south-western Ethiopia, a Hotspot of Biocultural Diversity*. [Online]. Available from: http://www.terralingua.org/bcdconservation/?p=79.

Wossen, T., Berger, T., Mequaninte, T. & Alamirew, B. (2013). Social network effects on the adoption of sustainable natural resource management practices in Ethiopia. *International Journal of Sustainable Development & World Ecology*. [Online]. 20 (6). pp. 477–483. Available from: http://www.scopus.com/inward/record.url?eid=2-s2.0-84889880452&partnerID=tZOtx3y1.

Wubalem Tadesse (2014). Proposal on Potential GIAHS candidates of Ethiopia Gedeo multistory agorofrestry system Konso Agoroforestry and Cultural Landscape. *GIAHS Steering and Scientific Committee Meeting 28-29 April 2014, Rome Italy.* [Online]. Available from: http://www.fao.org/fileadmin/templates/giahs/Presentations/april2014sc/06/Wubalem-GIAHS_FAO-Presentation_FINAL-NEW.pdf

Yadav, R.Hi. & Mekonnen, E. (2013). Degradation of Preserved and Isolated Church Forests in Asebot, Ethiopia. *EUROPEAN ACADEMIC RESEARCH*. [Online]. I (4). Available from: http://www.euacademic.org/UploadArticle/36.pdf. [Accessed: 15 September 2014].

Yibabe, T. (2001). *Conflict, Transition and Deforestation* . . Thematic Briefings. Ethiopia/University of Sussex (UK): Forum for Social Studies (Ethiopia) and the University of Sussex (UK).

Yilma, K. (2013). *Zonal diagnosis and intervention plan Sidama zone, SNNPRS*. [Online]. The Livestock and Irrigation Value chains for Ethiopian Smallholders (LIVES). Available from: http://lives-ethiopia.wikispaces.com/file/view/Sidama+zonal+report-+final.pdf.

Yirdaw, E. (2001). Diversity of naturally-regenerated native woody species in forest plantations in the Ethiopian highlands. *New Forests*. [Online]. 22 (3). pp. 159–177. Available from: http://link.springer.com/article/10.1023/A%3A1015629327039. [Accessed: 13 October 2014].

Yntiso, G. (2004). The Metekel resettlement in Ethiopia : why did it fail ? In: A. Pankhurst & F. Piguet (Eds.). *People, space and the state: migration, resettlement and displacement in Ethiopia : proceedings of the workshop held by the Ethiopian Society of Sociologists, Social Workers and Anthropologists and the United Nations Emergencies Unit for Ethiopia, 28-30 January 2003, including reviews of the 2003 resettlement experience*. Addis Ababa, Ethiopia: Ethiopian Society of Sociologists, Social Workers and Anthropologists.

Young J. (n.d.). *Ethiopian Protected Areas a 'Snapshot' March 2012*. [Online]. Available from: http://phe-ethiopia.org/admin/uploads/attachment-1167-Eth%20Protected%20Areas%20Snapshot%201_4_2012.pdf.

Zeleke, G. & Hurni, H. (2001). Implications of Land Use and Land Cover Dynamics for Mountain Resource Degradation in the North-western Ethiopian Highlands. *Mountain Research and Development*. [Online]. 21

(2). pp. 184–191. Available from: https://www.scribd.com/doc/77360778/Implications-of-Land-Use-and-Land-Cover-Dynamics-for-Mountain-Resource-Degradation-in-the-Northwestern-Ethiopian-Highlands. [Accessed: 13 October 2014].

Zent, S., Gragson, T.L. & Blount, B.G. (1999). The Quandary of Conserving Ethnoecological Knowledge: A Pairoa Case. In: *Ethnoecology; Knowledge, Resources and Rights*. Athens, Georgia: The University of Georgia Press.

Zent, S. & Maffi, L. (2001). Acculturation and ethnobiological knowledge loss among the Piaroa of Venezuela: demonstration of a quantitative method for the empirical study of traditional ecological knowledge change. In: *On biocultural diversity Linking language, knowledge and the Environment*. Washington and London: The Smithsonian Institution.

Zewde, B. (2001). *A History of Modern Ethiopia, 1855-1991: Updated and revised edition*. 2nd Revised edition. Oxford England; Athens; Addis Ababa: James Currey.

Zewdie, B. (1990). Ethiopian Historiography: Retrospect a prospect. In: *Proceedings of the Symposium of Silver Jubilee Anniversary of the lES*. 1990, Addis Ababa, Ethiopia: Addis Ababa University Press.

Zewdu, M. & Demissie, A. (2001). *Conservation and Sustainable Use of Medicinal Plants in Ethiopia.* Addis Ababa: Institute of Biodiversity Conservation and Research.

Annexes

Annex I: Reference for list of selected individual & focus group interviews, July 2012-March 2013, Wonsho-Sidama, Ethiopia

Director, BIE (2013). *Interview with Dr Gemeda Dalle, director of Ethiopian Biodiversity Research Institute, Addis Ababa, Ethiopia*, May 2013

Director, FIDS (2013). *Interview with Mr Firew Bekele, director of Furra Development& Education Institute, Yirgalem, Ethiopia, February 2013*

Expert, ARCCH (2013). *Interview with an officer at Federal Authority for Research and Conservation of Cultural Heritage, May 2013*

Expert, HCA (2013). *Interview with Mr. Burgie Alemu expert at Hawassa City Administration Department of Environment Protection, Hawassa, Ethiopia, March 2013*

Experts, SNNPRS-BDC (2013). *Interview with Mr Misrak Kumalo, Fikrte Assefa, Tsigerda Mulugeta & Mr. Desta: experts at Biodiversity conservation team of SNNPRS Bureau of Agriculture and Rural Department, Hawassa, Ethiopia, March 2013*

Expert, SZ-ANRD (2013). *Interview with Mr Tesfaye, expert at Sidama Zone Department of Agriculture & Natural Resources, Hawassa, Ethiopia, March 2013*

FGD-children (2012). *Focus group interview with children, Wonsho, Ethiopia December, 2013*

FGD-older men-1 (20121). *Focus group interview with male community elders, group 1, Wonsho, Ethiopia, November 2012*

FGD-older men-1 (2012). *Focus group interview with older men, group 2, Wonsho, Ethiopia, December 2012*

FGD-Women-1 (2012). *Focus group interviews with women, group 1, Wonsho, Ethiopia, November 2012*

FGD-Women-2 (2012). *Focus group interview with women, group 2, Wonsho, Ethiopia, December 2012*

FGD-young men-1 (2012). *Focus group interview with young men, group 1, Wonsho, Ethiopia, September 2012*

FGD-young men-2 (2013). *Focus group interview with young men, group 2, Wonsho, Ethiopia, January 2013*

FGD-young women-1 (2012). *Focus group interview with younger women, group 1, Wonsho, Ethiopia, November 2013*

Forestry expert, SNNPRS-BABR (2013). *Interview with Mr Tsegaye Fikadu, senior forestry expert at SNNPRS Bureau of Agriculture & Natural Resources, March 2013*

Head-WDA (2013). *Interview with Mr. Zewdie Gebiba, head of Wonsho District Administration, Bokao, Ethiopia, February 2013*

Head, WDAO (2012). *Interview with Mr. Bekele Hummo, head of Wonsho District Agriculture Office, Bokaso, Ethiopia, November 2013*

Head, WDCTCO (2013). *Interview with Mr Azmach Assefa, head of Wonsho District Culture, Tourism and Government Commination Office, Bokaso, Ethiopia, February 2013*

KI-AiO-RA (2012). *Interview with Mulugeta Mume, my all-in-one research assistant and key informant, Wonsho, Ethiopia, July 2012- March 2013*

Officer, GBG (2013). *Interview with Mr Mesfin Hailu, officer at National Botanical Garden, Gulele, Addis Ababa, Ethiopia May 2013*

Officers, FMCT (2013). *Interview with Mr Getachew Talachew et al, Officers at Federal Ministry of Culture and Tourism, Addis Ababa, Ethiopia, May 2013*

Officer, SNNPRS-BoCT (2013). *Interview with Mr. Bizuayehu Lakewu, senior culture expert at SNNPRS Bureau of Culture & Tourism, Hawassa, Ethiopia, April 2013*

Officer, SNNPRS-CoN (2013). *Interview with Worku Leulselassie, SNNPRS Council of Nationalities' Head of Nationalities' Documentation Department, Hawassa, Ethiopia, April 2013*

Officers, SCRBO (2012). *Focus group discussion with Tesfaye Kebede, Director of the Sidama Radio Station , Muluken Berhanue; expert (Social anthropology BA), Getahew Geremew (Expert, BA Management) & Abebabyehu Tesfaye (expert, BA social anthropology) officers at Sidama Community Radio Broadcasting Organization, Yirgalem, Ethiopia, December 2012*

Officer, SZ-CTD (2013). *Interview with Mr Tefera Ledamo, Officer at Sidama Zone Culture & Tourism Department, March 2013*

Principal, BES (2012). *Interview with Mr Teshale Melese, principal of Bokaso Elementary School, Bokaso, Ethiopia, December 2012*

Principal, BHS (2012). *Interview with Mr Bayou Balanago, principal of Bokaso High School, Bokaso, Ethiopia, December 2012*

SZ-BD Expert (2013). *Interview with Ms Firewoyn Tesfaye, biodiversity conservation expert at Sidama Zone Department of Agriculture & Natural Resources, Hawassa, Ethiopia, March 2013*

Annex II: Data collection episode & informant catalogue (partial)

July 2012- June 2013, Ethiopia

Note: Specific dates for each data collection episode are provided in the transcription files.

