

The Implications of Changing Makushi Identity and Traditional Practices for Forest Conservation in Guyana

Deirdre Jafferally

Department of Geography

Royal Holloway- University of London

Thesis submitted in accordance with requirements for the Degree of PhD,

University of London

January 2017

Declaration of Authorship

I, Deirdre Moira Jafferally, hereby declare that this thesis and the work presented in it is entirely my own. Where I have consulted the work of others, this is always clearly stated.

Signed: 

Date: 18 Jan, 2017

To the Makushi People

For all the experiences and good times you have given me

“It’s now time for less talk and more action”

Daniel Allicock, Surama Village

“But ask the animals, and they will teach you, or the birds in the sky, and they will tell you; or speak to the earth, and it will teach you, or let the fish in the sea inform you.”

Job 12: 7-8

Abstract

Indigenous knowledge has been acknowledged as being useful for the conservation and sustainable management of natural resources, particularly in current debates on forest conservation for climate change mitigation. The possession of such environmental knowledge has likened Indigenous people to being conservationists. However, Indigenous societies have been changing by outside influences that affect the continued transmission of their knowledge. Using the case study of the Makushi Indigenous people of the North Rupununi, Guyana, this thesis explores the concept of Indigenous peoples as conservationists due to the possession of traditional environmental knowledge and how developmental changes are impacting the transmission of such knowledge. The research took place in five villages and at Indigenous cultural events, and used a range of qualitative methods including semi-formal interviews, focus groups, participant observations and document analysis, to collect and analyse data.

The findings reveal that historical resource use by the Makushi was not governed by active management strategies, but by cultural taboos and traditional beliefs that resulted in the sustainable use of these resources. In exploring how change was impacting traditional practices, it was shown that communities are embracing new ideas and technologies that are shifting their previously sustainable form of traditional farming to unsustainability. While there is an embrace of new ideas there is, however, juxtaposition in the perceptions between the elder generation wanting to pass on knowledge and young people wanting to learn their traditions. The findings of this research show that the steady and continued erosion of indigenous knowledge and practice would leave future generations unable to draw from this knowledge base to contribute to forest conservation. In creating new spaces for knowledge transmission future generations of Indigenous people may continue contributing to forest conservation.

Acknowledgements

When an opportunity presents itself I was taught to grab hold of it with both hands: prepared or not. You can only hope that along the way you gain the skills and tools necessary to succeed if not you find the people who will help you get there. There are a few people who have done that for me despite all my shenanigans. First and foremost Dr Jay Mistry you have been patient beyond words. Your support and steady guidance has been my beacon on a very rocky trip. Dr Katie Willis, my devil's advocate, you have pushed to make me and this thesis better. I am not sure I have gotten it all right but there are many lessons learned that are deeply appreciated.

I started this PhD with a small group of people who are now scattered hopefully all over the globe. I wish them the best of luck and like to thank them for giving me a sounding board while in London. Sara Pologno, Mary Ondiek, Louise Brown and Sammia Poveda thank you for the support.

This PhD was supported by a College Research Overseas Fees Scholarship and the COBRA Project funded by the European Commission - Seventh Framework Programme. I would like to acknowledge both for the support received. I would like to acknowledge the Geography Department Postgraduate Research Development fund for supporting my attendance to the British – Caribbean Geography Seminar in Jamaica.

There are members of the COBRA Collective I would like to thank for checking in on me and providing advice based on your experiences Celine Tschirhart, Elisa Bignante, Matt Simpson and Andrea Berardi. Geraud De Ville, we were in the same boat, I hope yours come to port soon. The Guyana COBRA Crew Odacy Davis, Lakeram Haynes, Ryan Benjamin, Rebecca Xavier and Grace Albert thank you for the help and support and for not making my work too hard. It was fun working with you all and I hope it is not the last time.

In my bid to gain permission to conduct my research I would like to thank Diane Fernandes of the EPA, Bisham of the Ministry of Indigenous Peoples Affairs and Raquel Thomas – Caesar of the Iwokrama International Centre for advice and pushing my case forward when needed.

To the communities of the North Rupununi it is always a pleasure working with you. Thank you for taking me in, for teaching me and for allowing me to annoy you with my questions. I hope this work helps to preserve some of your knowledge and provide some insight to how your way of life is changing and provides you a point of reference to making decisions about those changes. Should you need help know I am there and always willing,

To my family THANK YOU! My mother usually says I don't know what you are doing but be sure to do it well. I tried mom. Thank you for all the prayers. To my father, thank you for looking out for me while in London. It meant a lot. To my little big sister, thank you for the basement providing a quiet space to work. Thank you for the proof reading and access to the library system to find much needed papers and books when I could not access them through my own University.

Lloyd, the elephant has been very patient. I hope you get your just reward. Thank you for the encouragement to go after this. I appreciate it.

Praise to the Father for his tender mercies and grace.

Table of Content

Contents

Declaration of Authorship	2
Abstract	4
Acknowledgements	5
Table of Content	7
List of Tables	12
List of Figures	13
List of Maps	14
List of Plates	15
Acronyms	16
Glossary	17
Chapter 1 - Introduction	18
1.1 Introduction	18
1.2 Research Location	19
1.3 Research Question	23
1.3.1 Research Justification	23
1.3.2 Research Question	24
1.3.3 Research Sub-questions	24
1.4 Potential Policy Relevance	26
1.5 Structure of Thesis	27
Chapter 2 - Context	29
2.1 Introduction	29
2.2 Description of Research Site	32
2.2.1 Physical Description	32
2.2.2 Research Communities	37

2.3 Livelihoods.....	46
2.3.1 Tourism.....	47
2.3.2 Forestry.....	47
2.3.3 Non-timber Forest Products.....	48
2.4 Non-Governmental Agencies and Resource Management Projects	48
Chapter 3- Research Methodology	51
3.1 Introduction	51
3.2 Research Design.....	51
3.3 Research Strategy.....	53
3.4 Research Methods	54
3.4.1 Semi-structured Interviews.....	55
3.4.2 Focus Groups.....	58
3.4.3 Participant Observation	59
3.4.4 Document Analysis.....	60
3.4.5 Secondary Data – Farm Surveys	61
3.5 Positionality of the Researcher.....	63
3.6 Research Ethics	68
3.7 Data Analysis	71
3.8 Dissemination of Research Findings.....	72
3.9 Conclusion.....	72
Chapter 4 - Winds of Change.....	74
4.1 Introduction	74
4.2 Brief History.....	74
4.3 Time Line	75
4.3.1 Post European Contact.....	83

4.3.2 Colonisation of the Rupununi	86
4.3.3 Rupununi Uprising	93
4.3.4. The Iwokrama Rainforest Programme	95
4.3.5 Other conservation organisations	100
4.4 Conclusion.....	101
Chapter 5 – Conservation or Care.....	104
5.1 Introduction	104
5.2 Signs of Historical Conservation.....	106
5.2.1 Population Size and Distribution.....	106
5.2.2 Fishing and Hunting	107
5.2.3 Knowledge of the landscape.....	113
5.2.4 Farming.....	114
5.2.5 Looking for Signs of Conservation	115
5.3 Role of cultural taboos and norms in resource conservation	118
5.4 Traditional History	123
5.5 Contemporary Knowledge	127
5.5.1 Forest Conservation Knowledge	128
5.5.2 Stories and Taboos.....	134
5.5.3 Transmitting Knowledge	137
5.6 Conclusion.....	147
Chapter 6 – Farming in the Forest	150
6.1 Introduction	150
6.2 Defining Traditional Shifting Cultivation in the Rupununi	152
6.2.1 Historic description of Makushi Farming.....	152

6.2.2 Contemporary Description of Makushi farming	155
6.2.3 Makushi Definition of Traditional Farming	159
6.3 Impact of Traditional Farming on Local Area Forest	160
6.4 Changes to Traditional Shifting Cultivation	165
6.4.1 Technology	165
6.4.2 Land Use Planning.....	171
6.4.3 Commercial Scale Farming	183
6.4.4. Changes in Rotation Patterns.....	186
6.4.5 Farm Beliefs and knowledge	189
6.5 Conclusion.....	192
Chapter 7 – Makushi Traditional Knowledge and its Transmission.....	196
7.1 Introduction	196
7.2 What is Makushi Knowledge?	198
7.3 The State of Makushi Social Memory.....	200
7.4 Sacred Spaces to Modern Places	207
7.4.1 Home and hearth.....	207
7.4.2 Farming Camps.....	208
7.4.3 Matriman	210
7.4.4 Heritage celebrations	210
7.5 Methods of learning	219
7.5.1 Cultural Groups	222
7.6 Building future social memory.....	225
7.7 Conclusion.....	227
Chapter 8 – Conclusion.....	229

8.1 Introduction	229
8.2 Research Findings	230
8.3 Implications of Research Findings	232
8.4 Policy Implications	233
8.5 Suggestions for Further Research	235
8.6 Dissemination of Research Findings	236
Bibliography	237
Appendix A – Table of Ethics	248
Appendix B – Informed Consent Form	250
Appendix C – Research Matrix	253
Appendix D – Interview checklist	255
Appendix E – Matrix of Interview	258
Appendix F – categories and codes for Data Analysis	260

List of Tables

Table 2-1: Breakdown of faunal and floral species distribution from local, national and international perspective	36
Table 2-2: Summary of Village Statistics	39
Table 3-1 - Summary of research methods	54
Table 3-2 - Summary of Focus Groups and Interviews conducted in communities.....	58
Table 4 -1 - Timeline of events affecting Indigenous populations of British Guiana	76
Table 5-1: Types of Taboos	120
Table 6-1: Pros and Cons on Savanna Farming.....	174

List of Figures

Figure 6-1: Hunting on farms (Source: CMRV Data)	163
Figure 6-2: Use of hunted game (Source: CMRV Data)	164
Figure 6-3: Graph showing the distribution of farming areas in use by age of site (Source CMRV Data).....	178
Figure 6-4: figures showing preferences for farming in primary vs secondary forest locations. (Source: CMRV data).....	188

List of Maps

Map 1-1 - Map of Guyana; research area marked by white square (Source: Captured from Google Earth 2015).....	21
Map 2-1 - Map showing Makushi location in relation to the other tribes of Guyana (Source Balkaran, 2007)	33
Map 2-2: Vegetation Map of Guyana, study area marked by black square (Source: http://botany.si.edu/bdg/pdf/vegetation240.pdf).....	34
Map 2-3: Soil Map of the Rupununi (Source: http://eusoils.jrc.ec.europa.eu/esdb_archive/EuDASM/latinamerica/images/maps/download/gy13001_2su.jpg).....	38
Map 2-4: Map of Research Communities (Source: Jenny Kynaston, Cartographic Technician, RHUL, 2014).....	39
Map 4 - 1: Map showing approximate area of current Guyana Makushi Territory (Source: prepared by author in Scribble Maps).....	75
Map 6 -1: Map showing farming areas of Rewa, red square denotes primary farming site and orange circle secondary farming site. (Source: Author)	180

List of Plates

Plate 2-1: Habitat examples across the Rupununi landscape. A Pakaraima Foothills, B Savanna Plains – Lake Amuku, C Guyana – Brazil Border – Takatu River, D. Transition Forest - Surama Valley (Source: Author)	35
Plate 2-2 - Communities of Annai Central (background) and Kwatamang (foreground) from the air (Source: Author)	41
Plate 2 - 3 - Community of Surama (Source: author)	43
Plate 2- 4 - Trail leading from the Rewa Eco-lodge to the village (source: Author).....	44
Plate 2-5 - Crash Water Landing on the Rupununi River (Source: Author).....	46
Plate 3-1: presentation done at Rewa village in response to request before permission was granted for research (Source: S. James).....	66
Plate 6-1: Farm location that is in transition from intensive farming and fire; Awaramay, Rupununi River (Source: Author).....	162
Plate 6-2: Cassava eaten and left exposed by wildlife (Source: Author).....	162
Plate 6-3: Pictures showing savanna farming. A - prepared farm site; B- planted sticks; C – growing cassava; D – mature cassava (Source: COBRA Project and Author).....	176
Plate 6-4: Shows farm taken near participant's home in Crash Water (Source: Author).	182
Plate 7-1: Yupukari Heritage Celebration – craft weaving competition (Source: Author)	215
Plate 7-2: Yupukari Heritage celebration – purse weaving competition (Source: Author)	216
Plate 7-3: Yupukari Heritage Celebration – children mimicking craft techniques (Source: Author).....	216
Plate 7-4: Yupukari Heritage Celebrations – craft expert plaiting a fan from ite leaves to display cassava bread (Source: Author).....	216

Acronyms

CDM – Clean Development Mechanism

CMRV – Community Monitoring, Reporting and Verification

COBRA – Local Solutions Future Challenges: Community Owned Best Practice for Resource Adaptive Management in the Guiana Shield

COP – Conference of Parties

DTL – Demarara Timbers Limited Inc.

ENS – Environmental News Service

FCPF - Forest Carbon Partnership Facility

FIP - Forest Investment Program

GCP – Global Canopy Programme

GFC – Guyana Forestry Commission

GSI – Guiana Shield Initiative

GIS – Geographical Information Systems

IIC/Iwokrama – Iwokrama International Centre for Rainforest Conservation and Development

IPCC – Intergovernmental Panel on Climate Change

LCDS – Low Carbon Development Strategy

MRV – Monitoring, Reporting and Verification

NGO – Non-governmental Organisation

NRDDB – North Rupununi District Development Board

NORAD – Norwegian Agency for Development Cooperation

PNC – People’s National Congress

PPP – People’s Progressive Party

RDC – Rupununi Development Company

REDD – Reduce Emissions from Deforestation and Forest Degradation

REDD+ - Reduce Emissions from Deforestation and Forest Degradation Initiative UF – United Force

UNFCCC – United Nations Framework Convention on Climate Change

Glossary

Bina – a charm used by a Makushi for positive or negative gain

DDT – Dichlorodiphenyltrichloroethane a chemical used widely after World War II as a pesticide. It was later found to have long lasting effects within the environment especially on health and animal life cycles.

Junk – is a colloquial term used for cutting wood into more manageable pieces for use.

Lap – term used to describe the weeding of the under growth of the forest when preparing a farm.

Matapeeing – the process of squeezing the poisonous juice from the grated cassava to have the meal for making cassava bread and farine.

Minab – refers old farms that have come to the end of their planting cycle and allowed to go into fallow but have useful plants like fruits and medicinal herbs.

Oma – bad spirit

Pikaru'ma – woven basket used as a purse or bag

Traditional – customary practice, following an older form of doing something

Toshao – leader of a community elected every three years by popular vote

Warishi – a craft piece made from nibbi vine to carry load by Amerindians like a backpack supported by a head strap.

Chapter 1 - Introduction

1.1 Introduction

“Indigenous peoples’ traditional knowledge and practices are increasingly being recognised as vital for conservation work and efforts to combat and adapt to climate change.” (United Nations, 2010)

They are the forests’ original owners, scientists and conservationists. (Eede, 2011)

Popular belief holds that Indigenous peoples are adept managers of their natural environment based on their extensive traditional knowledge (Smith, 2001). This belief is borne out in statements such as those cited above. This notion that Indigenous peoples are conservationists or the original ecologists (Nadasdy, 2005) is based on the assumption and stereotype that Indigenous peoples live in perfect harmony with their environment. Nadasdy (2005) further argues that those who subscribe to this thinking believe that Indigenous people can provide guidance on how industrial societies can develop a more sustainable relationship with their environment. This idea is reinforced as Indigenous peoples inhabit the most ecologically diverse locations on the planet and appear to have maintained a sustainable lifestyle (Butler, 2012).

Indigenous peoples, however, live in a diverse array of environments, very different from non-indigenous peoples, and their relationships with those environments also vary widely. They are believed to view their world in an holistic manner, acknowledging the relationship between living things, people and the land (Howard, 2015). This purported worldview prescribes using only what is needed for daily survival and respect for the resources to be used. It is also linked to their traditional knowledge and spiritual beliefs which are passed down from previous generations (Berkes et al., 2000). Traditional knowledge provides a blueprint of how Indigenous peoples carry out their traditional practices, how they should relate to their environment and is transferred mainly through stories, poems, songs and dances (Alfred & Corntassel, 2005; Berkes, 2012).

It is believed that this knowledge documents the complex relationships and behaviours between and within ecosystems (Gadgil et al., 1993) and could prove very valuable in helping to maintain these systems. There is much to support the use of traditional/Indigenous knowledge in natural resource and forest management (Inglis, 1993; Nazarea, 2006; Tanyanyiwa & Chikwanha, 2011).

Opposers of this premise think believers labour under a false impression about Indigenous peoples and their relationship with the environment. There can be no doubt that Indigenous peoples by their living arrangements have a close relationship with the land that allows them to understand the intricacies of the system. However, researchers like Smith (2001), Alvard (1993, 1994, and 1995) have demonstrated some Indigenous practices to be unsustainable. In addition, Indigenous societies are evolving as they come into wider contact with western civilization. They are adapting to a market economy that influence the way they interact with the environment and view their culture (Redford, 1991).

1.2 Research Location

This research was conducted in the Rupununi Region (Administrative Region 9: Upper Takutu - Upper Essequibo) of Guyana. The country is 80% forested, with the other 20% comprising of coastal alluvial plains and savannas (hinterland and intermediate). Approximately 85% of Guyana's population is located on the coast, while the other 15% is distributed in the hinterland. Guyana's main economic activities comprise the extraction of its natural resources (mainly minerals and timber) and agricultural exports (rice and sugar) (GoG, 2000).

Its colonial resource management legacy¹ and socialist political direction following its independence in 1966 left Guyana's natural resources sector underdeveloped. The consequence was that for nearly 20 years (1966-1985) almost 85% of Guyana's forest remained intact. This low state of resource exploitation continued until the 1990s when democratic elections resulted in a liberalisation of the economy and substantial increase in resource exploitation; especially within the areas of logging and mining (Mistry et al., 2009). The only limiting factors preventing the rapid extraction of resources were inaccessibility to the resources, terrain and some elements of Government policy².

As a country whose coastal zone is situated below sea level, climate change is an important issue. Fortunately for Guyana, it holds one of the key components believed important for mitigating climate change – tropical forests. Guyana thus finds itself in a unique position to leverage its forest for assistance to transition to a green economy. In 2008, then President Bharrat Jagdeo presented a proposition to the world which premised low income countries like Guyana being paid the value of the resources and ecosystem services inherent in the forest as an incentive to maintain canopy cover and work towards a low carbon economy (Jafferally, 2010).

In 2009, Jagdeo launched Guyana's Low Carbon Development Strategy³ (LCDS). In addition, Guyana also signed a Memorandum of Understanding (MOU) with the Government of Norway that would see the cooperation between the two countries working on climate mitigation initiatives especially concerning REDD+, biodiversity

¹ The old Forestry Act (1953) of British Guiana mandated selected harvesting as its forest management system. This practice was carried forward in the drafting of the new Forest Act of 2007. In addition, other sustainable forest management practices like reduced impact logging is encouraged.

² Guyana's hilly terrains still provides a challenge to resource extraction and only recently have the Acts governing use of certain resources been revised or rewritten.

³ The LCDS is Guyana's broad framework to combat climate change in particular Guyana deploying its forests to help mitigate global climate change. The main focus is to invest in a low carbon economy, expand access to services and economic opportunities for Indigenous people, as well as improving social services and economic opportunities for Guyana more broadly.

conservation and enhancing the sustainability of Guyana's low carbon development (ENS, 2009; Howden, 2009).



Map 1-1 - Map of Guyana; research area marked by white square (Source: Captured from Google Earth 2015)

The communities of the North Rupununi District - one of the five districts in the Rupununi Region – is one of the areas in Guyana more exposed to ideas of conservation, having worked with a number of conservation organisations especially the IIC over the years. This awareness has allowed them to see the potential benefits of the LCDS and to endorse it in principle. The communities, however, are awaiting the development of the opt-in agreement which will outline how communities will benefit and what the requirements are for participating in the forest conservation scheme. The sixteen communities of the North Rupununi, represented by the community based NGO, NRDDDB, have been educating themselves and making preparations for any role they may play in the LCDS.

The communities have been involved in a number of projects geared towards building community knowledge and capacity over the last 5 years. They have worked with IIC on a component of the Guiana Shield Initiative Programme (GSI)⁴ looking at benefit sharing options for ecosystem services payment and monitoring of forest⁵. They have contributed to the consultation and dissemination of information on the LCDS and more recently they have worked on the CMRV with funding from NORAD to develop capacity for REDD+ monitoring. In tandem with the Guyana Forestry Commission, one of the local villages - Annai Village - was chosen as a forest demonstration site for the national MRV Framework. The presence of the IIC, the implementation of CMRV and the conservation knowledge of the Makushi people made the North Rupununi an ideal place to conduct my research. The Northern Rupununi is the traditional home of the Makushi. Their presence and traditions were documented by European travellers such as Robert and Richard Schomburgk, Charles Barrington Brown and Everard im Thurn and later Anthropologists like Roth and Farabee. The location is relatively easy to access, but there are some areas

⁴ <http://www.guianashield.org/>

⁵ http://www.guianashield.org/index.php/publications-home/cat_view/89-publications/38-gsi-phase-ii-publications/78-guyana

where access is more challenging. In addition, the communities have been engaged in research activities which can be linked to and support my research topic including exploring changes in Makushi farming practices.

The North Rupununi was also chosen because of the work done by the COBRA Project⁶. The project was funded by the European Commission – Seventh Framework Programme. COBRA built on research works that were conducted in the North Rupununi over the past fifteen years by Dr Jay Mistry, Dr Matt Simpson and Dr Andrea Berardi. The aim of COBRA was to identify community owned solutions and to assess how funding from REDD+ might be channelled through policy to address the issues these solutions highlight (Jafferally et al., 2012) . The research undertaken in this thesis is linked to the COBRA Project and complements the objective of identifying community challenges through the changes that are occurring within these communities especially in the area of traditional knowledge and practice.

1.3 Research Question

1.3.1 Research Justification

Indigenous people believe that Western societies can learn from them how to solve some of the world's environmental issues with the knowledge they hold and their ability to detect changes in the environment based on this knowledge (Howard, 2011). Further, Brian Keane (co-founder and director of Land is Life) was quoted in Howard's (2011) article as saying "Indigenous people are where the hope lies for the future of this planet." Wihak (2009) expresses the same sentiment declaring Indigenous peoples as keepers of a vital part of human heritage and their knowledge essential for our survival.

⁶ COBRA Project – Local Solutions for Future Challenges: Community Owned Best Practices for Sustainable Resource Adaptive Management in the Guiana Shield was a three year research project looking at community best practices that may best indicate areas of research where international funding can be channelled. The project was led by Jay Mistry, Royal Holloway and funded by the EU 7th Framework Programme. The project also funded my research. More information can be found at www.projectcobra.org

Kipuri (2009) and Collings (2009) emphasized the importance of the bond between Indigenous people and their land. This relationship based on their worldviews, beliefs, values and customs, has helped define Indigenous traditions and practices; and these are passed on to younger generations to keep their culture alive (Kipuri, 2009). However, some Indigenous communities are evolving as they embrace a more Western lifestyle which impacts the transmission traditional knowledge and practice. This thesis, therefore, aims to explore the impacts of some of these changes on traditional knowledge transmission and practice, in particularly traditional shifting cultivation. Further the thesis will examine the implications of these changes for forest conservation.

Both Kupuri (2009) and Collings (2009) noted that the strong relationship between Indigenous peoples and the land generates a sense of responsibility to maintain the health of the land. Traditional shifting cultivation is an integral practice for many Indigenous groups. The practice is conducted in the forest, has a wealth of traditions and knowledge to be transmitted and most importantly bring the people in constant contact with the land. The practice is believed to operate within the designs of the forest ecosystem mimicking tree fall gaps (Alcorn & Royo, 2015). In exploring how change is impacting traditional knowledge and practice through this vital activity the thesis helps to address a gap in the debate on the future of traditional knowledge due to Western influence.

1.3.2 Research Question

What are the implications of changing Makushi identity and practices for forest conservation in Guyana?

1.3.3 Research Sub-questions

1. Can Makushi be identified as conservationists?

1.1. To what extent have Makushi social-ecological practices in the past been conservation practices?

- 1.2. To what extent are historical conservation practices continuing?
- 1.3. What factors of change are influencing Makushi historical social-ecological practices and their conservation effects?
2. Do Makushi traditional shifting cultivation practices act as a conservation method and what are the implications of changes in this practice for forest conservation?
 - 2.1. How do Makushi define traditional shifting cultivation?
 - 2.2. How do Makushi judge the impact of this practice on the forest?
 - 2.3. What changes have Makushi noticed in their traditional shifting cultivation practices in the last 20 years?
 - 2.4. What are the potential impacts of the changes on Makushi forests and land?
3. What role does social memory play in maintaining the integrity of traditional practices especially traditional shifting cultivation?
 - 3.1. What are the methods used by Makushi to transmit traditional knowledge for maintaining traditional practices like traditional shifting cultivation?
 - 3.2. What are the spaces used to build social memory, transmit knowledge for traditional practices like traditional shifting cultivation?
 - 3.3. Are the methods and spaces still relevant to today's social-ecological setting or are new methods and spaces needed to transmit knowledge and build social memory?

It is my hope that this thesis, through the answers to these questions, will be able to specifically contribute the following to the traditional knowledge transmission debate:

- Are Indigenous people conservationists? Through exploring the records of the Makushi resource use from historical to contemporary times
- Provide insight into the issues inherent in maintaining the traditional shifting cultivation knowledge and practice

- What are the changes that are affecting the transmission of traditional knowledge and building social memory in Makushi society and what are the options moving forward.
- The implications of these changes for traditional practices like traditional shifting cultivation and the future of forest conservation

1.4 Potential Policy Relevance

This research may be relevant to stakeholders at several levels. Forest resources remain one of Guyana's largest resource assets. Indigenous people may have a role to play in helping to maintain forest integrity. The only way to do that would be to have the traditional knowledge that they have used for generations available. In order to help maintain that knowledge it is necessary to understand how social and ecological changes are impacting traditional communities and decide on an action plan that would help these communities reverse the trend and do more than just document the knowledge and the associated practices.

At the national level the research aims to inform policy that would support the conservation and revitalization of Indigenous knowledge and social memory. As the COBRA project has shown, Indigenous communities have locally owned solutions that can be scaled up to help solve large environmental and social challenges (Mistry et al., 2014). At the local level this research aims to demonstrate how certain changes made for community development are influencing and impacting traditional practices and knowledge transmission. This information may allow Indigenous people to make decisions that may balance out their developmental needs versus safeguarding their traditions. At the national and international levels the research findings may be able to identify areas which can help strengthen policies and programs aimed at combatting the continued loss of traditional knowledge and practices.

1.5 Structure of Thesis

The thesis comprises of eight chapters. The first four chapters outline the theoretical aspects of the research and the context in which it was conducted. The latter four chapters outline the results of the research. The chapters of the thesis are organized as follows:

Chapter 2 - Context: lays out the theoretical framework and existing research which informs this thesis. It is divided into three sections. Section 1 explores conservation and how changes in conservation practices relate to Indigenous peoples. Section 2 explores the factors that influence change within traditional societies and their impacts. Section 3 explores the specifics of Indigenous traditional shifting cultivation and how change (discussed in section 2) may impact the practice.

Chapter 3 – Methodology: entails a comprehensive discussion around my positionality and ethics. Following this is a detailed description of the research location both ecological and social. The research design is then laid out followed by a discussion of data collection, analysis and dissemination.

Chapter 4 – winds of Change: explores the history of the Makushi people of Guyana. The chapter aims to set out a time line of how Makushi society has changed since contact.

Chapter 5 – Conservation or Care: the first empirical chapter, this chapter describes and discusses the findings related to the forest research sub-question. Historical documents on Makushi culture are explored to identify possible conservation practices and the transmission of these practices to the present.

Chapter 6 – Farming in the Forest and the Savanna: this chapter explores traditional shifting cultivation from the Makushi perspective, how changing social and ecological changes are impacting the practice and potential impacts on the environment.

Chapter 7 – Makushi Traditional Knowledge and its Transmission: this chapter examines how the Makushi build social memory through the transmission of knowledge. It explores the sacred spaces used for transmitting knowledge and whether social-ecological changes are influencing change in how traditional knowledge is transmitted, social memory is laid down and the sacred spaces where that knowledge is transmitted. -

Chapter 8 – Conclusion: this chapter lays out the conclusions drawn from the research, the contributions made to further knowledge on how changes impact the role Indigenous people play in forest conservation, and the wider application of the research to policy locally, nationally and internationally.

Chapter 2 - Context

2.1 Introduction

The Makushi are one of the extant nine Amerindian tribes that inhabit Guyana (Forte, 1996). They are from the Carib speaking branch of the tribes and the largest group of this branch (Forte, 1996). In Brazil, the tribe is known as Macushi or Macuxi, and Pemon⁷ in Venezuela. In Guyana, the Makushi population, found mainly in the Rupununi, numbers approximately 9000; while in Roraima, Brazil they total about 15000 (Wilson et al. 2006). Wilson et al. (2006) indicate that there is little formal institutional relationship between the two groups⁸. Movement of people across the border, however, indicates a more informal relationship at the family level.