FWP: Fieldwork Period /Phase GO: Governmental; PO: Private organizations; FG: Full Gospel; Prot: Protestant; AA: Addis Ababa; Ind. Individual; Int.: Interview; Infml: informal; TS: Tree survey; wz; with; Env't: Environment; Mgt: Management; hh: household

No.	Data episode	FWP	Names & number of informants involved	Sex	Age group	Data episode setting	Scale & type
1.	Infml group-based interview wz officers at FMCT	3	3 experts/officers	M	Adult	AA -Office	GO National
2.	Int wz an officer at Gulele Botanical Garden	3	Mesfin Hailu	M	Adult	AA -Office	GO-Academia - National
3.	Int. wz director of BIE	3	Dr Gemeda Dalle	M	Adult	AA- over the phone/ virtual	GO-National
4.	Infml street survey of trad tooth cleaning med plants	3	Infml ethnographic conversation with 4 street vendors; names not recorded	M/F	Youth	AA streets	Grassroots-National
5.	Infml street TS at seedling vending shops	2	Names unrecorded; runners of 2 roadside shops	F/M	Adult	Hawassa streets	Grassroots-POs-Regional/Zonal
6.	Int wz manager of Haile Resort Hawassa	2	Mr. Habtamu	M	Young/ Adult	Hawassa City	PO; Regional/ Zonal
7.	Interview wz manager of Lewi Hotel and Resort	2	Mr. Aaron Melaku	M	Adult	Hawassa City	Private Sector; Regional/ Zonal
8.	Interview wz Sidama Zone Culture & Tourism Department Expert	2	Mr. Aseffa Ledamo	M	Adult	Hawassa City	GO sector; zonal
9.	Interview wz Sidama Zone Env't Protection & BD Conservation Section experts	2	Ms. Firewoin Tesfaye	F	Youth	Hawassa City	GO sector; Zonal
10.	Interview wz Sidama Zone Natural Resource Protection and Forestry	2	Mr. Tesfaye	M	Adult	Hawassa	GO- Zonal
11.	Interview wz SNNPRS Biodiversity Conservation & Env't Protection Bureau's expert team	2	Mr. Misraq Kumalo; Ms. Tsigereda Bekele; Ms. Fikirte Assefa; Mr. Desta	M/F	Adult	Hawassa	GO-Regional
12.	Interview wz SNNPRS Bureau of ARD Forestry expert	2	Tsegaye Fikadu	M	Adult	Hawassa	GO- Regional
13.	Interview wz Hawassa City Admin Municipal Waste	2	Burge Alemu	M	Adult	>>	GO-Zonal

	Mgt & Green Panting Office expert						
14.	Interview wz expert at SNNPRS Council of Nationalities' Culture Gallery	2	Mr. Worku	M	Adult	>>	GO- Regional
15.	Observation of live cultural festival at Hawassa City Grand square	2	Tadesse Legesse	M	Adult	>>	GO- Regional
16.	Ind. Int. with owner of sacred grave site and Indigenous tree species	1	Tilahun Garsamo EOTC/SAR	M	Adult	Ferro	Grassroots-Local
17.	Inf. Int. & tree survey	1	Tadesse Gobara & Gadisso Wenna	M	Childhood	Bokasso	Grassroots-Local
18.	Int with owner of sacred podo trees and a practicing Buduho	1	Manissa Marassa (a practicing SAR)	M	Old-age	Ferro	Grassroots-local
19.	Mini-group interview on sacred sites and podo trees at Shisho Shishame	1	Lanqaso Lalima, Hayeso Fitala, Hassano Hailu	M	Adult/ Youth	Ferro	>>
20.	Ind. Int. on sacred trees	1	Zerihun Senbeto, 32	M	Youth	>>	>>
21.	Ind. Int on women and botanical env't.	1	Furra Wotarro	F	Old women 68	>>	>>
22.	FGD wz adult/old women, group 1	1	8	F	Adult/ old	Bokaso Millennium Park	>>
23.	FGD wz adult/old women, group 2	1	6	F	>>	Bokaso FG Church Compound	>>
24.	FGD wz young women	1	11	F	Youth	AWSF open space	>>
25.	FGD wz Adult/old men, group 1	1	8	M	>>	AWSF open space	>>
26.	FGD wz Adult/old men, group 2	1	7	M	>>	Bokaso FG Church compound	>>
27.	FGD wz young men, group 1	1	10	M	youth	Bokaso Woreda Admin Office	>>
28.	FGD wz young men, group 2	1	8	M	Youth	AWSF open space	>>
29.	FGD with children	1	12 (2 female)	M/F	childhood	>>	>>
30.	Infml int. and tree survey at Ferro EOTC	1	Ette Rimma, EOTC guard	M	Adult 35	EOTC Ferro	>>
31.	Ind. Int. Islam and conservation	1	Kedir Tirra, Muslim, 55	M	Adult	Bokaso, own home	>>
32.	Infml tree survey at a private hh yard	1	Kedir Tira & Melaku	M	Youth-Adults	>>	>>
33.	Infml key inf. Int. Ethnographic	1	Mulugeta Mumme[18] KI-RA	M	Adult	Bokaso	>>

[18] Over 40 episodes of interview and informal ethnographic conversations were undertaken with this man, my key informant and all-in-one research assistant. Few of these episodes were done in conjunction with another key informant from the local admin office, Youhannes Bolka.

	conversation						
34.	Ind. Int. religious leader	1	Priest Agegnew Tirra, EOTC, 60	M	Old age	Bokaso Admin Office	>>
35.	Ind. Int on ethnohistory	1	Kimmo Alaka, Bokaso, SAR, 92	M	Old age	Own home, Bokaso	>>
36.	Ind. Int wz local religious leaders	1	Yohannes Lamisso, Prot. church leader, 52		Adult	Bokasso, Admin Office	>>
37.	Ind. Int. wz sons of sacred site owner; surveys of trees	1	Aschalew Tilahun (18); Tamiru Tilahun (20); Prot.	M	Youth	2 Ferro	>>
38.	Ind. Int. wz current owner of a defunct sacred grave site wz podo trees	1	Hailu Atulla, 32; Kaffala Barasso, 30	M	Youth	Ferro	>>
39.	Infml tree species survey at a road side firewood sale centre	1	Ashneafi Yotta, 20;	M	Youth	Roadside, Ferro	>>
40.	Ind. Int. owner of sacred grove	1	Qarfafa Hadada, 85 Beyene Barassa, 50	M	Adult/ Old age	Menafesha	>>
41.	Infml mini-group interview	1	Woyasa Gidame, 25; Umer Babiso, 24; Dayaso Mukula; 26	M	Youth	Menafesha	>>
42.	Ind. Int. wz adult man	1	Latamo Gadane, 46; Muslim	M	Adult	Menafesha	>>
43.	Ind. Int. wz old man, owner of sacred trees	1	Argata Qamiso, 67; A SAR-turned Protestant	M	Old age	>>	>>
44.	Int wz Wonsho Woreda Admin Head	1	Zewdie Gebiba, 45	M	Adult	Bokaso	GO-local
45.	Ind./mini-group interview wz Infml BD survey at Loggo Haqqa	1	Bo'e' Kachara (32; FG; M) Yonna Sinao (60; M; SAR) Tumato Gambura, 56, M, Protestant	M	Youth/ Adult	Kinante	Grassroots-local
46.	Ind. Int. & Survey of tree seedling mgt farm	1	Betana Shure, 22 Ayele Senbata, 28	M	Youth	Kinante	>>
47.	Survey &visit to Ganna *Saticho* Sacred Site	1	Name not recorded	F	Adult	Bokaso	>>
48.	Visit at Ferro Tree seedling farm & interview wz 2 individuals (2 separate sites	1	Yosef Tu'e, M, 30; Qedala Qecha, 25, M; both farm employees	M	Youth	Ferro	>> + GO-local
49.	BD inventory wz forestry expert at AWSFS	1	Tagga Tilahun, 7 Lansamo Ladamo, 28	M	Children/ Youth	AWSF, Bokaso	Grassroots-local
50.	Ind. Int wz Principal of Bokaso Elementary School	1	Teshale Melesse, 32,	M	Youth	Bokaso	GO-local; schools
51.	Int wz Wonsho *Woreda* Agri. Office	1	Bekele Humo (40); Head of the Office	M	Adult	>>	GO-local
52.	Mini-group (2-men) int. on trad saw	1	Zerihun Dukamo, 35; Yosef Yotta, 40	M	Adult	Ferro	Grassroots-local

	milling; observation of the activity						
53.	Int & observation of trad wood art works from bamboos	1	Two males and a girl (Names unrecorded)	M/F	Youth	Menafesha	>>
54.	Int wz owner of sacred grave tree sites & observation of the site & trees	1	Daniso Denbelo, 60; SAR/EOTC/	M	Old age	>>	>>
55.	Int wz herbalist	1	Aliye Hatiso, 60, Muslim,	M	Old	>>	>>
56.	Int wz adult women supported by her husband	1	Bizunesh Futte, 45, Prot. Wachamo Wariqo, 50, Prot.	F/M	Adult	Bokaso	>>
57.	Ind. int. Wz a Muslim guard at Abbo Holy Spring; observation the Holy Spring	1	Husein Germamo, 65, Muslim	M	Old age	Bokaso/ AWSF	>>
58.	Ind. Int. wz a Buduho pray-er at AWSF, Abbo Holy Spring	1	Qasim Mehamed, 55, Muslim/Buduho	M	Old age	>>	>>
59.	Mini-group interviews with boys at AWSF	1	Arega Legese, 10; Teshale Godana, 12; Dagim Dassa, 15	M	Children	>>	>>
60.	Ind. Int. with adult woman; Observation of wood-based trad utensils	1	Sukare Lamiso, 49	M	Adult	Bokaso	>>
61.	Infml tree name identification with a boy	1	Siriqa Simano, 13	M	Child-hood	Bokaso, roadside	>>
62.	Mini-group int. with a family of herbalists;	1	Langitu Bitala, 75; Bitala Limaso, 80; Turago Bitala, 45	F/M	Adult/ Old age	Menafesha	>>
63.	Infml int. & roadside tree inventory with boys	1	Pilipos Kassa, 10 Desalegne Yoannes, 14	M	Children	Menafesha, roadside	>>
64.	Infml observation & int. of women in action doing *ensete ventricosom* processing using trad wood made objects	1	Zenebech Tsegu, 20	F	Youth	Bokasso, inside *ensete* farm	>>
65.	Transect walk & BD/tree inventory at AWSF (Observation + mini-group interview wz 3 herbalists	1	Nega Worqu, 20 (P; a son of a herbalist); Lanqamo Netto (60; Buduho; herbalist); Aliye Hatiso, 60; Muslim; herbalist[19]	M	Youth/ old age	Inside AWSF	>>
66.	Survey & NPO of tree species in rural HH farm plots (6 hhs)	1	Mulugeta Desta, 25; Asfaw Alawe, 35; Daniel Dapase, 50	M	Youth	Lalamo	>>
67.	Ind. Int. of adult man	1	Kenera Birega, 40	M	Adult	>>	>>