The Makushi is generally a savanna based tribe, establishing their settlements in the open areas, while utilising the forest to gather needed resources (Forte, 1996). Myers (1994) believes historically the various branches of Makushi were spread out across the state of Roraima and North Rupununi. According to Watkins et al (2010) the Portuguese were the first to describe the Makushi living in the location. However, with the Portuguese pushing ever northward they were pushed more towards the Brazil – Guyana border and was the cause of large migration during the 1860. In Schomburgk's (1840) time the Makushi were concentrated along the Kanuku and Pakaraima Mountains with the Caribs to the north east and the Wapishana to the south. The Makushi and Wapishana were trading partners but were known to have had conflicts with Carib. While the Caribs occupied the upper Essequibo and lower Rupununi Rivers from Apoteri, the Rupununi is not their original home. They were known to have come from coast Guyana. Because they were engaged in the slave trade, they were known to raid Makushi villages for slaves. The story of

⁷ The term Pemon, meaning people, is also used by the Arekuna and the Arawak speaking Wapishana.

⁸ There is some expressed interest among the leaders of the Indigenous Council of Roraima (CIR) to connect and have a stronger relationship with the communities through the NRDDDB. This would also serve to strengthen institutional ties between the organisations.

Iwokrama is that during these times the Makushi would retreat to the Iwokrama Mountains to hide from the Caribs. It's unsure when exactly the tribal wars came to an end and the Caribs retreated from the Rupununi but in communities tales are told that the Makushi joined with the Arekuna to fight the Carib and defeated them. While most Arekuna returned to the Pakaraima Mountains some remained in the region marrying Makushi women. However, in the villages these families are considered Makushi as the child takes tribal lineage from the mother.

In Guyana, an Amerindian is considered any person belonging to any native or aboriginal tribe of Guyana or descended there of (Amerindian Act, 2006). Amerindian has always been the term used in reference to the aboriginals of the country but as of recent they have taken on the political construct of Indigenous peoples. Indigenous, like many of the terms applied to the peoples of colonised lands such as tribal, traditional, native, or aboriginal, are all vaguely defined Western descriptors which imply that Indigenous people have occupied the same landscape for generations (Da Cunha & De Almeida, 2000). This concept is better expressed in the use of the term indigeneity.

Indigeneity according to Cottrell et al. (2012) represents the ideas of belonging, cultural origins and deep rooted local attachments. Merlan (2009) believes Indigenous was used to distinguish those who were native from those who could be considered as "other". This implies a difference between the first occupiers of the land and those who colonised it. Whatever the origin of the term, being Indigenous has taken on new meaning for native peoples. Indigenous peoples have taken these terms and shaped them to act as a beacon of mobilisation to achieve the goals of the people (Da Cunha & De Almeida, 2000). Being Indigenous or claiming indigeneity now has a political application for native people who are engaged in "*struggle for their political rights, their lands, a place within their nation's society and economy*"(Guenther et al., 2006 pg. 17) .

Beyond the political application of being Indigenous, indigeneity also classifies the peoples across the world who shares similar characteristics in their lifestyles and belief systems. These characteristics include (Cultral-Survival, 2014; Merlan, 2009; UNPFIL, 2009):

- Living in relatively small populations compared to the dominant culture in their home country:
- Having a distinct language apart from the official language of the home country:
- Having and practicing distinctive cultural traditions:
- Possessing strong connection and generational ties to their lands;
- Sharing a worldview that is centred on the land.

Since the end of the tribal wars the Indigenous people of Guyana has been pulling together politically to advocate for their social rights and land rights. A number of Indigenous NGOs were established the most outspoken being the Amerindian Peoples Associate who advocate on land rights issues, social injustices, environmental management. Within the government before 1992 there were departments that looked at Amerindian affairs but in 1992, President Cheddi Jagan established the Ministry of Amerindian Affairs to overlook all issues related to Amerindian people. In 2015, the new government changed the name of the ministry to Ministry of Indigenous Peoples Affairs; reflect the new political stand of the Minister.

Over recent years with social media it could be seen that Indigenous Guyanese were embracing their Indigenous identity. A number of pages were established on Facebook to share and discuss Indigenous issues. It also gives them the opportunity to learn more about each other, especially those who reside in the other regions. It has also given them a platform to speak out against injustices witnessed.

The Ministry of Indigenous Peoples Affairs is responsible for coordinating and help focus developmental issues for the tribe. The government through the Ministry provides funding to further economic development for the tribes. A national leaders (Toshao) council was established that all Indigenous leaders could meet to discuss issues and meet with Government agencies to deal with pressing issues. Each region has a number of representatives who sit on the executive committee who are charged to investigate any complaints raised.

2.2 Description of Research Site

2.2.1 Physical Description

The Rupununi savanna is believed to be the home of Indigenous tribes for more than 7000 years (See Map 2-1) (Watkins et al., 2010). The savanna is part of the wider Roraima savanna ecosystem which extends into Brazil and Venezuela and is separated from the Roraima system by the Takatu River and Ireng Rivers (Wetlands Partnership, 2006; Watkins et al., 2010). The system is partially divided into North and South by the Kanuku Mountain Range which projects a few miles from the Takatu River (Baldwin, 1946). The North savanna, home of the Makushi, lies within a rift valley – the Takatu Graben. The Kanuku Mountain Range forms the southern boundary of the basin, while the Pakaraima, Iwokrama and Makarapan Mountain Ranges form the Northern boundary of the basin (Watkins et al., 2010).

Mistry et al. (2008) describe the North Rupununi as a patchwork of savannas, wetlands and forests with an intricate network of rivers and creeks which give rise to a number of highly diverse habitats (See Map 2-2). These habitats support a comparatively high diversity of terrestrial and aquatic fauna and flora (Watkins et al., 2010). It is believed that the fragmented geology of the North Rupununi is responsible for many different habitat types which exist in such a small area (Watkins et al, 2010) (See Plate 2-1 for

examples of the Rupununi landscape). The high level of biodiversity also results from the mixing of the Amazonian and Guiana Shield ecozones (Watkins et al., 2010).



Map 2-1 - Map showing Makushi location in relation to the other tribes of Guyana (Source Balkaran, 2007)

**A****B****C****D**

Plate 2-1: Habitat examples across the Rupununi landscape. A Pakaraima Foothills, B Savanna Plains – Lake Amuku, C Guyana – Brazil Border – Takatu River, D. Transition Forest - Surama Valley (Source: Author)

2.2.1.1 Biodiversity

The high numbers of habitats found in the Rupununi correspond to a high degree of biodiversity. The North Rupununi is estimated to be the home of approximately 65% of the wildlife found in Guyana (Mistry et al., 2008) (see Table 2-1 for a breakdown of biodiversity distribution). It boasts healthy populations of endangered species, some of which were dubbed the Giants of El Dorado by the Iwokrama International Centre for Rainforest Conservation and Development (Iwokrama). These include the Harpy Eagle (*Harpia harpyja*), Black Caiman (*Melanosuchus niger*), Giant Otter (*Pteronura brasiliensis*) and Jaguar (*Panther onca*). This high diversity in landscape, faunal and floral species is largely responsible for the eco-tourism draw of the Rupununi.

Table 2-1: Breakdown of faunal and floral species distribution from local, national and international perspective

Faunal Group	Rupununi + Iwokrama	Iwokrama	Guyana	Guiana Shield
Birds	> 650	474	860	800
Fish	> 410	420	800	800
Mammals	> 191	128	225	200
Reptiles	> 103	81	158	200
Amphibian	> 67	48	113	

(Source: compiled by Author)

2.2.1.2 Climate

The climate in the Rupununi is dictated by the movement of the Inter-tropical convergence zone (Watkins et al., 2010). As the zone moves north it brings rain to the region in April/May, and in August/September as it returns south to the equator it marks the start of the dry season. During the wet season the rivers rises more than six metres, bursting their banks and flooding the forest and savanna to create seasonally flooded wetlands that are important for the spawning of fish and breeding of many bird species (Wetlands Partnership, 2006; Watkins et al., 2010) .

The Pakaraima Mountains create a rain shadow that affects the amount of rainfall in the region. Moving from the north of the region to the south, there is a rainfall gradient with the annual rains in the forests averaging 3000mm, while rainfalls at the southern end e.g. Lethem, amounts to an annual average of 1600mm. In addition, to the rainfall gradient, the climate is also affected by the El Niño Southern Oscillation phenomenon (ENSO). In the Rupununi, ENSO can bring periods of severe drought with the region seeing a reduction of almost 50% in rainfall. The reverse La Niña can bring periods of intense rain resulting in flooding and prolonged high waters (Watkins et al., 2010). The Rupununi documented severe ENSO events during 1940/1941, 1984/84, 1997/1998 and 2009/2010 (Misir et al., 2013).

2.2.1.3 Soil

The various geological events in the history of the Rupununi have served to shape the landscape (Watkins et al., 2010). These events and resulting attributes have served to shape the soil profile of the region (Mistry et al., 2008). However, the hydrology of the Rupununi causes heavy leaching of the soil, resulting in very low fertility (Selvaradjou, 2005). Rutherford and Hill (1979) in testing the soil types of the Rupununi indicate that forest based soils have higher nutrient contents, with the heat and humidity allowing for the quick decomposition of organic materials and resulting in rapid replenishment of lost nutrients. According to the soil analysis (see Map 2-3), a large extent of the Rupununi has non-agricultural lands with severe limitations for agricultural use, which would require high fertilization (Selvaradjou, 2005).

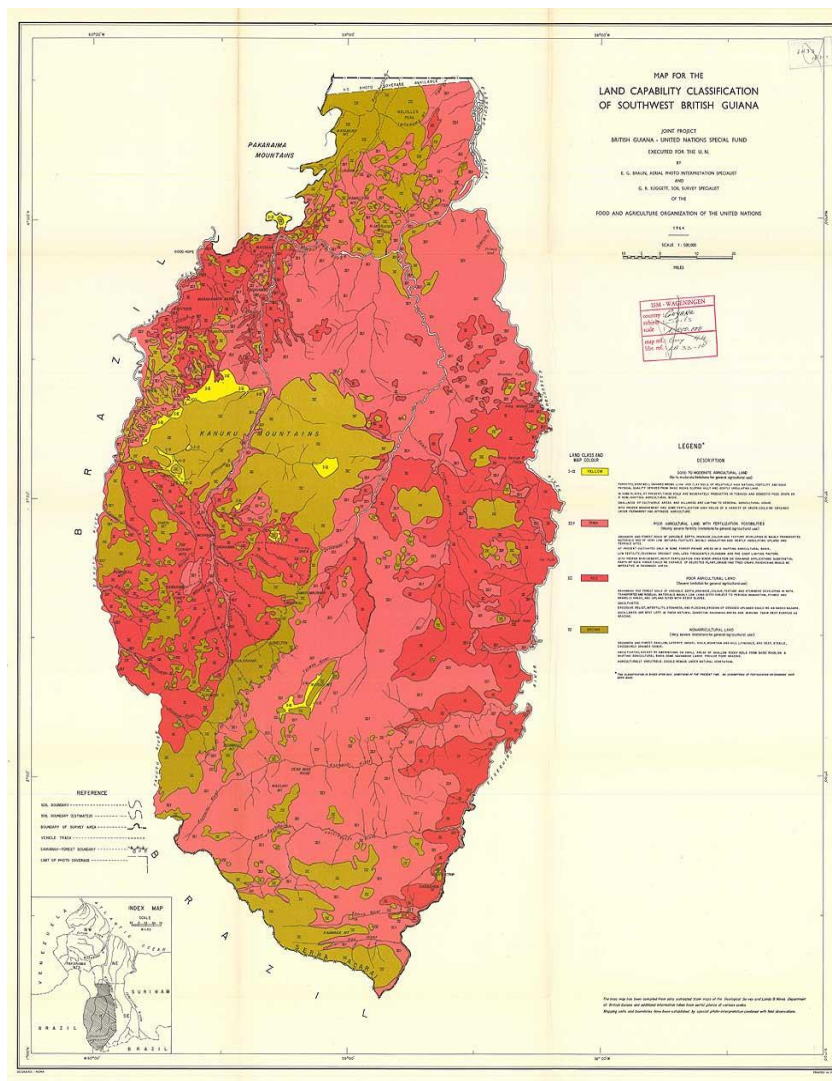
2.2.2 Research Communities

Communities for the study were chosen based on access⁹ and perceived influence of change to culture and tradition. Some changes that take place in communities are expected to better a community socially and economically (Radcliffe & Laurie, 2006). These enhancements may change behaviour and attitudes resulting in changes of cultural practices that appear inappropriate (Radcliffe & Laurie, 2006). Change in communities have been influenced by accessibility to information and resources – human and financial (Hunter, 2005). Access was looked at in terms of contact of the community with the outside, be it coastal Guyana or international. This was either through frequent visits of different players (government, NGO, researchers, tourists, business interests), access to the internet (social media, emails etc.) and other communication technologies (television, radios, cell phones). Change was measured based on the adaptation of community members to the new ideas that were being introduced and implemented, like using new

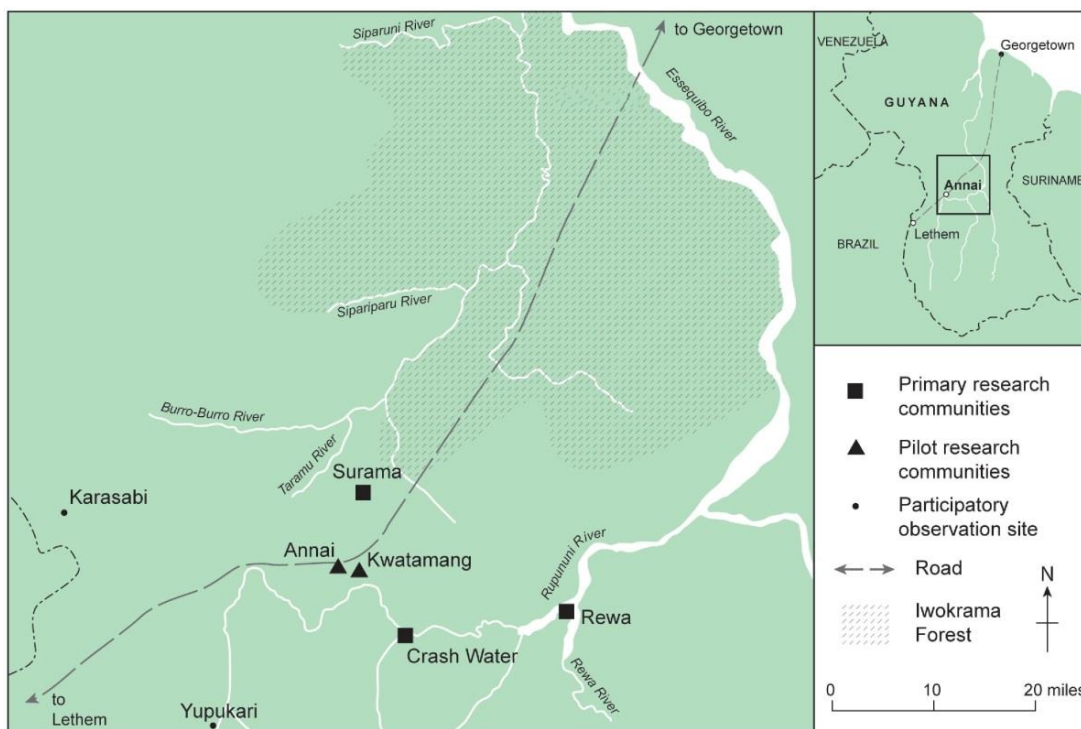
⁹ Access is defined by the author as being ease of physical contact; readily available connection to the internet; some use, if not full use of cell phones and a wide network providing support and resources towards community development.

materials for building, being able to use new technologies, incorporating new knowledge into their planning for community development.