[19] All the three were individually interviewed at separate occasions.

	on culture & trees						
68.	Observation survey & Infml int. of at a local market	1	Melkamu Bekele 25; Melese Dolla, 27; Wosene Yamme, 30	M	Child-hood/ Adult	Bokaso local market	>>
69.	Int wz a Prot. herbalist wz obs. & inventory of trees found at the compound	1	Worqu Yotta, 68	M	Old age	Ferro	>>
70.	Ind. Int & inventory of trees, animals & birds of Aregash Lodge	1	Dotora Hanqamo, 38	M	Adult	Yirgalem, Aregash Lodge	NGO/PO-Local/Zonal
71.	Int wz Stewards of AWSF (the *Ganna* and the junior aide)	1	*Gaana* Ki'e supreme ritual leader, 57; Mukura Rumsa, 68,	M	Old age	AWSF Bokaso	Grassroots-local
72.	Mini-group discussion wz Sidama Radio Station Officers	1	Tesfaye Kebede, Muluken Birhanu, Getachew Geremew; Abebayehu Tesfaye	M	Adult	Yirgalem	Zonal/local-GO
73.	Ind. Int. wz young man working as aide to *Ganna*	1	Qutte Kachara, 25	M	Youth	AWSF	Grassroots-local
74.	Ind. Int wz assistant manager of Aregash Lodge; observation & survey of fauna & flora of the Lodge	1	Alemayheu Smauel, 28	M	Youth	Aregash Lodge-Yirgalem	NGO/PO-Local/Zonal
75.	Ind. Int wz principal of Bokaso high school wz survey of trees in the school farm	1	Bayou Balnago, 32	M	Adult	Bokaso	GO-local-schools
76.	Ind. Int wz director of Furra Institution	1	Firew Bekele, 32	M	Adult	Yirgalem	NGO-local/zonal
77.	Int. wz Muslim representative	1	Kedir Husen, Muslim, 60	M	Old age	Bokaso	Grassroots-local
78.	Int wz a herbalist	1	Kedir Donni, Muslim, 65	M	Old age	Ferro/Bokaso admin office	>>
79.	Ind. int. wz a household head	1	Kedir Tira, M, Muslim, 45	M	Adult	Bokaso-own home	>>
80.	Ind. Int. on the Dadho Podo sacred Tree site; wz observation	1	Wotte Wonfaro, 32; SAR; Harqa Caqisso, 55, SAR	M	Adult-Old age	Bokaso own home	>>
81.	Int. & observation of the Ṭaare ritual	1	Asrat Wonfaro, 65, Buduho	M	Old age	>>	>>
82.	Ind. Int wz an old man, a SAR, supplemented by an observation/survey of trees	1	Yumma Yutura	M	Old age	Bokaso	>>
83.	Ind. Int wz a SAR at a hh Sacred Podo Site	1	Darre Danaqa, SAR, 50	F	Adult	Bokaso	>>
84.	Infml int. with various urban local informants on	1	About 5 casual informants whose	M	Youth	Yirgalem	>>

	botanical awareness & tree naming & uses		names unrecorded				
85.	Int wz head of Wonsho Woreda Culture & Tourism Office	1	Azmach Assefa, 32, BA, Protestant, head of Culture & Tourism Office of the *Woreda*	M	Adult	Yirgalem/Boka so	GO-local
86.	Interview of a Muslim woman at Buulla Sacred Site	1	Sofia Kedir, 45	F	Adult	Ferro	Grassroots-local
87.	Mini-group Int. with local men at Hassana Haqa sacred site; supplemented by observation and BD survey	1	Daniel Sirpo, 60, Prot; Balango Banata, 32, Prot; Nadamo Narre, 40, Prot; Melakamu Dukamo, 30, Prot, farmer	M	Youth-/Adult-old age	Halaqana	>>
88.	Alemyehu Dejene, Biology teacher, nature/ Env't club member	1	Alemyehu Dejene Biology teacher, nature/ Env't club member	M	Adult	Yirgalem	GO-local - schools
89.	Infml int. and survey/observation Of fauna and flora of the Furra Institute campus	1	Mehammed, a forestry expert. A 2nd work wz him	M	Youth	>>	Grassroots-local/zonal

Annex III: Ethnobotanical information on selected flora identified at sacred sites and other places in Wonsho, Sidama, Ethiopia (July 2012- Februry 2013)

Keys

Uses:

***AR**: aromatic; **B**: basketry; **BC**: bridge construction; **BF**: Bee fodder; **BH**; beehive hoisting; **BM**: boundary marker; **BO**: beauty and ornamental tree; **CF**: cattle fodder; **CH**: charcoal; **CS**: cash source; **D**: detergent and cleaning material; **DF**: dry fencing; **EF**: edible fruit; **FB**: Fibre; **FL**; live fencing; **FN**: fencing; **FS**: food security source; **FT**: Farm tools and tool handles; **FW**: firewood; **GF**: goat fodder; **HPM**: raw material for traditional hide processing; **HM**: human medicinal; **HU:** household utensils; **HWP**: house wall and floor plastering; **L**: lighting source; **LO**: lubricating oil for bread baking; **M**: medicinal; **NKU**: no known use; **P**: Posts and poles for house construction; **POI**; poisonous; **R**: ritual use; **RD:** recreational-social drug substance; **S**: social uses; **SC**: soil conservation; **SD**: Shade; **SF**: soil fertility; **SPC**: supportive pole for farm crops; **T**: timber; **TG**; traditional game; **TM**: thatching material for traditional house; **TOT**: totemic; **UNR**: Use note reported; **VM**: veterinary medicinal; **WAF**: wild animal food; **WB**: wind break: **WEP**: wild edible plant; **WS**: walking club/aid*

Tree Category:

***BWT**: big woody tree; **MWT**; medium growing woody trees; **SH**: Small trees/shrubs; **C**: climber; **H**: Herbs; **PP**: parasitic plant growing on other big woody trees; **GW**: Grassy/weedy plants*

***Nativity: N**: Native; **E:** Exotic*

Surveyed & located at/identification modality

***AFF**: Agroforests; **AWSF**: Abbo Wonsho Sacred Forest; **EOTC**: Ethiopian Orthodox Church premises; **NAW**: Not found in Abbo Wonsho Sacred Site; **NS**: not/never spotted during informal survey; **NSS**: Not found in sacred sites; **OS**: organizational settings; **OSS:** Other sacred site; **PHY**: private household yards and gravesites; **R:** rare; **RL**: locally reported as lost; RLE: Reported lost elsewhere other than sacred sites; **RS**: road sides; **RSS**; Reported existence at sacred sites; **SMS**: spotted during market survey (of forest products for sale); UN: Urban neighbourhoods*