The communities where field work took place were Annai Central, Kwatamang, Surama, Rewa, Crash Water, Karasabai and Yupukari (See Map 2-4 for location and Table 2-2 for statistical summary). Annai Central and Kwatamang were used for pilot testing of the interview and focus group questions. Karasabai and Yupukari were part of my observations of the Annual Amerindian Heritage Celebrations. Rewa, Surama and Crash Water were my core data collection locations.



Map 2-3: Soil Map of the Rupununi (Source: http://eusoiils.jrc.ec.europa.eu/esdb_archive/EuDASM/latinamerica/images/maps/download/gy13001_2su.jpg)



Map 2-4: Map of Research Communities (Source: Jenny Kynaston, Cartographic Technician, RHUL, 2014)

Table 2-2: Summary of Village Statistics

Village	Area (Sq Miles)	Population size	House Holds	Physical access	Information Access
Annai	239.34 for Annai Village as a whole	299	56	Road	CP, I, TV, NP, Ra
Kwatamang		585	93	Road	CP, I, TV, NP, Ra
Surama		434	74	Road	CP, I, TV, NP
Crash Water	187.61	256	48	River	Limited CP, Ra
Rewa	187.86	282	48	River	I, limited TV, CP, Ra

(Source: CDO, 2013 and Author) CP – cell phone, I – internet, TV – television (cable, DVD), NP – newspaper, Ra – Radio

2.2.2.1 Annai Central

Annai Central is one of the five sub-communities that make up the Annai Village (Plate 2-2). The other sub-communities include Rupertee, Kwatamang, Wowetta and Surama. It is also the administrative centre for the North Rupununi District. Annai Central is one of the oldest known village sites, having previously been inhabited by the Caribs before they were driven from the area. The name translates to Pine Hill. The community is predominantly Makushi, but also has smaller populations of Arekuna, Wapishana and

Arawaka. Annai is the government administrative centre; and therefore host a coastlander population and their descendants. The village is located about 1km from the main Georgetown –Lethem road. The community is centred on a large hill within the savanna and is approximately 5- 6km from the Rupununi River. During the rainy season most of the land around the hill is flooded except where it has been elevated to form roads.

The village has a population of 585 individuals and 93 households (CDO, 2012). About half of the population is school age children attending nursery, primary and secondary schools. The secondary school students live close enough to the secondary school that they can travel on a daily basis, though the school is almost 5 km away. Most residents are dependent on subsistence farming for their survival. The farms are located in the forested areas behind the foothills of the Pakaraima Mountains and most farmers have to journey approximately 12-15 km to get to their farm sites. These farm lands have been farmed for generations. Before fully settling at the village site, most of the older generation used to live on their farms, only coming out during holidays and festivals (NRDDB, 2011). Some families still live at their farms on a subsistence basis. Job opportunities are mainly government related (education, health care, public security and administrative) or working at the local eco-resort. Some people are also employed at the stores and restaurant/bars that have opened recently in the area. Others may travel to look for work outside of the district, going to gold mines and timber concessions, the Iwokrama Forest, Lethem and Boa Vista, Brazil.



Plate 2-2 - Communities of Annai Central (background) and Kwatamang (foreground) from the air (Source: Author)

2.2.2.2 Kwatamang

Kwatamang is found to the south-east of Annai Central (Plate 2-2). The community is also centred on high ground within the savanna and is spread out on three hills. The village is 5 km from the Rupununi River and the community centre is approximately 3 km from the Georgetown-Lethem Road. Like Annai, the community is surrounded by flood waters during the rainy season and is only accessed by elevated roads built in the savanna and by boats for those coming by the river. The community's establishment is more recent, being settled in the late 1940s. The main tribal make up is Makushi, with some Wapishana.

Kwatamang has a population of 434 individuals with 74 households (CDO 2012). About a quarter of the population is made up of school age children. The community has a nursery and primary school and the older students attend the Annai secondary school 2.5 km away. Villagers are dependent on fishing and farming for their subsistence. Kwatamang villagers used to farm in the same general location as Annai Central and

Rupertee, but with increasing numbers of persons farming in those areas they have been moving to alternative locations, towards the foothills of Makarapan Mountain. Some villagers are employed in the government sectors - mainly teaching, medical and administration - while others work within the shops and at the local eco-tourist resort. Others may travel to work within the Iwokrama Forest, the gold mines, Lethem or Boa Vista.

2.2.2.3 Surama

Surama can be found at the transition zone of tropical rainforest and savanna (Plate 2-3). The village, one of five sub-communities making up Annai Village proper, is situated within a valley of savanna, surrounded by mountains and forest. The wide variety of habitats provides Surama with a rich composition of biodiversity and has made the setting a prime location for community-based tourism. The community spent over 15 years developing and improving their tourism enterprise. The village has used this enterprise to provide employment for its villagers on a rotation system. Given its active progressive¹⁰ stance, the village has made use of the many opportunities that have come its way through its tourism venture and its connections to the NRDDDB and Iwokrama.

Surama has a population of 299 individuals with 56 households (CDO, 2013). A third of the population comprises school age children – nursery to secondary, with a small elderly¹¹ population of six. The community has a nursery and primary school while the older students attend the Annai secondary school¹² located at Kwatamang. The community centre is approximately 5.5 km from the main thoroughfare that links the Rupununi to the capital city of Georgetown. The community is predominantly Makushi

¹⁰ The community's leadership is aggressive in pursuing the social and economic development of the community.

¹¹ Elderly refers to a person who is 60 years and older, also referred to as pensioners.

¹² The Annai Secondary School is one of two secondary schools in the region that cater to the communities of the North and those in the South Pakaraima Mountains.

with some Arawak, Patamona and Wapishana mixed in. Some members also have East Indian and African partners.



Plate 2 - 3 - Community of Surama (Source: author)

In addition to its tourism business, other opportunities for employment include the public sector¹³, NRDDDB, Iwokrama, the community cassava processing venture and self-employment. However, a large portion of the employable population works within the tourism sector. Those who do not have regular employment are dependent on subsistence farming for their livelihood. The village is approximately 5 km from the Burro Burro River and approximately 3km from Surama Lake where most subsistence fishing occurs. As most persons have a source of income there is now a tendency to buy meat when available from the village shops.

2.2.2.4 Rewa

Rewa Village is located on the Rupununi River within tropical forest (see plate 2-4). It was founded in 1952 by a family from Massara. The village is approximately 1.5 to 2 hours by boat or 72 km from the population centre of Annai Village. This village, like

¹³ Public sector jobs are mostly within the education and health sectors and only employ a small number of individuals.

Surama, has ventured into community-based tourism. This venture, however, is only about seven years old. The community is slowly building its reputation in this area and gaining recognition¹⁴. While in the case of Surama there is more interaction between the visiting guests and villagers, including having tourists lodge with villagers, in Rewa this interaction is not as integrated. While there is a tour of the village, cultural exchanges are not part of the tour packages.



Plate 2-4 - Trail leading from the Rewa Eco-lodge to the village (source: Author)

The village has a population of 282 individuals with 48 households (CDO, 2013) made up predominately of Makushi with some Wapishana. It is believed that the antecedents of the village were Arekuna. Less than a third of the population is of school age with a fifth being of secondary school age (CDO, 2013). Like Surama, these students attend the Annai Secondary School, but there is a higher potential for drop outs due to the distance and parents' inability to support their children away from home. There is a small elderly

¹⁴ The community saw a 100% increase in visitors from 2011 to 2012 with the introduction of its sport fishing package.

population of nine individuals. Employment beside the eco-lodge is within the Government sector, self-employment, NRRDB projects and village projects which in most cases are short - term projects. Villagers mainly depend on farming and fishing for their subsistence. The village's main farmland is located 8 km downriver as most of the land surrounding the village is low and swampy (Ingwall-King, 2014). As part of the village's developmental program farine production is being promoted. The village obtained funding from the Government to develop a village co-operative that would plant cassava and produce farine for sale. This activity was in operation up to the time of my field work¹⁵. Like the other communities, those seeking employment aside from those available in the village, travel outside the district.

2.2.2.5 Crash Water

Crash Water Village is also located on the Rupununi River (See Plate 2-5). The village is approximately half an hour from the population centre of Annai by boat or approximately 20 km in tropical forest. The site is thought to have been a settlement historical as evidence of pottery and other artefacts have been found in the vicinity. The old settlement most likely would have been Carib. The villagers are now predominately Makushi with some Wapishana. The village, despite its physical ease of access, is mainly a farming community using its farm and fish resources for subsistence. The village originally started as the farming grounds for the village of Yakarinta. Some of the residents decided to make the site their permanent home instead of traversing the distance continuously. The village has an interest in ecotourism but has thus far been unable to get the venture off the ground. They built a guest house as a start but this has fallen into disrepair.

¹⁵On checking the status of the cassava project it was indicated that the farm became "old". No new cassava was planted and no new farm site was cut. There was, therefore, no cassava to continue production.



Plate 2-5 - Crash Water Landing on the Rupununi River (Source: Author)

The village has no access to the internet and cellular service is patchy. In order to obtain a signal for the use of a cell phone, villagers need to locate hot spots at elevated sites to obtain connection. It is also a challenge to contact the village by HF Radio. There is limited interaction with “outsiders” in the village. However, there is usually continued movement of villagers in and out of the village in the pursuit of employment. The village has a population of 256 individuals with 48 households (CDO, 2013). There are 77 school age children with 10 attending secondary school. There are 4 elderly persons residing in the village (CDO 2013). Employment opportunities are limited to the public sector, village projects, Iwokrama and NRDDDB. Others travel out of the district seeking jobs.

2.3 Livelihoods

The Makushi mainly exist by subsistence from farming and fishing. Farms are often located 5-15 miles from villages. The main food crop is *cassava*, which is used to produce farine, cassava bread, tapioca, and various beverages. Women usually shoulder the responsibility for maintaining the farm. Fish is the main source of protein, though those who could afford it may purchase chicken or beef. There is some hunting done but

mostly it is said that little hunting is done as there are no guns, though some do hunt with bow and arrow.

Since the coming of Iwokrama the communities have explored a number of economic ventures that may offer alternative to forestry. These include non – timber alternatives like bee keeping, aquarium fish trade, butterfly farming, crabwood oil, furniture making and ecotourism.

2.3.1 Tourism

Eco-tourism has slowly developed in the North Rupununi since the start of Iworkrama. The wetlands offer a fantastic range of birds for the avid birder. Paired with the forest the Rupununi Wetlands boast over 600 species of birds including the Harpy Eagle, Jabiru, a host of parrots and Macaw. There are five functioning lodges in the area – Karanambu Ranch, Rockview Lodge, Surama Village, Rewa Ecolodge and Caiman House, Yupukari. Each lodge offers unique packages for the tourist including sports fishing, caiman spotting, jungle survival camping, horseback riding and anteater spotting. Rewa and Surama provide job opportunities for a large number of its population while the other lodges are staffed by smaller groups of community members.

2.3.2 Forestry

Surama has applied for and received a permit to operate a sustainable utilization area from the Guyana Forestry Commission. The SUA is managed by members of the community and over seen by a village council subcommittee. The venture usually supplies the local markets within the villages and to Lethem, the border town. The operation has to follow the forestry guidelines of the GFC and uses low impact logging methods to extract its products. Communities such as Rewa and Crash Water may engage in forestry but mainly for community use. They may sell to other communities but based

on needs only basis. These ventures only employ a few persons for a named number of days.

2.3.3 Non-timber Forest Products

There are a number of NTFPs that communities have used for generations that can and have been used to generate income. As part of its mandate, IIC has worked with communities to identify products that could be marketed profitably. Over the years they have explored the sale of honey, crabwood oil, aquarium fish and craft items. While many of these ventures proved that profitable business could be made out of them, it demanded commitment by community members which was lacking resulting in the decline in production and sales. Some individuals has kept some of these activities going and are able to provide honey for sale in the local shops, others create hand crafted furniture. There are some ventures that encountered problems that could not be quickly overcome for both the aquarium fish and butterfly farm international transport to market and quarantine issues made the obstacles to get the ventures off the ground difficult. These are two lucrative business opportunities as there are markets for the products but until the transport and quarantine obstacles can be solved they can go no further.

2.4 Non-Governmental Agencies and Resource Management Projects

In the North Rupununi, there is one Indigenous Non-governmental organization that represents the interest of the Makushi communities. It is the North Rupununi District Development Board (NRDDB). The NRDDB was established in 1996 to represent the interests of the communities to the Government and Iwokrama. Over the years the role of the organization has evolved to be more than a representative body. They now work to advocate on issues and implement projects on behalf of the communities. Along with Iwokrama and the Government, NRDDB has partnered with a number of organisations and agencies to bring support and development to its constituent communities. The

projects range from the social – dealing with issues like HIV-AIDS, alcoholism,, abuse to environmental looking at climate change and resources management to species conservation to business development encouraging tourism and facilitating training and capacity building where needed.

Many of the projects that have been implemented by the communities have been environmental in nature. The longest running is the Arapaima Conservation Plan. In 1998, the communities requested assistance from the Government and Iwokrama to help curb the illegal overharvesting of the species or it would disappear from the Rupununi. Between that time to 2002, Iwokrama was able to identify a conservation program that would act as a good example for the communities. In the meantime with the support of the Government a moratorium was place on the harvesting of the species. In 2002 a management was drafted for the species. As of 2013 the communities had met to review and revise the plan to make changes to include new ideas like sport fishing with the species.

In 2000, there was a consorted push to have the North Rupununi Wetlands be recognized as a Ramsar site. The bid was not successful but the need to manage was an important one. In 2004, Iwokrama along with NRDDDB, Royal Holloway, Wildfowls and Wetlands Trust and Open University worked on a two year project that monitored sites across the North Rupununi that would lead to the development of a Management process for the location. The project also developed manuals to conduct monitoring both at the community and manager's level.

The next large project to include the NRDDDB and the communities was the GSI Project that looked at ecosystem services. The organization was involved in the development of materials for an outreach program on ecosystem services. Along with Iwokrama they

worked on the development of a forest impact monitoring program for timber harvesting which was tested in the Iwokrama Forest.

In 2010, Iwokrama and NRDDDB launched a project that looked at building capacities in tourism and fisheries management. The tourism team worked with six communities to help build their management capacities, develop business plans, develop a rule book for the lodges and provide a grant to improve their tourism products. The Fisheries Management team worked with the communities to develop a management for fisheries across the North Rupununi Wetlands. The team also worked with specific communities to develop conservation plans for three important sites across the wetlands.

In 2012, two major projects were implemented with the communities. These were the Community Monitoring, Reporting and Verification Project and Project COBRA. The CMRV was designed to build the capacities of community members to monitor their community forest for REDD+. The project offered a community component to the national MRV strategy. The COBRA Project was a three year program that explored using participatory video to document community owned solutions for community challenges. The project then attempted sharing and implement

Chapter 3- Research Methodology

3.1 Introduction

A qualitative research approach was considered most appropriate for this research. This approach allows the researcher to be both flexible and creative when in the field but also reflects the words and actions of the people being studied (Strauss & Corbin, 1990). The objective of this thesis is to explore the issue of Indigenous people as conservationists, the importance of their traditional knowledge and practices to conserving forests, and how this knowledge is transmitted. The application of a qualitative research approach allows the capturing of how people understand their situation and provides an holistic overview of the study (Yin, 1994).

In this chapter, I will provide a description of the research location and communities. The research design and methods will be outlined along with the data analysis undertaken. I will examine my positionality as a researcher and the ethics involved. The final discussion will reflect on the dissemination of the data.

3.2 Research Design

This study began with a pilot study from 22 April to 1 May 2013 in the communities of Annai Central and Kwatamang. Pilot studies can play a key role in setting up the field research as they can provide context, background and help the researcher judge peoples' reactions and understanding to their interview questions (Chung Tiam Fook, 2011; van Teijlingen & Hundley, 2001). Along with comments from the Makushi Researchers¹⁶ who worked with me in the two communities, I was able to reframe those questions that were difficult to understand before beginning the collection of the main dataset.

¹⁶ The Makushi Researchers are a group of local researchers, who carry out research on social, economic and ecological aspects of life in the North Rupununi. See chapter 4 for more details on Makushi Researchers

From the 17 June 2013 to the 30 November 2013, I undertook field work in the communities of Surama, Rewa and Crash Water. This period of work allowed me to collect data and carry out unstructured participant observations of some of the community activities taking place. Following the advice from the Makushi Researchers I spent an average of two to three weeks in the communities depending on the number of interviews I was able to conduct.

The field work was carried out in three phases. The first visits were done to collect data via informal interviews. While in the communities during this first visit I made observations of farms that were close by. The visits to Surama and Rewa were conducted during June and July 2013. Other commitments by the community leaders in Crash Water prevented my visit in August and with the impending annual Indigenous heritage celebrations in September, the first visit was moved to October. To not lose time in waiting, I designed and tested the questions for the focus group sessions using the data collected from Surama and Rewa. The questions were again pilot tested in Annai Central and Kwatamang between the 31st July and 13th August 2013.

The next phase was the observation of the Heritage Celebrations. In the month of September, I visited the communities of Annai, Yupukari and Surama to observe the Amerindian Heritage celebrations from village and district levels and the national heritage village.

The final phase was undertaken to conduct the focus groups. These were conducted in the month of November. Organising the focus group meetings however proved difficult. Despite the effort made, including visiting homes to invite participants to the meetings, very few people attended. There was a general lack of interest as experienced by fellow researcher Lisa Ingwall – King (see Chapter 3 – Methodology; Ingwall – King, 2014). In

addition, it was explained that many persons were out of the communities for job opportunities or were employed in the communities but were on duty.

3.3 Research Strategy

My interest from the beginning of this PhD was traditional knowledge and practice, resource conservation and the impacts of socio-economic changes on communities. The exploration of the literature and later the findings from the data helped me to formulate and refine my research questions. This research is linked to the COBRA research which looks at environmental solutions from a local perspective. The link comes in the expectation that communities may have solutions for environmental challenges passed on or developed through their traditional knowledge and practices. The question of what is being lost if communities are changing then becomes important in that context. The importance of the CMRV¹⁷ farm survey also became apparent as this project investigated a range of activities that occur in the forest in addition to farming. It also provided this data at a broader landscape level looking at more communities than just the five that were my focus. Having designed my research questions, I then used a research matrix (Appendix C) to help plot out what research methods I would use for data collection, what sampling technique best suited that method and what the sample size would be.

Following some discussion with my supervisors, I then worked on an interview checklist that would allow me to explore each research question in depth (see Appendix D). This checklist was then tested in a pilot study in the communities of Kwatamang and Annai. The aim of the pilot study was to test the language and structure of the questions, to judge people's ease at understanding what was being asked and if other questions should be included in the checklist for the next phase based on participant responses.

¹⁷ See Chapter 1 Section 1.1.4

In the next phase of the field work, it was planned that the research assistant would help me to identify the households in each community, and who might be available. I indicated the age ranges for participants I wanted to interview and we then divided the number of households among those age ranges after identifying the elders. It was my intention to interview at least one person per household unless others did not participate. We would then approach each household either the previous afternoon or early in the morning to see if they were available and willing to participate and what would be a good time to visit. In conducting the interviews, I met with the participants where it was most comfortable for them, allowing myself to fit into that space and taking an interest if they were conducting some activity until they were ready to talk. Where necessary I would allow the research assistant to lead in Makushi and then I would follow through with English. Instances where participants had something to say on a particular topic, but not necessarily related to the research, I allowed them to have their say and then gently brought them back to the topic.

3.4 Research Methods

I used a multi-method approach to collect my research data, outlined in Table 3-3. These methods provided multiple and varied perspectives on the research questions being explored. Using a multi-method approach also helped in triangulating the data and give independent verification (Chung Tiam Fook, 2011). This section will discuss the methods used during the entire study.

Table 3-1 - Summary of research methods

Method	Target Group	Dates	Location
Pilot interviews	23 villagers of North Rupununi	April – May 2013	Homes- mainly verandas
Semi-formal interviews	113 villagers of North Rupununi	June – October 2013	Various (farm, clinic, village office, home, cassava kitchen, school)
Pilot focus group	27 villagers of North Rupununi	August 2013	School, village office

Focus Group	25 villagers of North Rupununi	November 2013	Village rest house, under mango trees
Participant Observation	Communities celebrating Heritage activities at village, district levels and heritage village host	September 2013	Village centre
Secondary Data Farm Survey CMRV	225 persons from 11 communities of the North Rupununi	July to September 2012	Obtained from NRDDB CMRV Project
Document Analysis	Historical materials on British Guiana concerning the Indigenous population especially the Makushi	March – April, 2014	Senate House Library, archive.org, Bedford Library

3.4.1 Semi-structured Interviews

A total of 111 semi-formal interviews were conducted in the five communities between April 12 and 30 October, 2013. Interviews were used as the main method for collecting data from the communities as it provided the opportunity to collect detailed data from participants. It was a good way to access people's perceptions, meaning and definitions of situations and construction of their reality in the villages. The method is flexible and could be adapted to suit a wide variety of situations (Fontana & Frey, 1994). Semi-structured interviews helped to highlight the aspects of the research that were important, but also gave participants an opportunity to raise other ideas and issues or thoughts (Willis, 2006).

The sampling to identify participants was purposeful (Tongco, 2007). There were some specific questions on the interview checklist dealing with culture and transmission of knowledge that required targeting knowledgeable persons. Some of those persons were identified with the aid of the research assistant. However, all participants were approached with the aim of asking all the questions on the interview checklist (see Appendix D). The questions asked were then based on their indicated level of knowledge, or if they proposed new ideas these were followed up. Most participants attempted to

provide an opinion or answer to a question. If they were unsure of the answer or did not know, they indicated by either being silent or saying they did not know.

Determining the sample size is an age old question that is largely dependent on the time and resources available to conduct the research (Baker & Edwards, 2012). There is no standard answer to how large the research sample size should be. Becker (1958) suggested that the sample size should be that which allows you to say the truth. At the end of your resources, the data collected should support your narrative and the conclusions you draw. Since there was no predetermined sample size that needed to be used I attempted to interview as many households as possible within specific age ranges.

The original aim was to interview one person per household within the age categories of 16-24, 25-39, over 40, pensioners (over 60 years)¹⁸ and elders¹⁹ to be able to get the perspective of a cross section of the communities. The number of older persons in the village was first identified and determined if they would be able to participate in the research; the remaining households were then divide among the other age categories. Identifying households was based on the knowledge of the research assistant and statistical data from the Community Development Officer (CDO, 2013). At the start of each work day, the research assistant would check with villagers in a section of the village to determine their whereabouts and their willingness to be interviewed. At a more convenient time we returned to conduct the interview. At the start of each interview I or the research assistant would conduct the process of informed consent, giving the person the opportunity again to decide whether they would like to participate. We then proceeded if given an affirmative answer.

¹⁸Martin and Mirraoopa (2003) indicate that age does not denote eldership. It is believed that if a person over their life time demonstrate that their minds are receptive to understanding their role in adult society, they will be invited to become an Elder of the tribe but not an Elder in their own individual right. For this reason elder is used only to refer to persons who are “teachers” within the communities.

¹⁹ Elders refer to persons that have a level of knowledge that allows them to teach others within their communities. These persons may be specifically trained, gained their knowledge from experience or through research.

One of the limitations encountered in trying to recruit participants was the low number of persons to be found in the communities. As mentioned in Section 3.4.2, many people were unavailable due to having jobs in or out of the communities. This in some cases led to an uneven distribution of respondents in some age categories. However, the overall distribution in age range was not too uneven to represent opinions for that age range (see Appendix E).

Other potential limitations were the language barrier and the use of a translator. For most of the interviews, participants attempted to accommodate me by giving their responses in English. However, in the instances where they did not understand the question it was relayed to them in Makushi or they would use Makushi to relay an idea. The research assistant translated so that I could get a sense of what the participants were saying. The key was in making sure that the person assisting with translation understood the concepts being translated. I had noted in the pilot study that some ideas got lost in translation and the response I got back did not reflect an answer to the question. I therefore made it my duty to go over the questions being asked and go over key ideas as we discussed ideas coming from participants. One assistant made it their duty to clarify ideas they were unsure of and also reminded me when there was a need to further break an idea down.

The advantage of using a research assistant from the communities is that they are known to the people and they can provide an easy lead in to getting participants to relax in the interview. However, in translating the information, the translator may not have provided all the information that was being given, just the general idea and that means that I may have lost critical information in the translating process (Squires, 2009) that may have been important for follow up. This was the case in one instance when we were discussing the Parishara festival and why the dancing may have stopped in the village. I was, however, able to find other references to the same account given and follow up with another elder. One way I found of combatting the loss of information was to discuss the

interview with the research assistant as we moved along. That way I was ensuring that I was getting most of what was said.

Another limitation noted is the translator may inject their thoughts, knowledge and experience, either in the question which may influence the responses of the participants, or as they are relaying the response. The interjections may, however, serve to stimulate the memory of the participant or convey the question better. These interjections are difficult to avoid especially not knowing when they may add to the data being collected. I have accepted these interjections as part of the dataset following Berman and Tyyskä (2011) belief that translators can be looked on as key informants being active producers of knowledge and helping to strengthen the rigour and trustworthiness of cross language research. Their knowledge of the villages has proven invaluable and, as demonstrated, their experiences and questions do generate knowledge.

3.4.2 Focus Groups

The focus groups were used as a means of validating and complementing the data collected through the semi-structured interviews (Table 3-4 outlines the sessions carried out in the communities). It was also a way in which I could explore some of the ideas raised by individuals and obtain a group opinion on the topic, and expand the research population base (Morgan, 1996).

Table 3-2 - Summary of Focus Groups and Interviews conducted in communities

Communities	Focus Groups	Interviews
Annai Central*	1	11
Kwatomang *	3 (16-24, 25-39, over 40)	10
Surama	1 (over 40)	34
Rewa	1 (16-24)	32
Crash Water	1 (mixed)	24

***pilot communities**

After testing the interview guide in the pilot, I refined the questions I wanted to ask and returned to the communities in November, 2013. It proved difficult to interest persons in

attending the focus group meetings. Specific persons were targeted in two of the communities for their knowledge but very few came at the set meeting time. The main reason for this is believed to be the amount of time the meetings would take away from personal pursuits. Another reason as suggested in Section 3.6 may relate to what I would term as ‘meeting fatigue’, stemming from the high number of meetings that are being held in the villages.

3.4.3 Participant Observation

Participant observation provides the researcher with the opportunity to have direct contact with a research participant within their domain (Atkinson & Hammersley, 1994; Li, 2008). This method allows for the collection of data from an insider’s point of view. I used participant observation to visit farms with some of the participants as they were working or just to identify some of the things they were speaking of. I visited two family farms and observed the farming attempts being made in the savanna in Surama. I examined four farms that were situated close to the participants’ home in Crash Water and visited the farming grounds of Rewa and a minab²⁰ that was about 15 years old close to the village.

In discussing the transmission of culture I thought it important to examine the Amerindian Heritage Celebrations with a more critical eye than just a spectator enjoying the activities being carried out. I therefore attended the Heritage Village day at Karasabai on the 7th September, 2013 to get a sense of the messages the government officials send at these events. I attended a village celebration at Kwatata, a satellite community of Yupukari, which was more isolated than the ones I usually attend when in the Rupununi. This allowed me to see the villagers interacting and not influenced to entertain “outsiders”. This was held on the 14th and 15th September, 2013. The final event observed

²⁰ A minab is an old farm that has come to the end of its farm life but may have permanent fruit trees etc. that is used by the family periodically.

was the district celebration held at Surama on the 20th and 21st September, 2013. This gathering was a combination of representatives from various communities from the district. One community who did not usually attend the festivities because of their Christian beliefs made the trip and offered up a gospel song as their participation. It was my intent to observe how people were engaging with the skills being displayed, if they were using the opportunities to learn and share, what was the potential for building collective memory and how the younger generations were engaging with the activities around them.

3.4.4 Document Analysis

The document analysis was done through a review of historical publications on British Guiana, especially from the works of European travellers who had occasion to visit or travel through the Makushi territory. From my reading, three main authors stood out as having intimate knowledge on the Makushi and general observations on the other tribes having spent a number of years traveling the territories of the Amerindians. These were Robert and Richard Schomburgk and Everard im Thurn²¹, who explored the interior of British Guiana during 1837 – 1844, 1840 – 1844²² and 1876 – 1879 respectively. Later Rev. W.H. Brett ²³(1851, 1880, and 1881) and W. Roth ²⁴(1915, 1924, and 1929) published more in-depth analysis on the spiritual beliefs of the tribes. In 1944 and 1946,

²¹ The men spent a large amount of time in Makushi territory at the villages of Pirara during the Schomburgks' time and Quatata during Im Thurn's time. Pirara was a missionary site established by the Rev. Mr. Youd. In the absence of Youd, Pirara was taken over by the Brazilians claiming it was Brazilian territory. On his return Youd was asked to leave and the mission disbanded. The site was peacefully retaken by a British patrol during the second trip of Robert Schomburgk to the location but the mission was never restarted.

²² Robert Schomburgk was joined by his brother Richard on this trip. The main purpose of the trip at the time was for Robert to map the country to help settle the boundary dispute between British Guiana with Brazil and Venezuela respectively.