***Identification Modality**:*

***OE:** Observed existence; **RE:** Reported existence; **Name Identification: SNR**: Scientific name required*

Local name	Amharic name	Scientific name	Plant/tree characterization and use	Current status/ located at/ identification modality
Afkadosse	*Afkados*	*Persea americana*	*E; BWT; EF; CS; SD; SF; WB; T; P; BM; FS; FW*	*AWSF; OS; AFF; PHY ; SMS; OE; RE*
Appillee	*Apl*	*Malus domestica*	*E; SH; CS; M*	*PHY; RE, NSS*
Argissa	*Eret*	*Aloe sp.*	*N; SH; M; SC; LF; BM*	*AFF; RS; OE*
Akashicho	*Akasha*	*Acacia decurrens*	*E; BWT; BO; T; SD; FW; P; CS*	*PHY; OS; RE; OE;NSS*
Anano	*Qinçib*	*Euphorbia tirucalli* L	*N; SH; LF; POI; SC*	*AWSF: AFF; PHY; RS; OE; RE*
Araddo	*Timabho*	*Nicotiana tabacum*	*N; H; M; RD;*	*SMS; OE*
Barţaţusa		*SNR*	*N; GW; M*	*AWSF; RE*
Baţaraqicho		*SNR*	*N; MWT; M/VT; FW; FT; SPC*	*OSS; PHY; SMS; OE; RLE*
Berelibe	*Berelib*	*Annona senegalensis,*	*E; SWT; EF; CS; M; FS*	*PHY; AFF;RE, NSS*
Beţţo		*Heterotheca canescens*	*N; H/GW; CF; M*	*AWSS; OB*
Binjile		*Clutia abyssinica Jaub.*	*N; SH/H; M; CF; FW*	*AWSS; OS; PHY; OB; RE*
Bollee		*SNR*	*N; H; AR;D; M*	*AWSS; OE*
Bolkosso		*SNR*	*N. Sh; FW*	*PHY*
Boncho		*Pittosporum abyssinicum*	*N;BWT; M; VT; FW; P*	*RL; RE; RLE; PHY*
Borborlicho		*Solanum incanum L.*	*N; SH; FW*	*AWSF; OSS; RS; OE*
	Botl Brash	*Callistemon citirinus*	*E; BWT; BO;*	*UN; OE*
Bulancho	*Anfar*	*Buddleja polystacha*	*N;SH; M*	*AWSF; RE*
Bukibure		*SNR*	*N; H; WEP;*	*AWSF; OE*
Buncho	*Buuna*	*Coffea arabica L.*	*N/E; SH/SWT; CS; M;; FW; RD*	*OS; AFF; PHY; SMS; OE; RE*
Burtukane	*Birtukan*	*Citrus sinensis*	*E; SH/SWT; CS; M*	*AFF; RE; OE*
Buţicho		*SNR*	*N; C; M; R;*	*AWSS; OE*
Çaate	*Çaat*	*Khatha edulis*	*N/E; SH; RD;CS;*	*AFF; OE; RE*
Çaricho	*Qulqual*	*Euphorbia ampliphylla*	*N; BWT; FW; P; UT; LF; T; GF; BM; SC; M; FT (Beehive);*	*AWSF; SS; AFF; PHY; RS; A; RE; OE*
Çekata	*Digita*	*Calpurnia aurea*	*N; SWT; FT; FW; DF; CF; M; TG; WC*	*PHY; AWSF; OSS; RS; EOTC; OS; A;OE; RE*
Çikicho		*Brucea antidysentrica*	*SH; M/HM/VM; HU; P;*	*AWSF; PHY; OSS: RE; OE;*
Çologge		*SNR*	*N; GW; M*	*AWSF; OE*
Çuço	*Atat*	*Maytenus arbutifolia*	*N; SH; FW; GF*	*ASS; OSS: PHY; OS; RE*
Dadako	*Kosso Zaf*	*Hagenia abyssinica*	*N; BWT ;SF; T; M; FW; SC*	*AWSF; PHY; R; RE; OE; PHY;*
Dashicho		*SNR*	*N; SH; FW; CF; FN*	*AWSF: OE*
Danshicho		*SNR*	*N; SH; R; M;*	*AWSF; OE*
Dagucho	*Zigba*	*Podocarpus falactus*	*N; BWT; TOT; R; T; P; UT; SD; M/HM/VM; BO; SF; WB; BM*	*AWSF; OSS; OS; EOTC; PHY; AFF; RE; OE*
Dawaqa		*Faurea rochetiana*	*N; BWT; P; T; FW*	*NSS; RE; RL*
Dijabeessa		*SNR*	*N; SH; HU; GF*	*AWSF; OE*
Dinbicho	*Dembi*	*Ficus thonningii B*	*N; SH/C; T; M; VM/HM;*	*R; OSS; OE*
Ďoď ako		*SNR*	*N; SH; CF; FW; F; M*	*AWSF; OE*
Dongicho	*Tiqur Incet*	*Prunus africana*	*N; BWT; M; FN; P; T*	*AWSF; RE; OE; R; RLE*

Local name	Amharic name	Scientific name	Plant/tree characterization and use	Current status/ located at/ identification modality
Doniqasso		*SNR*	*N; H; M (FOR STDS)*	*AWSF; OE*
Dugucho	*Qerero*	*Pouteria altissima*	*N; BWT; TOT; R; T; P; BR; FW;*	*AWSF; OE; R; RLE*
Dummo Bardaffe	*Qey Bahir Zaf*	*Eucalyptus camaldulensis*	*E; BWT; FW; P; T; CS; SD; BM; M*	*RS; PHY; SMS; OS; A; NSS*
Duwancho	*Doqma*	*Syzygium guineense*	*CH; CS; EF; FS; M; P; R; S; SD; T; TOT; WAF; WB; WEP*	*AWSF; OS; OSS; PHY; OE; RE; RLE*
Ejersa	*Woyra*	*Olea europaea africana*	*N; BWT; M; AR; EWF; FW; P; D; R*	*PHY; R; EOTC; NAW; RE; OE; NSS*
Eshine		*SNR*	*N; H; CF;*	*AWSF; OE*
Faficho		*SNR*	*N; BWT; FW; P;*	*R; RE*
Falako		*Macaranga kilimandsharica Pax*	*N; BWT; CH;*	*RL; RSS; RE; R; RLE*
Faranjicho Masincho	*Yeferenj Bisana*	*Croton megalocarpus*	*E; BWT; BO; P; T; SD; FW; FN*	*OS; PHY; RS; UN; A; NSS*
Foqoncho		*SNR*	*N; SH; FB; CF;*	*AWSF; OE*
Galade		*SNR*	*N; SH/H; FB; M*	*AWSF; OE*
Gancho	*Arboch*	*Sapium ellipticum*	*N; BWT; FW; P;FT*	*R; RE; RL*
Garbabicho		*SNR*	*N; SH/H; CF; M*	*AWSF: OE*
Garbicho	*Lol/Sembo*	*Ekebergia capensis*	*N; BWT; TOT; R; M; POI; FW; SC; S*	*AWSF: PHY; OSS; AFF; OE; RE*
Gatame	*Anqua*	*Commiphora schimperi*	*N; BWT; BH; BF; FW; DF;*	*AWSF: RE; OE; R; RLE*
Gereramo		*SNR*	*N; GW; M*	*AWSF: OE*
Gbirina Zaafe	*Saligna*	*Eucalyptus saligna*	*E. BWT; BO; SD; BM;*	*OS ;OE; RE; NSS*
Gidincho	*Gaame*	*Ehretia cymosa*	*N; BWT; M; CF; FW; P; FT*	*AWSF; SMS; PHY; OE; RE; R*
Grawella	*Gravella*	*Gravillea robusta*	*E; BWT; BO; BM; LF; FW; T; CS; P*	*PHY; OS; RS; A; OE;RE; A; UN; NSS*
Godicho	*Sissa*	*Fagaropsis angolensis*	*N; BWT; BF; BH; FW; P M.*	*AWSF; PHY; SMS; R;E; OE; R*
Gorra/ Sisgorra	*Enjori*	*Rubus apetalus Poir*	*N; C/SH; M; WEP; CF; LF; BM*	*AWSF; OSS; AFF; RS; OE; RE*
Gowacho	*Qelewa*	*Maesa lancemia*	*N; MWT; FN; FW; P M/HM/VM; CF; S; TG*	*AWSF: OSS; PHY ;OE; RE*
Had'essa		*Lactuca inermis Forssk/*	*N; MWT; SD; FT; M; BH; FW*	*PHY; SMS; OE; RE*
		Teclea nobilis		
Hamararcho	*Ameraro*	*Discopodium penninervum* Hochst.	*N; MWT; FN; FW*	*NS; RSS; RE; R*
Hamashe Haqa		*Senna occidentalis*	*N; SWT; FW;DF;*	*AWSF; RS; OE*
Hançululicho		*Kalanchoe petitiana*	*N; H; M; FW*	*AWSF; OSS; RS; OSS; A; OE*
Hanqata		*SNR*	*N; C; M*	*AWSF: OE*
Harnagama	*Qontir*	*Toddolia asiatica*	*N; SH; FW; LF; BM*	*AFF; PHY ;RS; OSS; OE*
Haranjicho	*Endod*	*Phytolacca dodecandra*	*N; SWT; D (SOAP); M*	*AWSF; OE; RE;*
Haṭabicho	*Gim Qiṭel*	*Brucea antidysentrica*	*N; SH; FW; LF/DF; M/(HM/VM)*	*AWSF; RS; AFF ;PHY; RS; OE ;RE ;A*
Haṭicho		*SNR*	*N; H; WEP*	*AWSF; OE*
Haysso	*Grass*	*SNR*	*N; GW; CF; M;*	*AWSF; RE; OE; A*