²³ Rev. William Henry Brett was posted to British Guiana in 1840 as a missionary by the Society for the Propagation of the Gospel. Most of his work was conducted among the Amerindian tribes to be found on the coast of the country. Brett spent almost forty years in the colony before retiring back to Britain in 1879. He published three books on his work and observations while among the tribes.

²⁴ Walter E. Roth was a medical doctor working in Australia who became interested in anthropology and ethnography later in his career. He took up a post in British Guiana as a Government Medical Officer, Stipendiary Magistrate and Deputy Protector of Indians in the Pomeroun district. He was later appointed Commissioner of the Rupununi. During his time at these posts he pursued his interest in Indigenous culture, publishing a number of papers on topics of Indigenous customs, art and craft.

Iris Myers²⁵ published her two part synthesis on the Makushi; pulling together what was already known about the Makushi along with her own observations having spent a decade in the region from 1933. I have, therefore, decided to use the writing periods of these authors to help set the time frame of this analysis: 1837 – 1890, 1890-1944, post 1945 to present.

In using historical data, consideration has to be given to the accounts being presented by the author based on accuracy of the accounts and the philosophical perceptions of the author during the period the writing was done (Bowen, 2009). At the time Im Thurn and the Schomburgks were writing, Indigenous tribes in the New World were considered uncivilised and primitive (see im Thurn 1883, 1886, 1890). Many of the writings, therefore, looked at them in this manner when describing their culture and customs. Two elements missing from the accounts of im Thurn and the Schomburgks were the spiritual and social connection between the Makushi and the activities they carried out. Their accounts can be construed as very practical and sterile paintings of the culture. This method of account may lend itself to the Anthropological school of thought of being just an observer of the culture and not an active participant (Atkinson & Hammersley, 1994) but this lent itself to the writer being unsure of why a practice was being carried out and put their own interpretation to the action (Tedlock, 2005). It was with these thoughts in mind that the data was analysed.

3.4.5 Secondary Data – Farm Surveys

As part of a data collecting mission to better understand the communities and North Rupununi landscape, the Iwokrama International Centre commissioned a report in 1996 on the communities surrounding the Iwokrama Forest (see Forte, 1996). During the course of this investigation the Makushi Researchers conducted a farm survey that

²⁵ The two part paper on the Makushi were originally published in the *Timehri – Journal of the royal Agriculture and Commercial Society of British Guiana* in 1944 (No. 26, pg. 66-77) and 1946 (No. 27, pg. 16 -38). The two parts were combined and edited by Butt Colson and Myers and reprinted in 1993.

documented farming knowledge and practices. As a way of comparing the changes that have occurred within this practice over the last 16 years and as part of the CMRV's objectives of understanding how the forest is being utilised by farmers/community members when farming, the Makushi Researchers with the CMRV project conducted another farm survey in 2012. The survey was designed by the Makushi Researchers and tested at a workshop at the Bina Hill Institute on 12 June, 2012²⁶. The workshop was aimed at examining the questions, looking for duplicates, ease of understanding and testing the length of time it would take to complete the full survey. The surveys were conducted from July to September 2012 by the Community Resource Environmental Workers (CREWs) accompanied by the Makushi Researchers.

My interest in the data stems from the additional information it would provide about my research communities. In addition, the dataset provided a broader picture of how communities perceived an important traditional practice within a more modern setting. The dataset also provided information on how people were utilizing the forest and for what resources. While not a part of the dataset I was given permission to use, the data was ground truthed to verify farm locations and size as per participant responses. This information was relayed to me as I discussed the dataset with the head Makushi Researcher and one CREW member who conducted the surveys.

To be able to use the data in my study, permission was sought from the project management. As per sharing protocol set by the CMRV project, I was asked to seek formal permission from the leaders of the NRDDDB to access the data. A letter requesting permission was sent to the NRDDDB in April, 2013. This first request was denied, but with the failure of the project to produce a report on the survey, permission was again sought via letter in October, 2013. Permission was granted by the Board later that month.

²⁶ I was one of the participants of the workshop reviewing the questions and method of approach.

3.5 Positionality of the Researcher

I am mixed heritage, female, coastlander Guyanese and I have worked in the North Rupununi and its environs for over thirteen years. Many of the people in the communities know me by sight (if not to speak with) due to my work in the villages with Iwokrama and the NRDDDB. The time I have spent within the region has thus helped me establish a level of trust with community members and provided me with a perspective on the villages not easily gained by others who have not had the time to observe and interact with the people. My time in the North Rupununi provided me with a sense of familiarity with the people's behaviour, colloquial language and expectations.

Despite being a coastlander and having an outward African appearance, my relationship with the people within the communities that I have worked and interacted has always been welcoming. I have always thought that being open minded and meeting the people at their level has been helpful in this regard. I have always acknowledged that I was a stranger in the location and dependent on the good graces of community members to find my way around. It was, therefore, important to show them that I did not think myself above them in any way. I have noted Lisa Ingwall-King's concerns about her interactions with the two genders in the communities (see Ingwall-King, 2014, Chapter 3). She had a better connection with the women than with the men. I find my position slightly reversed in this regard. I have always had a good rapport with my male counterparts. This might have been due to the fact that my previous work was centred in a male dominated area – fisheries management. I would say while it is enjoyable to work with the women, any discomfort was mainly due to me not always being sure how to react to certain situations, like having community members approach me to discuss family issues based on what I would call a slight acquaintance.

Having long term familiarity with the villages is a double edged sword. On the one hand, as mentioned, I have trust and insight into the communities that makes it easier to interact with villagers and gain the kind of data needed. I have a long term view of the communities and the challenges they face and the goals they are striving to achieve. This adds to the sense that the data and information generated from my research would benefit the villages in some way. They also feel a sense of pride in my achievements as their participation, support and recommendations would have contributed to me attaining my goal.

On the other hand that familiarity can be a cutting edge. My familiarity with the region and people also gives the impression that I know enough about the issues I am investigating that I would not need to conduct any intensive field work²⁷. There is also a sense that there are higher expectations of you than other researchers. This is particularly linked to the achievement of a higher degree from community data but then not returning to the region to continue working, and going off to make lots of money elsewhere. This is particularly a concern since I am not tied to the region by contract; action more than words would demonstrate a commitment to continue working with the people.

In doing my own research and executing my duties on the COBRA Project I have consciously taken two positions. In carrying out project activities, I took a position of being in the background allowing my local counterparts to take the lead in engaging with the communities. This allowed them to use their skills and knowledge to implement project activities, while I provided advice and support. In doing this I was allowed the time to concentrate on preparing for my field work. But to ensure that the team was comfortable, we would strategize before they left on field trips and doing a debriefing on their return.

²⁷ This also related to knowing what data have been collected and where to access that data.

For my own research, I played the leading role, though in instances where the participants preferred to engage in Makushi, my Makushi translator led the interviews providing the information as the interview moved along. In these instances, villagers usually commented that I should by now know a little Makushi given the amount of time I had spent in the communities. When this was mentioned I usually told them what I believe to be the truth; that I am terrible at learning languages and so never made the attempt, though I do try to learn place names where possible.

People were so accustomed to me working with a particular local partner, that they found it strange to see me without that person in tow. It was certainly a different feel to work alone after so long or with someone new providing translation assistance. I was conscious that the translator's level of understanding was different and it would take time, time I did not necessarily have, for us to reach that same level of understanding that I had with my other project teammates on how I work, and more importantly, on understanding the concepts and ideas I was attempting to collect data on. For that reason I targeted the Makushi Researchers. They were chosen because they do have an understanding of working with other researchers and can pick up the ideas of the research quickly. Another element is that they take the time to check if their interpretation is correct, while someone who has never done any research may not. In addition, working with them could potentially provide me with some insight on the communities that I may not know, not having a continuous presence in the communities.

When working in the communities I attempted to dress as simply as possible to suit the usual pattern of dress of the villagers. I tried not to flash any expensive electronics or items around to give people the sense that I have things they do not. I have always tried to simplify the language so that people could understand. Though I must admit I did not always succeed. I tried to follow the lead of the Makushi Researcher on having "small talk" before getting into the interview and while this was fairly easy with those I knew to

speak with or in passing, it was not the case with those I did not know. I am not a very outgoing person, and making small talk can be hard because I am never inclined to delve into people's personal history, though in doing certain kinds of research that is what you need in order to understand the points of view of that person. During the course of the field research I, therefore, had to take myself out of my comfort zone to be able to conduct the individual interviews.

I had some expectation, given my history with the communities, that gaining permission to work with the communities would be easy. This, however, did not turn out to be the case. In addition to the letter seeking permission from the communities with an accompanying project proposal, I made a presentation to the leaders²⁸ of the communities at a NRDDDB meeting. This gave them time to question me about the project, how it would work, my timeline, and how it would benefit the communities. This gave them the information they needed to discuss the research with their communities before providing a response. One community requested my presence to make a presentation to the village before a decision was made (Plate 3-6).



A



B

Plate 3-1: presentation done at Rewa village in response to request before permission was granted for research (Source: S. James)

²⁸ Community leaders are referred to as Toshaos.

There is a growing reluctance within communities to grant permission for researchers to conduct field work in their communities. This reluctance in the first instance has to do with the time demand made on villagers to participate in studies. There is also a high demand made on villagers' time from the increasing number of meetings and workshops that occur in the villages that are organised by Government agencies and NGOs. While I do not have an exact figure, the number of workshops, meetings and research has increased over the last fourteen years. Their reluctance is also linked to perceived lack of benefits (especially financial) and the fact that data or promised reports are not returned to the communities. The issue of community research fatigue is an acknowledged if under researched topic (Sukarieh & Tannock, 2013). Clark (2008) believes that the complaints arise due to the constant repetition, frequency and redundancy of the research being carried out. These three factors certainly hold true for the communities I worked with. I was constantly asked "Why didn't you combine your research with the CMRV surveys" or was told "you know I answered questions like these with CMRV people." These are all ethical issues that need to be addressed from both the national perspective and perhaps the institutions from which these researchers are coming. The expectation is therefore high for me to return not only the data, but copies of my thesis to the research communities.

Many of the research projects conducted in the communities are similar in nature. During the course of my field work there were two other projects being carried out in the research communities. These were the COBRA Project and CMRV²⁹. Both projects had components that touched on community traditional farming. My association with the NRDDDB, responsible for the implementation of these two projects, had community members asking why I was repeating the research done by these projects. I had to explain

²⁹ Community Monitoring, Reporting and Verification: The CMRV project was designed to build the capacity of local and Indigenous communities to monitor changes occurring in community forest to support REDD claims. The project was designed to be linked to the national MRV strategy being designed by the Guyana Forestry Commission (GFC) and was carried out by NRDDDB, Iwokrama, GFC and Global Canopy Programme.

that while my field work was centred on farming and responses may overlap, this was research that I needed to do independently and that some of my questions may differ from those asked by the other researchers.

3.6 Research Ethics

Ensuring the safety of the participants taking part in my research was a necessary consideration. It was important that they were given full details about the research and made aware of their rights in participating in the research before any activity began (see Appendix A). I had prepared an informed consent sheet which outlined the purpose of the research, the main objectives, the role of the participants, their rights and confidentiality of their response and how the data would be stored (see Appendix B). These provided participants with a general overview of what would occur during the interview and what would happen to the data during the course of the research and on completion of the project. In following an ethics process, it may help prevent the development of hostilities between researchers and participants and engender a sense of mutual benefit to the participants and their community if they see the work as a gain not just to the researcher but to the community as well (Bryman, 2012).

This issue is particularly important in the North Rupununi where the villages are heavily targeted for research; academically – individual and institutional, and by NGOs. Following the guidelines set out in the Royal Holloway Geography Department ethics review process and Research Unit at the Environmental Protection Agency (EPA) - Guyana ensured that community members were made aware of their rights including the right to informed consent of participation, the right of refusal to participate, confidentiality and anonymity. In addition, before the research commenced permission was sought from the Environmental Protection Agency – Guyana, and from the villages

of the North Rupununi with overarching consent from the Ministry of Amerindian Affairs.

The EPA application form along with the project proposal was submitted to the EPA in February 2013. Following their review of the application they had follow up questions. In my case it was related to the provision of copies of the raw data following the completion of the research. There is always a question on access to data, especially as it relates to communities. I am reluctant to hand over what I consider community data as there is no guarantee that permission will be sought from either me or the communities for access when handed over, though I was assured by the Department that the data would be secure. The research guidelines require that a copy of the data be provided to the agency. My compromise was to provide a redacted; password protected zipped copy of the data on the completion of the thesis. The communities would also receive a sterilised version of the data as well.

The final research permit was granted by the EPA on receipt of the letter of permission from the Ministry of Amerindian Affairs³⁰ from the communities that permission was granted for the research to take place. This process took some time within the Ministry, delaying the actual start of the field visits to the communities which I had hoped would commence in April 2013. Mine was not the only permission letter delayed. There were a number of researchers awaiting permission to start their research and it was realised that the process for research permits perhaps needed some revision, as such delays affected research schedules and funding requirements. The Iwokrama International Centre, the institution I was locally affiliated with, started the process of discussion so that I was able to obtain my permit.

³⁰ The Ministry has been renamed following the change in Government after the elections on May 11, 2015 to the Ministry of Indigenous Peoples Affairs.

In starting the field work the issue of financial or other benefits was raised. The usual norm in conducting research in the communities, especially group meetings, is to provide a meal during the session whether the meeting last a full day or half day. This is so participants did not have to worry about finding their meals while attending that meeting. However, recently people have been asking about payment for their time or to the community. It is an issue still under debate by the main organisations (WWF, CI, Iwokrama, and NRDDDB) that conduct research within the communities and provide advice to researchers. While working in Surama I was told that the usual procedure would be to provide food hampers or basic items – like sugar to the elder participants. For the other participants nothing is given. This procedure was followed while I worked in the community.

In Rewa I was not asked to follow the same procedure, though it was indicated to me that persons were being paid for their time by another researcher who was conducting their field work at the same time I was there. This could potentially explain the low participation rate I obtained especially among the 25 – 39 age categories. As one villager said when asked if he would be willing to participate in the research

“Researchers come and they ask their questions and then they leave, I get nothing to show for the time” (Male villager, Rewa, July 2013)

As indicated, this is a growing sentiment among communities, especially for those communities that are heavily targeted for research like Surama and Rewa. The issue with paying participants is that a precedent is set that not all researchers coming after may be able to afford. In obtaining permission from the communities to work, one community requested a research fee to be paid to the village. I was willing until they provided the amount for the fee which was set at US\$100. Should each community begin to charge such a fee it would provide an obstacle to researchers with a small operating budget. In my response to the letter that was delivered with their stipulations for working in the

community I explained this difficulty indicating that while researchers may be willing to pay a fee, such a high cost may be out of their budget range. I suggested to the community that researchers may be willing to provide some service to the community that maybe useful along with paying a lower community research fee. For my research I had to withdraw my application to work in the community as the Village Council would not have met on time to review the issue for my application submission to the Ministry of Amerindian Affairs.