Local name	Amharic name	Scientific name	Plant/tree characterization and use	Current status/ located at/ identification modality
He'echo	*Grawa*	*Vernonia amygdalina*	*N; MWT; M; SH; SF; FW*	*AWSF ;OSS; AFF; A; SMS; OE; RE*
Hengedicho	*Birnira*	*Milletia ferruginea*	*N; BWT; SF; T; FW; WB; BM; SC; FN; CS*	*OSS; OS; PHY; AFF; OE; RE;*
Herasse		*Momordica foetida*	*N; H; POI;*	*AWSF; OE*
Heyaite Wesse	*Yeqoq enset*	*SNR*	*N; H/SH; M*	*AWSS:OE*
Hohooço		*SNR*	*N;GW/H; CF; POI*	*AWSF; OE*
Homicho	*Yeferenj Ţid*	*Cuprrensis lusitanica*	*E; BWT; A; FR; LF; DF; P; T; SD; M; BO; FW*	*AWSF; PHY; OS; A; RE; OE*
Honcho	*Yabesha Sid*	*Juniperas procera*	*N; BWT; T; P; TOT; R; UT; FW; FN; AR; D; M*	*AWSF; OSS; OS; EOTC; SMS; R; OE; RE; RLE*
Hoppicho	*Hoppi*	*Passiflora edulis*	*E; SH/C; WEP/EF; CS; M; LF; FS*	*AWSF; PHY; OE; RE*
Horoncho		*SNR*	*BWT; UNR*	*NAW; RE*
Gutto		*SNR*	*N; SWT; WEP*	*RL*
Ifaatichcho		*Cynoglossum coeruleum*	*N; GW/H; M*	*AWSF: OE*
Itancha	*Kitkita*	*Dodonaea angusitifolia*	*N;SWT; FW; FN; WC; M*	*NAW; RL*
Jakaranda	*Jakaranda*	*Jacaranda mimosifolia*	*E. BWT; T; FW; OB; SD; BM; P*	*UN; PHY ;A*
Jejako		*SNR*	*N; SH; F;FW*	*AWSF: OE*
Qanqo	*Enqoqo*	*Embelia schimperi*	*SWT; med*	*AWSF;*
Kasmiria	*Kazmir*	*Casimiroa edulis*	*E; MWT; EF; FS; CS; FW*	*PHY; SMS; OE; RE; NSS*
Kincho		*SNR*	*N; SWT;M*	*RL;*
Kiree		*Momordica boivinii*	*N; SH; LF; FW; BM*	*AWSF; OSS: RS; AFF; PHY; A; OE*
Kobire	*Yezijero Wonber*	*Polyscias fulva*	*N; WBT; BF; BH; FW; T; FN; FT*	*AWSS;OE;RE;R*
Kocke	*Kok*	*Prunus persica*	*E/N; SH; EF; FS; M; LF; CS*	*PHY; OE; RE; NSS*
Kokoļicho	*Dingay Seber*	*Ritchiea albersii Gilg*	*N; SH; GF; FW*	*AWSF; OSS; A; OE*
Kokoso	Tekesbila	*Drynaria volkensii* (basket fern)	*N; H/PP; M tooth ache*	*AWSS:OE*
Kukicho		*SNR*	*N; SH; GF; FW; CPM*	*AWSF; OE*
Lelcho		*Diphasia dainellii Pichi-Sem*	*N; MWT;; FW; CF; P; WEP; FS;*	*AWSF; R; RE; SMS; RLE*
Lemicho	*Qerkeha*	*Yushania alpina*	*N; BWT; R; TOT ;B; CS; DF; HWP; HU; P; WC;FT*	*AWSF; PHY; AFF; SMS; OE; RE*
Loome	*Lomi*	*Citrus aurantifolia*	*E; MWT; EF; CS; M*	*PHY; AFF; RE; NSS*
Luquţe		*SNR*	*N; SH/C; WEP; FW;*	*RL; NS; RL*
Maçame Haysote		*Ocimum urticifolium L.*	*GW/H; M*	*AWSF: OE*
Mango	*Mango*	*Mangi feraindica*	*E; BWT; FS; EF; SF; WB; CS*	*PHY; OE; RE; NSS*
Maalancho		*SNR*	*N; MWT; HM*	*PHY; OE; R*
Man'issa		*Trichocladus ellipticus*	*N; SH; M; S*	*R; RE; R*
Marerra		*SNR*	*N; SH; WEP; GF;*	*AWSF: OE*
Masincho	*Bissana*	*Croton macrostachyus*	*N; BWT; M; P; FW;FN; SC*	*AWSF; OSS; PHY; OS; RS; SMS; A; EOTC; OE; RE*

Local name	Amharic name	Scientific name	Plant/tree characterization and use	Current status/ located at/ identification modality
Maticho	*Sessa*	*Albizia schimperiana*	*N; BWT; P; FW; M/VM; SD*	*RS; OSS; OS; R; OE; RE;*
Memme	*Nim*	*Azandracha indica,*	*E; MWT; M; SD; BO; BM*	*OS; RS; OE; RE; UN; NSS*
Miqicho	*Misr Genfo*	*Ilex mitis (L.) Radlk*	*N; SH; UNR*	*NS; NAW; R; RL*
Nolle	--	*Achyranthes aspera L.*	*N; BWT; T; FW; M*	*R; RL; NSS*
Odako	*Shola*	*Ficus sur*	*N; BWT; R; SD; SF; WB; WEP; WAF;*	*AWSF; OSS; PHY; R; OE; RE; R*
Olate		*SNR*	*N; BWT; WEP*	*RL*
Oloncho	*Sagad*	*Psydrax schimperiana*	*SD; BWT; SD;SF; P;*	*AWSF; OS; OSS ;RS; OE; RE; R*
--	*Omedla*	*Acaia melanozylon*	*E; BWT; BO; WB; FW; T;*	*OS; UN*
Faranjete honcho	*Pachula Tid*	*Pinus pachula*	*E; MWT; BO;*	*UN; NSS*
Papayye	*Papaya*	*Carica papaya*	*E; SH; CS; EF; FS;SD;*	*PHY ;OS; RE; OE; NSS*
Pomme	*Pome*	*Punica granatum*	*E; SH/SWT; EF; CS;*	*OS; PHY; RE; N; UN; NSS*
Qararcho	*Qeraro*	*Acokanthera schimperi*	*N; SWT; TG; FW*	*PHY; R; OE; RE; R*
Qendo	*Qundo berbere*	*Schinus molle*	*N; GW; CF*	*AWSF; OE*
Qiltaho		*SNR*	*N; GW; M*	*AWSF: OE*
Qilṭo	*Warka*	*Ficus sur*	*N; BWT; SF; T; R; M; SC*	*AWSF; OSS; PHY; TE; OE*
Qitilmancho		*SNR*	*N; SH; R; WC; FW; CF;*	*AWSF; RE; R*
Qociqoma'lle		*SNR*	*N; H/GW; WEP; TG;*	*AWSF: OE*
Qomboe'cho		*Ricinus communis L.*	*N; MWT; GF; LO; L;*	*AWSF; OE; RE; PHY*
Rejicho	*Gim qitel*	*Vernonia auriculifera*	*N; SWT/SH; FW; FN/LF; M; CF*	*AWSF; OSS; PHY; RS; OE; RE; A*
Resheshuma		*SNR*	*N;C; NKU*	*AWSF: OE*
Saaticho	*Zebaba*	*Borassus aethiopum* *Phoenix reclinata*	*N; BWT; UT; BO; R; TOT; B; SD;*	*AWSF; OSS; PHY; RS; A; RE; OE*
Seetame	*Yedamot Woyra*	*Olea africana capensis*	*N; BWT; TOT;R; AR; B; FW; SD; M*	*AWSF; OSS; R; PHY; OE; RE; RLE; R*
Shamelcho		*SNR*	*N; SH; FW; GF*	*AWSF; OE*
Sheshako		*SNR*	*N; SWT; P; CF; FW; M*	*AWSF: OE*
Shifera	*Shiferaw*	*Moringa stenopetala*	*E; BWT; M; EF;BO;*	*PHY; RE; OE; UN; NSS*
Shihilcho		*SNR*	*N; SH; FW; GF; M; WEP [berries]*	*AWSF: PHY; OE*
Shisho	*Qawut*	*Rumex abyssinicus Jacq*	*N;BWT; R;TOT;FW;T;SH; M/VM; S*	*AWSF; OSS; R; RE:OE; R; RLE*
Shiwshiwe	*Arzlibanos*	*Casuarina equistefollia*	*E; T; SH; BO;*	*UN; AWSF; PHY; OE*
Shohicho		*Ocotea kenyensis*	*N; BWT; TM; R; SD;*	*AWSF; OSS; PHY; R; RE; OE; R*
Shuqshuqe		*SNR*	*N; H/GW; CF;*	*AWSF: OE*
Sinnolee		*SNR*	*N; C; FB;; CF; WEP*	*AWSF: OE*
Sonicho	*Dobbi*	*SNR*	*N; H/SH; FB;*	*AWSF: OE*
Soyamma		*SNR*	*N; SH; M; CF;*	*AWSF: OE*
Suruppa		*Lagenaria siceraria*	*N; C; WEP; M; LF; BM*	*AWSF; OSS; AFF; OE*
Ţaabicho		*SNR*	*N; SWT; FW; M/VM; CF; P;*	*AWSF: OE*
Tabiqa		*SNR*	*N; H; CF*	*AWSF; OE*
Ţaddo	*Geesho*	*Rhamnus prinoides*	*N; SH; CS;RD;*	*SMS; OE*

Local name	Amharic name	Scientific name	Plant/tree characterization and use	Current status/ located at/ identification modality
Tansafina	*Sasalpina*	*Caesalpinia decapetala*	*E. SH/MWT; SF;SD;SFC;BM*	*AFF; RS; RS; PHY; RE; OE; UN*
Ţae'cho		*Hypoestes forskaolii*	*N; H/GW; M*	*AWSF: OE*
Ţeberako	*Bersama*	*Bersama abyssinica*	*N; SWT; FW; FT; M /HM*	*AWSF; OSS; RS; PHY; OE; RE; A*
Ţincho		*SNR*	*N; MWT;WAF;*	*OSS; NAW; R; OE*
Tonqicho/Lanticho	*Etse Patos*	*Dracaena steudneri*	*N;BWT; SH; BO;FW;*	*OS; RS; PHY; RE; OE*
Ţonţoloma	--	*Lepidotrichilia volkensii*	*N; BWT; CH; FW; P*	*R; RE; RL*
Tontoncho		*Plectranthus Igniarius*	*N; SH; FW*	*AWSF; OSS: RS; PHY; RE; OE; A*
--	*Tulip Zaf*	*Spathodea campanulata*	*E; BWT; OB; SD;*	*OS; UN; NSS*
Ţun'ayicho		*Solanum nigrum L*	*N;H/SH; WEP; M;*	*AWSF: OE*
Waaço	*Bazra Girar*	*Acacia abyssinica*	*N; BWT; CF/GF; FW/SF/WB; P; FT;BM;SD*	*RS; R; PHY; NAW; NSS; OE; RE; PHY*
Wadiicho)	*Wanaza*	*Cordia africana*	*N; BWT; SF; T; P; SD; R;M; WEP; FW;DF;*	*AWSF; EOTC; OS; SS; AFF; RE; OE*
Wajo Bardaffe	*Nec Bahir Zaf*	*Eucalyptus globulus*	*E; BWT; FW; M; P; WC; SD*	*PHY; RS; OS; A; OE; RE; NSS*
Welako	*Korch*	*Erthirina abyssinica*	*N; BWT; T; HU; CF; SD; LF; WB; T; M; SF; TG*	*AWSF; OSS; AFF; PHY; RS; A; RE; OE;*
Woraricho		*Syzygium guineense*	*N; MWT; FT; SH;*	*AWSF; OE; NSS*
--	*Yederja Zaf*	*Chorisia speciosa*	*E; BWT; BO;*	*OS; PHY; UN; NSS*
Zytoncho	*Zeytun*	*Psidium guajava L.*	*E/N; BWT; EF; FS; M;CS*	*PHY; OE; RE; NSS*

Annex IV. Ethnomedical information on some plants of Wonsho botanical environments, Wonsho, March 2013

(See keys below)

Local name	Scientific name	Category	Ethnomedicinal information
Dagucho	*Podocarpus falcatus*	T; N	Bk; L; Br; CD; H; DD; IO (Liver disease)
Duwancho	*Syzygium guineense*	T; N	L; Br; Bk; H/V; DD; ID (hammessa, common tummy pain in infants)
Binjile	*Clutia abyssinica*	H; N	L;V; DD; V;H (*woranţo*, a cow disease; *rarate*, liver disease)
Arado	*Nicotiana tabacum*	SH; N	L; GS; H; SB; SSR (Snake bites)
Surrupṕa	*Lagenaria siceraria*	V/C; N	BrE; H; IW; DD: IO (Liver disease)
Bataraqicho	*Scientifi name needed*	T; N	L; SF; CD; (*abasenga*, anthrax)
Godicho	*Fagaropsis angolensis*	T; N	L/Br; CD/H; GS; SE/SA/D/V (*dingeteñu*, a sudden disease causing diarrhea and vomiting) berry eaten
Haď essa	*Lactuca inermis Forssk*	T; N	L/B; H/CD; DAC; DD; (Tooth hygiene/ cough/ tummy pain/ cow intestinal problem)
Ejersa	*Olea europaea africana*	T; N	L/Br/W; CD; DR/SF; DAC/CD
Haranjicho	*Phytolacca dodecandra*	SH; N	L; Br; DAR/SE; (hygiene; *dingeteñu*)
Kukicho.	*Sceintific name needed*	SH; N	B/L; H; DD; STD
Buncho:	*Coffea arabica L.*	SH; N	L; H; DD; STD; (syphilis)
Çikicho:	*Justicia schimperiana*	SH; N	R; GS; H; SA/SE/
Garbicho	*Ekebergia capensis*	T; N	B; GS; CD (*dingeteñu* disease)
Gowacho	*Maesa lanceolata*	T; N	B; DD/FE; H; FD/SA (human foot disease
Gidincho	*Ehretia cymosa),*	T; N	L; CD/H;DD; V/D
Rejicho	*Vernonia auriculifera*	SH; N	L; H; DR; SW
He'echo	*Vernonia amygdalina*	T; N	L; H; DD; SA
Odako	*Ficus vasta*	T; N	B; GW; H; IW; (ascariasis)
Nolle	*Achyranthes aspera L.*	T; N	L; H; DR; TA (human tooth ache)
Masincho	*Croton macrostachyus*	T; N	L/Br/S; GW/ DR; SD/SE/ED (*wugaat*, pain caused by current of air; shisha, a skin rash; eye disease)
Gorra	*Rubus apetalus Poir*	SH/N	L; H; DD; (liver disease)
Honcho	*Cuprensis lusitanica*	T; E	Br; H; SA; DD (abdominal crumps)
Wajo bardaffe	*Eucalyptus globules*	T; E	L; H; DD/SF; SA/ DAR
Saticho	*Borassus aethiopum*	T/N	B; H; DAC (tooth brushing)
Itancha	*Dodonaea angustifolia*	SH; N	L; H; DR; SW/FD (butame, a foot cancer).
Kincho	*Scientific name needed*	T; N	B; DD; ID
Çekata	*Calpurnia aurea*	SH; N	L; CD; DD; (*birree*, a common calf disease)
Shisho	*Rumex abyssinicus Jacq*	T; N	B; CD; DD; (*woranţe*, a cow disease)
Hançululicho	*Kalanchoe petitiana]*	SH; N	B/L/S; DAC
Tontoncho	*Plectranthus igniarius*	SH; N	L; H; DR/SF; (colds)
Dinbicho	*[Ficus thonningii B].*	SH/C; N	L; H/CD; DD
Boncho	*Pittosporum abyssinicum*	T; N	B; H; CD; DR; SW (*Cough in cattle)*
Wadicho	*Cordia africana*	T; N	B; H; DD; IW (ascariasis)
Dongicho	*Prunus africana*	T; N	Bk; H; DD; ID/SA (*Hammessa)*
Dadako	*Hagenia abyssinica*	T; N	L/Br; DD; H; IW *hamashu* (Tapeworm)

Akirsa	*Aloe vera*	SH; N	L/S; H;DR; Breastfeed weaning
Ţunayicho	*Solanum nigrum*	H; N.	L; stomach ache
Beţo	*Heterotheca canescens*	H. N	L; DD; tonsil
Wajo bardaffe	*Eucalyptus globulus (Blue Gum)*	T. E	Stomach ache;
Qanqo	*Embelia schimperi*	T. N;	B; BrE; hookworm
Kokoso	*Drynaria volkensii*	H; N.	Leaves rubbed; (toothache

KEYS:

Parts of plant/tree used:

B: branch; Bk: Bark; Br: Berry; L: Leaves; R; Roots; S: sap; W: Wood;

Methods of decoction applied:

DD: Decoction Drank; DR: Decoction Rubbed; BrE: Berry eaten; GS; Gnawed & swallowed;

Types of health/para-health problems:

CD: cattle disease; D: Diarrhea; DAC: Detergent, Aromatic and Cleaning; ED; Eye disease; EE: Evil eye protection; FD: human foot disease; ID: Infant diseases; IO: Internal organ diseases; IW: Intestinal worms; H: Human; SA: Stomach ache/tummy pain; SB: snake and insect bites; SD; skin disease; SE: Sudden & emergency ailments; SF: smoke fumigation SSR: Snakes and insects repellent; STD: sexually transmitted diseases; SW: sore and wounds; TA: Tooth ache; V: Vomiting

Plant/Tree classification

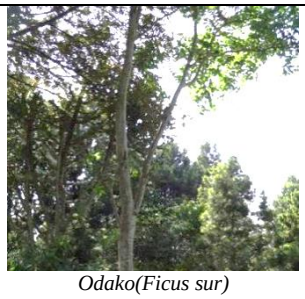
T: tree; C: Climber; E: Exotic; GW: grass/weed; H: Herb; N: Native; SH; shrub; V: Vine;

Annex V. Some of the flora of Wonsho-Sidama (pictured)

From tree survey, July 2012- February 2013, Wonsho, Ethiopia

(Note: The names of plants are given in vernacular first and where determined, scientific names are given in brackets. Some are given in vernacular only as it was not possible, at the time of fieldwork, to determine their scientific names. Botanical and ethnobotanical details of the identified 154 flora are given in Annex III; some plants are repeated showing various dimensions; e.g. Seedling stage)

<table>
<tr>
<td> 
Dagucho (Podocarpus falcatus)</td>
<td> 
Kobire (Polyscias fulva)</td>
<td> 
Memme (Azandracha indica)</td>
</tr>
<tr>
<td> 
Shamelcho</td>
<td> 
Faranjete masincho (Croton megalocarpus)</td>
<td> 
Gobacho (Measa lanceolata Forssk.)</td>
</tr>
<tr>
<td> 
Çaricho (Euphorbia ampliphylla)</td>
<td> 
Masincho (Croton macrostachyus)</td>
<td> 
Honcho (Juniperas procera)</td>
</tr>
<tr>
<td> 
Eshine</td>
<td> 
Ejersa (Olea europae)</td>
<td> 
Kukicho</td>
</tr>
</table>

 *Tabiqa*	 *Hoqqo*	 *Odako(Ficus sur)*
 *Heecho (Vernonia amygdalina)*	 *Gidincho(Ehretia cymosa)*	 *Hitancho (Dodonaea angusitifolia)*
 Grawella (*Gravilea robusta)*	 *Gidincho (Ehretia cymosa)*	 *Hataabicho (Brucea antidysentrica)*
 *Çuço (Maytenus arbutifolia)*	 *Kokolicho (Ritchiea albersii Gilg)*	 *Sisgorra (Rubus apetalus Poir)*
 *Seetame (Olea capensis spp)*	 *Welako (Erythrina abyssinica)*	 *Gidincho (Ehretia cymosa)*

 *Shamelcho*	 *Duwancho (Syzygium guineense)*	 *Kazmira (Casimiroa edulis)*
 *Honcho (Juniperas procera)*	 *Dugucho (Pouteria altissima)*	 *Homicho (Cuprrensis lusitanica)*
 *Shohicho (Ocotea kenyensis)*	 *Arzelibanos (Casuarina cunninghamina)*	 *Afkadose (Persea americana)*
 *Dongicho (Prunus africana)*	 *Godicho (Fagaropsis angolensis)*	 *Dumme bardaffe (Eucalypetus camaldulensis)*
 *He'echo (Vernonia amygdalina)*	 *Gaatami (Commiphora schimperi)*	 *Ţaddo (Rhamnus prinoides)*

Gereramo

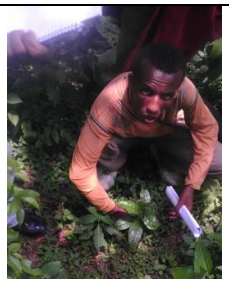
Malancho

qiltaho

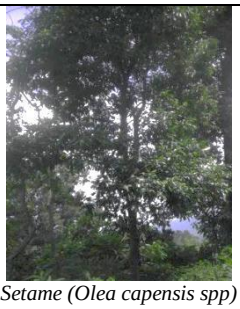
Bartatusa

Akacha (Acacia decurrens)

Dashicho



Hopicho (Passiflora edulis)