During the course of the community visits it was important to stress that participation in the research was voluntary. This was to ensure that people did not feel obligated to participate just because they knew me. As is often the case, the consent process was more informal than originally laid out in the ethics review. Pulling out sheets of paper to read and have participants sign the forms threw up barriers between me and the villagers. The research was explained to each participant, following the informed consent sheet, making sure to give them time and space to ask questions. For those who communicated predominantly in Makushi, my research assistant translated the details of the consent process. Participants were then asked for verbal consent before proceeding with the interview. This process was recorded as part of the interview.

3.7 Data Analysis

The data collected was qualitative in nature and collected from semi-formal interviews, focus groups, and observations. The secondary data obtained was mixed data, both qualitative and quantitative. Only the qualitative data from the secondary dataset was used in the analysis. The data analysis followed the grounded theory approach to analysing the data. A grounded theory approach is an inductive method that results in theories (relationships) being developed from the data collected (Welsh, 2002). The data was imported and transcribed in the software NVIVO (O'Neill, 2013) to easily facilitate

the coding process. The program provided the tools to quickly link similar questions, group similar answers and identify the dominant views being presented. As these connections were made, they were also mapped to continue the process of finding relationships be it direct or indirect. Preliminary review of the dataset brought out many interesting ideas which made it challenging to narrow a few broad themes (see Appendix F for categories and codes). But it was largely the emerging patterns revealed to the author as the data was grouped together that finalised the list.

3.8 Dissemination of Research Findings

As mentioned in the Section 3.3 of this chapter, it is important that this work and the associated data are returned to the communities. As promised to the participants and village leaders, redacted copies of the data will be returned to the communities and a copy will be lodged with the NRDDDB. Copies of the thesis will also be returned to each participating village and NRDDDB. Copies will also be sent to relevant agencies including the EPA, Ministry of Amerindian Affairs and Iwokrama International Centre. It is my intention to return to the North Rupununi to make an oral presentation of the research results to the NRDDDB and produce a simple document of the findings of the thesis that could be easily taken back to be shared with the community members.

3.9 Conclusion

This chapter gives a detailed account of how and where the research was conducted. It highlighted the need to use a multi-method approach to collecting the data necessary to explore and discuss the research questions. As this study involves Indigenous people it is always important to consider the ethics of such research, which has been discussed in this chapter. Conducting research in the North Rupununi requires navigating not only the physical landscape to get to research communities, but the researcher's interactions with

the participants as both a researcher and a familiar face within the villages which was highlighted in the discussion of my positionality.

The next chapter will discuss the some of the main elements of change that occurred within Makushi territory and how this affected their society and influenced the changes that occurred with in culture and practices. The chapter gives a snap shot of historical and contemporary events that had some impact on the Makushi society. Following Chapter 4 are the three empirical chapters discussing the results of the research carried out starting with the main thrust of this research: Makushi as conservationists. The chapter will explore the findings of the document analysis of historical data and present day community perspectives.

Chapter 4 - Winds of Change

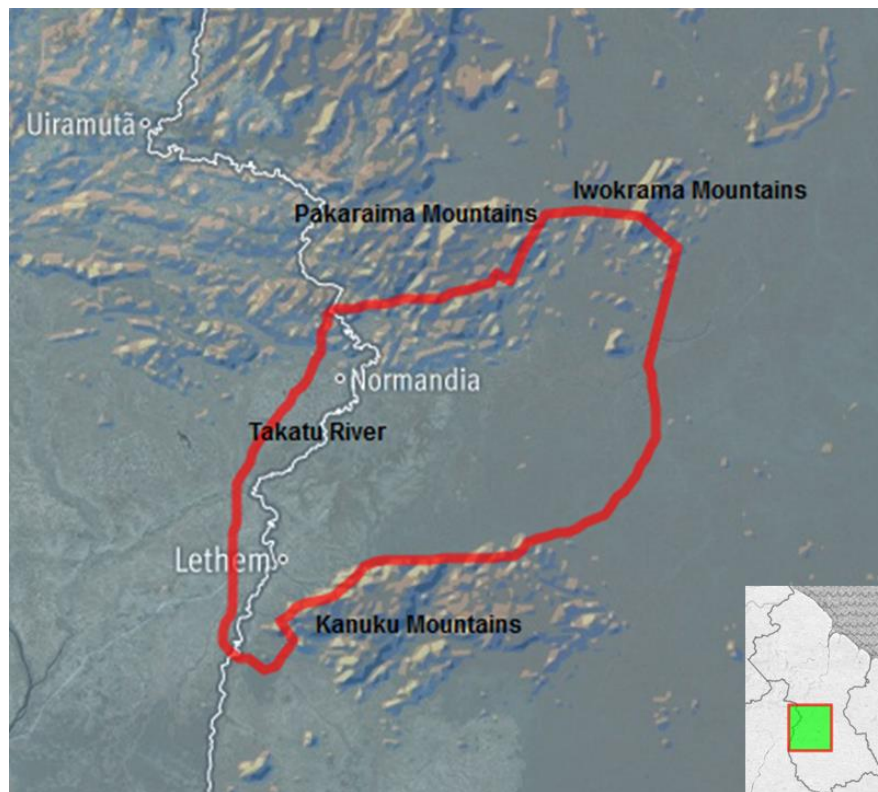
4.1 Introduction

Despite having contact with Europeans since the 17th century, economic development of the Makushi, and other tribes in the Rupununi and other hinterland regions of Guyana have been slow. This slow development has been in part responsible for the maintenance of their culture, but as Myers (1994) noted during her stay in the Rupununi from 1933 – 1944, even the slow penetration of colonisation had done enough to begin eroding the culture and traditions of the tribes.

This chapter will examine some of the main events that occurred within the Rupununi region that had an impact on the tribe and influenced changes socially, ecologically, culturally and economically.

4.2 Brief History

For more than 400 hundred years, the North Rupununi has been home to the Makushi people. I. Myers (1994) along with other literature suggests that the Makushi made their way into Guyana in a bid to escape the Portuguese. The Makushi territory is reported to be between the Kanuku and Pakaraima Mountains to the Iwokrama Forest in the North Rupununi (Wilson et al., 2006) (see Map 4-1). According to Watkins (2010), the Makushi historically referred to their Rupununi home as Pîyakîta – the place of landing. It is estimated that contact was made with the tribe when the Dutch trading post, Fort Arinda, was established near the mouth of the Siparuni River in 1731. Little was known about the tribe until the works of explorers and colonial administrators including Charles Waterton (1828), Robert Schomburgk (1840), Richard Schomburgk (1844), Everard im Thurn (1883) and anthropologists like William Farabee (1924) were published.



Map 4 - 1: Map showing approximate area of current Guyana Makushi Territory (Source: prepared by author in Scribble Maps)

While the Makushi are now permanently settled into villages, traditionally they were semi-nomadic, changing location when the will and demand for resources required (Forte, 1996). The colonisation of the territory by Europeans, in the late 1890s to early 1900s, served to settle the tribe more permanently, especially with the establishment of missions, churches, schools and the introduction of the cash economy (Watkins et al., 2010). Europeans also brought with them diseases when they colonised the area. Colonisation and the consequence of disease on the tribe all had a profound effect on the Makushi psyche and their belief of their continued existence (Henfrey, 1964).

4.3 Time Line

The events that have affected the role Indigenous peoples played in the development of Guyana and how these events have changed them are outlined in Table 4-1. The policies of the Dutch and British colonisers set the course for how Indigenous culture and society would endure including in the Rupununi. In a bid to highlight how Makushi culture was

influenced over the course of Guyana’s history, the following discussions are centred around four main periods of events. These events are post European contact, colonisation of the Rupununi, the Rupununi Uprising and Establishment of Iwokrama Forest. These four periods provide an avenue to discuss how changes unfolded in Makushi territory, and their impacts and potential consequences on culture and traditional knowledge.

Table 4 -1 - Timeline of events affecting Indigenous populations of British Guiana

Year	Event	Notes
1492	Columbus arrived in the West Indies.	It is believed that Columbus may have discovered Guiana on his third voyage in 1498.
1493	Catholic Missionaries began travelling inland of the Orinoco to the Amazon to convert natives	
1532	Johan Gonzalez de Sosa explores Southern Venezuela, laying claim to the province of Guayana. The first story of El Dorado is chronicled.	The location of Manoa is purported to be Lake Amuku in the North Rupununi. In the 1800s Humboldt dispelled the mythical beliefs of El Dorado.
1580	The Dutch contact the Caribs of Guiana and attempt to establish a colony in the Pomeroon.	
1595	A tribe describes as the Iaos, living around the Moruca area is expelled by the Arawak with the help of the Spaniards.	
1596	Walter Raleigh (Raleigh) brings attention to Guiana. An expedition under Lieutenant Laurence Keymisa, from Raleigh’s crew, explores coastal Guiana and identifies three tribes: Caribs, Arawak and Iaos.	
1619	Spaniard Geronimo de Grados is sent from Santo Tome in Venezuela to Guiana to force the Arawak into submission but was captured by the British and Dutch and made prisoner.	
1621	Dutch West India Company was formed with one aim being to protect the Amerindians.	
1648	The Dutch established a colony on the Lower Essequibo.	
1670	The Carmelites established a mission among the Tarumas near the mouth of the Rio Negro.	
1686	Dutch West India Company makes it illegal to enslave Amerindians unless they were already enslaved by their own people.	

1715-1721	Tarumas moved to Guiana from Brazil	
1720	The Manau people revolted against the Portuguese. It is believed they had some ties to the Dutch in Guiana.	
1724	Governor De Iteere ordered the destruction of the Manaikos Indians after being given the impression that they were aiming to war with the settlers.	It is believed that the tribe's only aim was to establish relations with the settlers, but the Caribs aiming to maintain a position of power as middlemen between the tribes and settlers were responsible for the wrong information leading to the response.
1731	Dutch Fort Arinda established near the Siparuni River.	
1735	The Council of Justice commanded that no goods, wives or slaves should be taken from an Indian in payment without written consent of the Commandeur (Commander).	
1738	The first Moravian Christian Missionaries arrived in Guiana to spread the gospel to the Arawak. They were the first to translate the gospels to the Arawak language. Laurens Storm vans Gravesande arrived in Guiana from Holland to take up the appointment of Commander of Essequibo.	
1740	Nicolas Horstmann was sent to explore the source of the Essequibo and identify a route to the Amazon. He was interned by the Portuguese because of his knowledge.	
1743	Gravesande sent Englebert Piepersberg on the same quest as Horstmann. He returned bearing a crystal with sulphur but was never able to location the source again.	
1756	Dutch established a post at the confluence of Essequibo and Rupununi Rivers.	This site is now known as Apoteri, other accounts have Apoteri listed as a Carib village.
1765	There are reports of fighting between the Wapishana and Makushi	
1770	Dutch Government recognizes Amerindian Chieftains	
1776	Portuguese tried to settle the tribes of the upper Rio Branco into six villages but during 1780, 1790 and 1798 the tribes revolted and those not killed were exiled to other areas.	
1778	Protectors of Indians were appointed for each district. A Great Dunbar of Indians was held at Fort Island for the first time.	This is taken to mean a gathering of the chiefs to pay tribute – an annual gift that was given to the tribes

		in return for assistance. This policy was continued by the British until slavery was abolished.
1780	The Makushi and Wapishana flee the Rio Branco and settled the Rupununi after revolting.	
1784	Dutch West India Company decrees that Amerindians should be given ownership to the land they occupied.	
1787	The first cattle were brought to the Roraima State by Colonel Manuel de Gama Lobo d'Almada.	
1790	Makushi living in the Rio Bronco area revolt and are exiled. At the same time Protectors of Indian posts were named in Guiana.	
1803	Britain takes over the rule of the colonies of Essequibo and Demarara.	With the surrender of Berbice, the three counties were collectively known as British Guiana.
1804	Waterton travelled to British Guiana where he spent more than twenty years managing the family plantations and exploring the surrounding lands.	Details of his travels were compiled in the book <i>Wanderings in South America</i> (1828).
1810	Mahanarva, a Makushi Chief, brings news of the existence of Tarumas. An expedition was led by John Hancock, accompanied by Mahanarva, back to the Rupununi. This was the first European expedition to the region since Horstmann had travelled to the Rupununi savannas.	
1813	Hilhouse advocates on behalf of the Amerindians and makes mention of the Altapacha people.	See his work in <i>Indian Notices</i> (1825).
1829	Rev Armstrong established a mission at Bartica Grove.	
1833	Armstrong travels to the North Rupununi to interest the Makushi in starting a mission. The Committee on Indian Affairs was commissioned.	
1834	Rev. Mr. Youd established his mission at Pirara.	Youd was later forced out of the location by the Portuguese.
1835-1839	Robert Schomburgk reported the enslavement of Amerindians from the Rupununi by the Portuguese.	
1836	The Aborigines Protection Society was established.	
1837	Robert Schomburgk makes contact with Wai Wai. Post holders were abolished and annual gifts	

	discontinued.	
1839	Robert Schomburgk points out the decline in Amerindian numbers due to small pox contracted from colonists. Rev Youd of Pirara reports to the Governor of visits to the Tarumas and Atorais. Robert Schomburgk takes Sororeng to England.	Sororeng is reported to be the last of his tribe, the Paravilhana. The tribe was considered a branch of the Makushi.
1840	Robert Schomburgk returns to British Guiana commissioned by the British Monarchy to conduct the surveys for the boundary settlement between the British, Spanish and Portuguese.	
1841	Richard Schomburgk meets the last of the Amaripa Indians.	Richard came to British Guiana with his brother under the commission of the Prussian Emperor.
1841	Youd returned to Pirara with the Schomburgk brothers for a short time. The Pirara incident with Rev Youd sees a confrontation between the British and Portuguese military. The standoff resulted in a neutral zone being created that lasted for 60 years.	The Mission was never re-established. Youd died on his way back to England to make his case for continuing the mission in the Rupununi.
1852	The Alleluia religion created by the Makushi and Arekuna tribes begins to take root.	This religion continues today but mainly among the Arekuna in the Pakaraima Mountains.
1865	DeRooie establish a ranch and trading post in South Rupununi.	Other spelling for the name includes DeRooy and DeRooij.
1868	Barrington Brown conducts geological surveys Guiana interior giving accounts of his encounters with the Indians.	His travels are documented in <i>Canoe and Camp Life in British Guiana</i> (1876).
1877	Everard im Thurn arrives in British Guiana.	He spent a number of years in the colony travelling among the Indians and made the first successful climb to Mt. Roraima from Venezuela's Gran Sabana.
1892	H.P.C. Melville bought out DeRooie's cattle and settled at location known as Dadanawa.	
1890s	John Ogilvie came to the Rupununi prospecting for minerals. He was instrumental in the development of the balata (rubber latex) industry that employed a lot of Amerindians throughout the region.	Ogilvie is also mentioned as being quite knowledgeable of the location by a number of researchers passing through the region including Farabee and Myers. He also wrote a paper on the Wapishana creation story. Ogilvie returned to Scotland