Setame (Olea capensis spp)

Dhodhalko

Doniqasso

Jejako

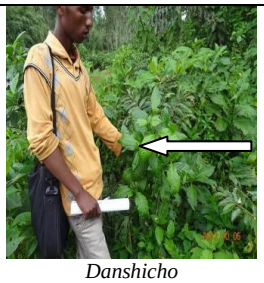
Soonicho

Çikicho (Brucea antidysentrica)

Rejicho (Vernonia auriculifera)

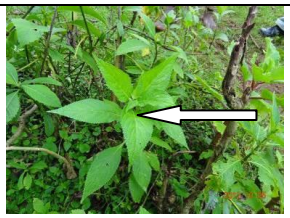
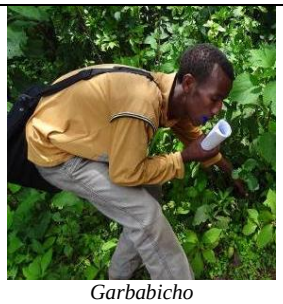
Çikicho (Brucea antidysentrica)

Ţeberako (Bersama abyssinica)



Danshicho

Hançululicho (Kalanchoe petitiana)

 *Tontoncho (Plectranthus Igniarius)*	 *Gowacho (Maesa lancemia)*	 *Çuço (Maytenus arbutifolia)*
 *Kokodhicho (Ritchiea albersii Gilg)*	 *Tabicho*	 *Tontoncho (Plectranthus Igniarius)*
 *Bukibure*	 *Reshashuma*	 *Hanqata*
 *Çaricho (Euphorbia ampliphylla)*	 *Macame Haysote* *(Ocimum urticifolium L)*	 *Tae'cho (Hypoestes forskaolii)*
 *Garbabicho*	 *Hamashe Haqa* *(Senna occidentalis)*	 *Garbicho (Ekebergia capensis)*
 *Had'essa (Lactuca inermis Forssk)*	 *Tun'ayicho (Solanum nigrum L)*	 *Hohooco*

'No name'

Dijabeessa

Kukicho

qitlimancho

Gidincho (Ehretia cymosa)

Kokoso (Drynaria volkensii)

Danshicho

Buticho

Odako (Ficus sur)

Kobire (Polyscias fulva

Foqoncho

Beʈʈo (Heterotheca canescens)

Marerra

Shuqshuqe

Qociqoma'lle

'No name'

Binjile (Clutia abyssinica Jaub)

Soyamma

Shihilcho

Gorra (Rubus apetalus Poir)

Galade

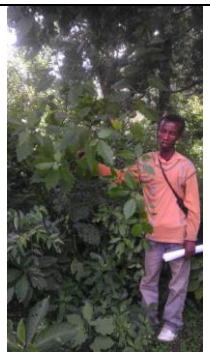
Haranjicho (Phytolacca dodecandra)

Heyaite wesse

Sinnolee

Dongicho (Prunus africana)

Duwancho (Syzygium guineense)

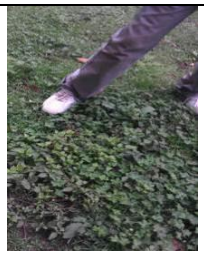


Dhodhako

Haysso (grass)

Bataraqicho

Wadiicho (Cordia africana)

 *Dugucho (Pouteria altissima)*	 *Worarichо (Syzygium guineense)*	 *Qitilmancho*
 *Sheshako*	 *Herasse*	 *Cologge*
 *Ifaatichcho (Cynoglossum coeruleum)*	 *Gereramo*	 *Kokoso(Drynaria volkensii)*
 *Qiltaho*	 *Bartatusa*	 *Qendo*
 *Dashicho*	 *Qombo'e (Ricinus communis L.)*	 *Ceqakata (Calpurnia aurea)*
 *Arado (Nicotiana tabacum)*	 *Surruṕṕa (Lagenaria siceraria)*	 *Lemicho (Yushania alpina)*

 *Marerra*	 *Shuqshuqe*	 *Qociqoma'lle*

Annex VI: Household survey form

University Of Kent

School of Anthropology & Conservation

Durrell Institute of Conservation & Ecology

Ethno-botanical Traditions & Conservation in Abbo Wonsho Sacred Site of Sidama, Wonsho, Bokaso, Southwest Ethiopia

Household Survey on Sacred Forest Sites

September 2012

Dear informant:

[Interviewer: Please introduce yourself in clear, brief and confident tone and read the introduction carefully to the informant.]

This is a household survey on awareness, opinions and conservation practices of people in this community. The survey is part of a PhD research project by a staff member from Hawassa University. The research aims at understanding the conservation role of sacred sites of Wonsho such as Abbo Wonsho and local views of threats facing sacred sites and related traditions. It is hoped that outcomes from this research will help better protect sacred forest sites, their biodiversity and local botanical traditions.

Your household is one of the 200 randomly selected from four qebeles [PAs] of this Woreda [District]. Your cooperation is very important for the success of the research. Please kindly share your experiences, knowledge and opinions regarding the questions we ask you. The interview will not take more than 60 minutes. You are absolutely free to participate or not. You can also interrupt or end the interview anytime if you want once it is started. Your name will not be printed on paper. Your privacy and identity will in no ways be disclosed to anyone. The forms will be destroyed once the information is analysed.

Thank you very much for your kind cooperation.

Part I: Household beliefs, practices, awareness and utilization vis-à-vis trees and sacred forests

Dear informants, in this first section, the following simple statements are provided. I will read them one by one. I want you to kindly say "Yes," if you think the statement correctly describes your household's experience and "No" if it does not apply to your household. [Interviewer: Please record 1 for "Yes" and 0 for "No". If the informant does not want to answer or seem indefinite or say he/she does not know, record 3.]

No.	*Statements*	*Responses & Code*
	Section 1: General tree conservation traditions	
1.	*"Our household currently maintains a portion of family land that is considered sacred."*	
2.	*"Our household has portions of the household land where we plant, grow and protect trees for non-cash purposes."*	
3.	*"Currently we have a family shrine or burial site where trees are well protected."*	
4.	*"Our household currently maintains a patch of trees planted by a now-dead household member/ ancestor for non-cash purposes."*	
5.	*"A living member of our household has planted some trees in the family-owned portion of land for non-cash purposes."*	
6.	*"Our household has (an) old standing tree/ trees in the front-yard or back-yard that bears witness to ancestral names."*	
7.	*"We have a tradition currently going on whereby we plant trees on grave or burial sites to honour a dead family member."*	
8.	*"Our household has a plant/ a tree that we consider as so special/ revered that it is not cut down for use for mundane purposes."*	
9.	*"Taking lightly, let alone cutting down, some trees in our household is still a taboo."*	
	Section 2: Ethnic & socio-cultural identity & trees	
10.	*"Currently, trees define our household's ethnic- cultural identity."*	
11.	*"There are some especially important trees (1 or more) that still continue to define our household's cultural ethnic identity."*	
12.	*"Our household has a totemic plant or tree which we consider as defining our ethnic/clan origin."*	
13.	*"Our household still owns and uses some material utensils traditionally made of plant/ tree products."*	
14.	*"In our household, we sometimes sing traditional songs that make some reverential reference to trees/forest."*	
15.	*"In our household, children or other family members often engage in traditional games, plays, proverbs, riddles, etc that directly or indirectly make reference to trees."*	
16.	*"In our household, children are taught about traditional botanical beliefs and*	

	practices."	
17.	*"At least one of the children/ household member bears a personal name that directly or indirectly refers to a plant or tree."*	
Section 3: Worldviews, rituals, religion and trees		
18.	*"A trace of Sidama ancestral religion is still evident in our household."*	
19.	*"A member of this household is active adherent to Sidama ancestral religion."*	
20.	*"The spirits of our household's ancestors now continue to reside in tree/trees."*	
21.	*"Sometimes, a member of our household tries to call the names of, communicate with dead ancestors, through offering sacrifices under tree/trees in the family burial site or elsewhere."*	
22.	*"Our household still recognizes a tree/ trees found here in our land or elsewhere esp. in Wonsho Sacred Forest Site as crucial embodiment of its ancestors and hence use these trees when making prayers or other rituals."*	
23.	*"Wonsho Sacred Forest Site is crucial for this household for its religious expressions and identity."*	
24.	*"Our household directly or indirectly participates in the seasonal traditional rituals conducted at sacred sites."*	
25.	*"A member of this household has within the last 3-6 months period visited an ancestral religious priest or ritual leader such as those in the Sacred forest site seeking spiritual help advice."*	
26.	*"A member of our household has made a prayer or vow in the name of household's ancestor or Abbo concerning some issue in the last 3- 6 month's period."*	
27.	*"A member of our household made a sacrificial offering to honour the name of household's ancestors or Abbo concerning a promise met or a vow fulfilled."*	
28.	*"At least a member of our household went to participate in this/last year's communal worship gathering of Fiche Çambalala."*	
Section 4: Household material & livelihood dependence on trees (esp. of the AWSF)		
29.	*"Our household currently owns patches of trees planted in the past 10-20 years that are used mainly for livelihood purposes."*	
30.	*"Our household recognizes some trees that are crucial for its livelihood."*	
31.	*"Our household's livelihood is tied in one way or another to the Wonsho Sacred forest site."*	
32.	*"Our household harvests dried leaves, branches and woods for fuel from sacred forests, such as AWSF."*	
33.	*"Our household harvests honey from sacred forests such as AWSF."."*	
34.	*"Our household harvests edible fruits, leaves and other plants from sacred forests such as AWSF."*	
35.	*"Our household harvests grass, weeds and other plants for cattle feeds form AWSF."*	
36.	*"We sometimes tend our cattle inside AWSF."*	
37.	*"Our household sometimes harvests small wild games (animals) for edible or*	

	recreational purposes."	
38.	*"A member of our household sometimes hides/ entrusts a valuable material item or money inside the Sacred Forest Site."*	
39.	*"Children or other household members often spend time in sacred forests, such as AWSF to recreate themselves, take rest or do other similar things."*	
Section 5: Sacred forests and household medicinal plant use		
40.	*"Traditional medicine is an important source of health care for our household."*	
41.	*"Plants/ trees are important sources of medicine for our household."*	
42.	*"We sometimes recourse to medicinal plant use to deal with various health and wellbeing problems."*	
43.	*"Our household has a member who possesses a good knowledge of medicinal plants and knows how to deal with various diseases."*	
44.	*"One of our family members has recently (in the last 3-6 months period) visited a traditional medical practitioner for medical treatment for a sick household member."*	
45.	*"We often harvest medicinal plants from our family owned land."*	
46.	*"Our household harvests medicinal plant from sacred forests such AWSF."*	

Part II: Household opinions and practices and views vis-à-vis sacred sites, esp. AWSF

Now, continuing the interview, I am going to read to you another set of statements and this time, you will kindly tell me whether you strongly agree with the statements.

[Interviewer: Please read the statements very carefully and write down the number representing the response in the space provided.] 1= Disagree 2= Not sure 3= Agree

No.	*Statements*	*Response & Code*
Section 1: Household opinions of the role & benefits of wonsho sacred forest sites		
47.	*"There are some animals which are found only in sacred forests such as AWSF."*	
48.	*"There are some plants which are found only sacred forests such AWSF."*	
49.	*"There are some big trees which are found only in sacred forests such as AWSF Site."*	
50.	*"There are some medicinal plants which are found only in sacred forest such AWSF."*	
51.	*"There are more medicinal plants/ trees in sacred forest such as AWSF than elsewhere."*	
52.	*"Our household's health and wellbeing greatly depends on sacred forests such as AWSF."*	
53.	*"Our household' livelihood would suffer a heavy loss if there were no sacred forests, esp. AWSF."*	
Section 2: Household opinions/attitudes about protecting sacred sites		
54.	*"It is Abbo's spirit that has protected and continues protects sacred forests."*	
55.	*"It is Abbo who is the ultimate owner of AWSF."*	

56.	*"It is Abbo who holds the supreme law and power concerning the care of AWSF."*	
57.	*"Sacred forest sites were better protected in the past than they are now."*	
58.	*"Observing the old ancestral norms and rules of the sacred site (will) better help protect the Sacred Site and trees."*	
59.	*"One may get harm (even up to death) if one violates Abboic rules regarding the sacred forests and trees."*	
60.	*"The practice and continuity of Abboic rituals are essential for the conservation of the sacred site/ forest."*	
61.	*"Taking part in the sacred ritual- social activities is backward."*	
Section 3: Household opinions about the threats facing sacred forests, local botanical traditions and their future		
62.	*"Sacred Forests such as AWSF today faces many threats to its ancestral traditions continuity."*	
63.	*"The land cover of AWSF is now declining."*	
64.	*"The number of wild animals that used to exist in sacred forests is now declining."*	
65.	*"The number of indigenous trees that used to exist in sacred forests such as AWSF is now declining."*	
66.	*"The number of exotic plants and trees is increasing these days."*	
67.	*Some peasants are making encroachments through land use into the domains of sacred forests such as AWSF."*	
68.	*"Some individuals make clandestine attempts at harvesting the trees of sacred forests for timber production."*	
69.	*"The demand for forest products/services (such as charcoal, timber, building materials, beams, poles, fuel wood, medicinal plants, etc) is putting increasing pressure on Wonsho sacred forests."*	
70.	*"Exposure of AWSF to outside political and socio-economic influences (such as introduction of new policies and laws) are undermining ancestral land and forest laws of the Site."*	
71.	*"Exposure of AWSF as a tourist attraction is likely to be a sacrilege to the ancestral norms."*	
72.	*"These days, people here are less and less fearful and respectful of ritual taboos and ancestral norms."*	
73.	*"These days an increasing gap exists between the older and younger generation and thus it is becoming difficult for the cultural transmission of ancestral norms and botanical traditions."*	

Section III: Closing remarks

[Interviewer: Take notes as verbatim as possible.]

74. Finally, do you have any idea or suggestion that you want me to note down in connection with what we have so far talked about?

Section IV: Informants'/ household's background characteristics

Now finally, I want to record some basic background information about you so it could help us in the analysis of our data.

1. *How old are you? _____*
2. *What is your status in the household? (father/husband, mother/wife, son, daughter, other)*
3. *Religious affiliation of the informant (Interviewer: Please probe also for that of the household as a whole)*

   _____

4. *Is there any active follower of Sidama ancestral religion in the household?*
5. *What clan does the family belong to? _____*
6. *What is the household's major occupation & source of income? _____*
7. *Your education status (total years spent in/ level of schooling): _____*

Section V: General identification

[Interviewer: please record the following:]

Sex of respondent: _____

Name of qebele (PA): _____

Code/number assigned for the household [Begin with #001 for the first household you visit]: _____

Number of times visited: _____

Time taken to interview: _____

Date of interview: _____

General comment on the interview session and the informant:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Supervised by:_____

Checked by: _____

Annex VII: Self-reflective ethical statement

On November 9, 2012, I had an interview session with the *Ganna*, the general overseer of Abbo Sacred Forest Site. My research assistant made the arrangement by making mobile phone calls beforehand. It is interesting that the fruits of modern technologies are mingled with ancestral traditions and the *Ganna (pictured below, left)*, a man of about 56 years of age, was holding his mobile phone and made at least one phone call during the interview session.

We had an easy access and audience with the *Ganna*, what otherwise is very difficult in ordinary cases. We entered into the inner quarters where the spiritual leader was headquartering and he came out of an old house made of corrugated iron roofs with mud walls and kindly hosted us. We sat down on a long bench made by traditional skill men from indigenous trees outside the 'office—living place' of the *Ganna*. In front of us, three different flags were flapping by the wind. The flags, one of the signs of the Sacred Site to be an accomplished institution in its own right, were for the SNNPRS and Federal Government of Ethiopia.

The *Ganna* wore a wrist-watch, a sandal, a *gonffa*, a traditional free style pants worn often by men of the SAR, and a *buluko*, a large blanket made of cotton in traditional mills. He smelled strong odor of cow butter. I was told spiritual leaders often smear their bodies and heads with butter. The *Ganna* came and sat down, with another of his aide, a 65-year old man (right). The quarter we entered into was near the third compound of the sacred site. The Sacred Site has three distinctly fenced off quarters, with increasing degree of strict norms regarding access. We spent about 1 hour and 30 minutes, interviewing them on a range of prearranged and emerging themes, with supplements of photographic shots. Since we made our objective and identity clear before beginning the interview, there was not any sense of suspicion and restraint on the part of the informants….

On November 6, 2012, I spent half of the day working in one of my study villages, named Huleteṇa Ferro, about 40 minutes' walk from Bokaso. The purpose of this day's visit was to observe, take photographic shots and interview local informants concerning ancestral sacred sites, trees protected therein and the threats both face. I particularly interviewed an old man who was a SAR adherent and maintained a ring of 12 sacred *Podocarpus falactus* planted and growing on his father's burial site. This man was keeping a beautiful, five- years- old bull and another 3 years- old fattened ram, both of which were 'sanctified' and being cared for to be offered to ancestors. The man said he would be making this ancestral offering three years from now (October 2012). He had used to make such sacrificial offerings every eight years. I took picture shots of the animals, the graveyard and the sacred trees and spent a great deal of time interviewing the man…

Stories like the above were quite frequently occurring part of my fieldwork encounters. The fieldwork at the local community during the first phase created quite very interesting and challenging episodes. Many of these episodes entailed contacting with SAR adherents as well as my physical presence around, and taking photographic and video-graphic shots of, sacred sites.

A matter of concern for my ex-principal supervisor and my scholarship grantors was the methodological and ethical question of how I, the researcher, might work towards reconciling my own Protestant Christian convictions with the fieldwork professional ethics when I encounter with such cases of ancestral beliefs, practices, rituals and material objects. I was instructed by my Supervisor to come up with a reflective personal memo of how I dealt with any possible/ potential bias and the risk of imposing my own ideological views on the local informants. I am a Christian and have a strong conviction arising from my evangelical Christian stance. However, every researcher has his or her own ideological convictions to which they may have strong feelings and convictions. It is also the case that researchers face the tough decisions to make choices to dissociate their personal values from their professional work.

I have been a researcher among local communities throughout southwest Ethiopia who adhere to a range of belief systems which stand in clear opposition to what I subscribe to as a Christian. I have worked with the SNNPRS, Council of Nationalities' Research Institute, Ethiopia, as a researcher on ethno-historical, religious and cultural identities of the peoples of the Region. The Nationalities' Council and the research assistants who worked with me are strong witnesses of my clear, strong, neutral, professionally-based work and behavior throughout my encounter with the local people.

I worked hard to maintain this principle throughout my present PhD fieldwork. As noted above, the fieldwork mainly involved visiting sacred places, observing ritual events, and interviewing SAR practicing people. I had access to the Abbo Sacred Forest, the homes of SAR adherents and priests, visit sacred graveyards, etc. All these posed no methodological problem for me. I stuck strictly to the actual facts at the ground and there was no occasion, neither was there any need, to put forward any ideas, questions or suggestions that had a moral tone of asking the informants whether such and such belief or practice was good or bad, right or wrong.

I had my research assistant as field guide and interpreter, who could witness every talk and move I made during the 7 or 8 months fieldwork. He was officially assigned to me by the Wonsho District Administration as a liaison between me, the Administration and the local community. My research assistant had my behaviors, views and actions open before him to make his own evaluation as I worked and walked among the people in the locality.