		and his papers were donated to the Penn Museum.
1893	Bishop Swaby revisited interest in establishing a mission in the Rupununi.	
1903	Governor Sweltenham visits the Rupununi.	
1904	11 Amerindian reservations were created.	
1907	Walter E. Roth was appointed Protector of Indians.	
1909	Bishop Galton and Father Cary-Elwes travelled to the Rupununi and established the first Catholic Mission at St. Ignatius. For the Anglicans Rev J. Williams built churches at Yupukari, Annai and Toka.	
1913	William Farabee conducts research in British Guiana on the Central Arawaks and Central Caribs.	This included works on the Makushi culture.
1920	Opening of the cattle trail to Berbice to supply cattle to the coastal population.	Trail was completed by H.P.C. Melville.
1931	Walter Roth translates materials from the Schomburgk brothers making the material accessible to the people of the colony.	
1932	James Williams address the issue of Amerindian land ownership in a paper The Aborigines of British Guiana and their Land.	Anthropos 1936 Vol 31 pg. 417 - 432
1933	Iris Myers begins 10 year study of Makushi.	
1946	New Department of Interior was created to protect Amerindian rights. Medex program started in the Rupununi to train Amerindian Medical Rangers to administer anti-malarial drugs, worm medicines and other first aid treatment.	
1946	The Government Station, Bon Success, was renamed Lethem to honour outgoing Govern James Lethem who governed from 1941 to 1946.	
1948	Peberdy Report on state of Amerindians in Guyana was tabled recommending sweeping changes that would improve the social and economic wellbeing of the natives but the recommendations were not implemented.	
1951	A new Amerindian Act was put in place to guide policy concerning Amerindians.	This Act is largely based on the Aboriginal Indians Protection Ordinance of 1902. Amendments were made in 1953.
1957	Stephen Campbell was elected, Sept 10, as the first Amerindian Parliamentarian, running on the Labour Front Party ticket. He won the only seat for the party.	
1962	The Amerindian Scholarship Program was initiated to support students attending further	

	schooling in the capital of Georgetown.	
1966	Stephen Campbell travelled to London in advance of the upcoming declaration of British Guiana's independence to ask the Queen for Amerindian land security. This resulted in the establishment of the Amerindian Land Commission. Guyana declared independence from the British Empire.	
1967	Amerindian Chiefs met at Kabakaburi, Pomeroon; agreed to the resolution for the joint development of Essequibo by Guyana and Venezuela. The chiefs were later pressured into denouncing the resolution and express loyalty only to the Government of Guyana.	
1968	The film, Gift of the Forest, was released in the US based on the book written by R. Lal Singh who spent the first 10 years of his life living among the Makushi.	
1969	The Rupununi Uprising led by the ranching families Harts and Melvilles was quickly quelled. Resulting from these actions was the first Amerindian Leadership Conference to be held to discuss Amerindian issues. The Amerindian Land Commission Report is released.	Little was done on the Land Commission recommendations in the issuing of land titles until the early 2000s. This process is still ongoing.
1972	The Amerindian Research Unit was established at the University of Guyana.	
1974	Walter Roth Museum is established.	
1976	Amerindian Act of 1951 is amended. Amerindian Scholarship Program is renamed the Hinterland Scholarship program to include non-Amerindian hinterland dwellers with similar circumstances.	
1982	The Anglican Diocese establishes the Alan Knight Training Centre in the North Rupununi offering a 3 year program for those chosen to the program.	
1990	The 1976 Amerindian Act is amended.	
1991	Amerindian Peoples Association and Guyana Organisation of Indigenous Peoples were launched.	
1992	The Iwokrama Forest was gifted to the world at the Rio Earth Summit. The Ministry of Amerindian Affairs was established.	The offer of Iwokrama was made previously at the Inter-Tropical Timber Organisation heads of Government meeting in Kuala Lumpur in 1989 to help combat tropical forest deforestation.

1994	Amirang – a national gathering of tribal members was held in Georgetown and hosted by the Amerindian Research Unit.	
1996	Iwokrama Forest Act passed into law, legally establishing the Iwokrama Forest and its managing entity the Iworkama International Centre for Rainforest Conservation and Development. The North Rupununi District Development Board was established to represent the interests of the Makushi communities of the North Rupununi in Iworkama's management and advocate community issues to government and other organisations	
1998/1999	The community of Surama starts exploring community based tourism.	
2003	The Makushi Language Project was launched to teach the language in several schools in the Rupununi. The Kanuku Mountain Community Representative Group was established for the associate communities to engage in the process of negotiating and planning the development of the Kanuku Mountain Protected Area.	To date 7 of the 9 tribal languages have been converted to written languages. Current President Granger has promised funding to continue this work.
2003	The Presidential Grant was established providing Indigenous communities with a yearly grant to complete a project of the community's choice.	
2006	Amerindian Act of 1976 was revised and passed into law.	The Indigenous peoples have called for a revision of the Act to look at certain issues related to land titling and sub-surface rights to minerals. The current Government has committed to the process.
2006	First National Toshias Conference was held.	The new Amerindian Act mandated the establishment of a National Toshias Council that allow the meeting of Amerindian leaders in one location to discuss issues of relevance.
2007	The Wai Wai declared the first community owned conservation area for Guyana in southern Rupununi.	
2009	The Government of Guyana signed a MOU with the Government of Norway which provided funds for Guyana's low carbon development.	One of the items funded under this agreement was the completion of the land titling and demarcation of

		Amerindian lands. Funds were also set aside to fund sustainable economic developmental programs for the communities.
2011	Protected Areas Act came into enforcement	Two protected areas were declared in Indigenous areas; Shell Beach Protected Area and Kanuku Mountains Protected Area.
2012	North Rupununi communities helped to pilot the first climate change community monitoring, reporting and verification project in Guyana.	This program is now being extended to other communities in the Rupununi.
2012	Project COBRA explores how to document and exchange community owned solutions from the North Rupununi to the Guiana Shield.	
2015	South Central Peoples Development Association awarded Equator Prize for developing an innovative land use plan and living digital map of their traditional lands to promote secure land rights and socio-ecological resilience.	

Source: Balkaran (2007), Harris (1967), Baldwin (1946). Henfrey (1964), Menezes (1977), Schomburgk (1840, 1844), Roth (1948)

4.3.1 Post European Contact

The Makushi were believed to be a hunter-gather society, some 7000 years ago, that lived on the available resources on a subsistence basis (Plew, 2005). Given the wide variety of resources available, the Makushi maintained themselves through hunting, fishing, farming, and gathering of non-timber forest products. Where certain items were lacking, the tribe traded (bartered). According to Baldwin (1946) the Makushi would trade with the Wai Wai, using the Wapishana as middle men, exchanging Curari poison for the flint rock grater needed to prepare cassava³¹.

This tradition of bartering extended to include the European travellers passing through the region during the early to late 19th century. Travellers embarking on expeditions across the region exchanged items like beads and iron utensils for services rendered or food

³¹ *Manihot esculenta* – is the main food item in the Amerindian diet.

supplied by the tribes (Rodway and Watt, 1888) . The idea of economic development for the Rupununi and changes in the social and economic circumstances of the tribes of the Rupununi, as a whole, did not change until European colonists started to make the Rupununi their permanent residence around the late 1890s to early 1900s.

Before the colonisation of the Rupununi, the Indians were mainly left to their own devices. It was the policy of the Dutch (they published a number of ordinances that protected the Amerindians and their property) and later the British to allow the tribes their freedoms (Menezes, 1977). The Amerindians also maintained some distance between themselves and the Europeans, indicating the desire to retain some independence (Thompson, 1987). In Menezes's (1977) review of Dutch and British policies towards the Indians, it was indicated that the Dutch were sensitive to the Indians' reaction to Spanish rule and therefore, made every effort to indicate that trade was their main interest.

As the Dutch settlements thrived, due to their commercial enterprises; the increasing numbers of African slaves on the plantation, and the increasing hostilities of the Spanish, the Dutch saw the value of having a strong alliance with the Indians. Every effort was made to strengthen and prolong the relationship. This was done through Treaties of Friendship and the bestowing of small gifts and food to every member of the tribe. Menezes (1977) noted that the Dutch also established the position of post holders at various locations to maintain contact with the Indians. This serves to attract Indians to those locations and increased the potential for expansion and development of other commercial activities.

When the British took over the Colony, while they maintained many of the Dutch systems, their relationship with the Indians was not immediate. It was noted by Menezes (1977) that it was on the advice of Colonel Hislop that action was taken to engage the Indians using the formula of the Dutch. The Dutch and British had a seemingly hands off

policy when dealing with the Amerindians their presence did effect some changes for the tribes. Thompson (1987) identified the effects of disease, the Indian slave trade, intense warfare relating to trade and forced migration as being among the factors that effected change among the tribes.

One of the main focuses of Thompson (1987) was how migration pushed the tribes together. As the Dutch established plantations on the coast and the Spanish launched incursions into Guiana, tribes such as the Caribs³² moved inland. Movement of colonials and other warlike tribes in bordering Brazil also pushed such tribes as the Makushi further into Guiana (Myers, 1993; Thompson, 1987). This movement of the tribes caused contention especially as it related to establishing trade agreements with the Dutch and the trafficking of slaves for the plantations. There are however, few records that document the tribal wars³³.

The desire to keep some distance between their groups and the Europeans meant they could determine what from this new culture would be allowed into their lives and what would stay out. The interactions between the two groups would have also served to increase exchanges in technologies. Myers (1993) speaks of the desire by Amerindians to possess metal implements such as knives and cutlasses. These implements they would have seen as useful as and more efficient than the stone axes. However, the establishment of the missions would have encouraged change among the Amerindians, especially those who came to stay. The mission teachings would have changed how they saw themselves and the things they believed in. They used the law to influence some elements of Amerindian culture, like the presence of the piaiman. According to Myers (1994) the Aboriginal Indian Protection Ordinance of 1911 prevented the piaimen from practicing

³² The Carib is a coastal tribe. They moved as far inland as the Rupununi in a bid to promote trade as well as removing themselves from the pressure of European settlement. They eventually came back to the coast and resettled in Region 1.

³³ Some of the elders remember some of the places they were told had significance during the tribal wars such as Awaramay, Rewa's farming ground.

their craft on the reservations that were created. If they were caught, they were evicted. This would have denied the tribe both spiritual council and healer. The piaimen took to roving from one mission to the next to serve the tribe.

While certain areas of their culture were being attacked, Amerindian knowledge of the environment and their practices remained intact. While the Rupununi became colonised and the Amerindians were able to find work associated with the various enterprises taking off, no attempt was made to assist them in achieving economic independence (Roth, 1948). This meant that the tribes were still heavily dependent on the forest and farming to survive. In addition, many of the jobs, such as balata bleeding, required knowledge of the forest and where the trees could be found. These activities therefore, keep the tribes such as the Makushi in close relations to the forest.

4.3.2 Colonisation of the Rupununi

The main thrust to colonise the Rupununi started with the idea that raising cattle would be a lucrative business in the region, as the savanna would supply the grass needed to feed the cattle (Schomburgk, 1840). The boom in the balata (rubber latex) industry in Manaus, Brazil provided another resource that could be exploited (Baldwin, 1946). The start-up of these two industries during the early 1900s provided incentive for other colonists to explore the region for economic opportunities. Gold mining and timber were very minor industries until contemporary times. The cattle and balata industries were run by the colonials (Roth, 1948). Little effort was expended on developing the economic power of the tribes, despite the urging of the Peberdy Report³⁴ (Roth, 1948). The tribes were, however, used as labourers for these enterprises.

³⁴ The Peberdy Report - Report of a Survey of Amerindian Affairs in the Remote Interior of British Guiana – was written by Philip Peberdy, curator of the British Guiana Museum and Welfare Officer for the Amerindians in the 1940s. The report advocated for the social and economic development of the Amerindians but his recommendations were never taken on.

4.3.2.1 Cattle Trade

The wide stretch of savanna was touted as having great appeal for ranching, especially since that activity had been taking place on the Brazilian side of the border for some time (Baldwin, 1946; Schomburgk, 1848). In 1860, a Dutch trader, named De Rooij, made the Rupununi his home. He brought a bull and cow over from Roraima state and expanded the herd. In the 1890s when De Rooij retired back to the coast, Melville³⁵ bought the herd from De Rooi's heirs (Baldwin, 1946). With a boom in the balata industry in Manaus, Brazil there was a demand for meat and part of that demand was met by the ranches in the Rupununi (MacDonald, 2014). However, when the market in Brazil collapsed in 1917, alternative markets had to be found and the Government of British Guiana was persuaded to obtain their meat from the Rupununi. To get the cattle to the coast, a cattle trail was developed which ran from the South Rupununi to Annai (North Rupununi) through the forest to Kurupukari, crossing the Essequibo River and onto Takama on the Berbice River. The cattle were then moved by steamer from this point down river to New Amsterdam and then to Georgetown.

Following World War II, the use of the cattle trail diminished and was considered closed by 1953, as the government provided heavily subsidised flights from Lethem to ship the beef (Baldwin, 1946; MacDonald, 2014; Watkins et al., 2010). However, the atmosphere in the Rupununi following Independence, gained in 1966, was one of uncertainty for some of the ranchers of European descent, especially the Melvilles and Harts. Feeling politically threatened about their future, they led an uprising against the government in January 1969. This caused a collapse in the cattle industry as the government withdrew support of flights to airlift beef and in essence isolated the region further by reducing

³⁵ H.P.C. Melville was a Scot born in Jamaica. He made his way to Guyana and travelled to the interior to mine minerals. He was abandon on the banks of the Rupununi River when members of his travelling party gave him up for dead due to sickness. He was found by members of the Wapishana tribe and nursed back to health. He decided to stay with the tribe. He married two sisters and had ten children. He was later appointed a magistrate and Protector of Indians for the region.

access (Danns, 2014). There was an attempt to reuse the cattle trail following the uprising but it was only in a limited capacity (MacDonald, 2014; see section 4.3.3 for further information).

4.3.2.2 The Balata Industry

Balata³⁶ was the Rupununi region's oldest and most important industry. It was introduced in 1900 at the peak of the industry (Baldwin, 1946). In its heyday the industry produced close to 1 million pounds of latex and employed close to 700 people, half of which were Amerindians (Baldwin, 1946). The bleeders worked from April/May to October/November, bringing out their produce to the collection deposits, at Karanambu, Apoteri or Sand Creek, for payment. However, by the 1940s, the quantity of latex being shipped had been reduced by over half the previous quantity. Like the cattle industry, this industry collapsed due to lack of an international market (the natural product being replaced by synthetics) and restricted access to the location following the rebellion (Watkins et al., 2010).

4.3.2.3 Makushi and the local industries

While both the cattle and balata industries offered wage opportunities for the tribes of the Rupununi, their impacts on the tribes were quite different. Literature suggests that the Wapishana fared better than the Makushi when the region was colonised, especially due to access to the south (Baldwin, 1946; Roth 1948, Henkle 1963). In the south, grazing rights were granted to the Rupununi Development Company (RDC), creating the Dadanawa Ranch, the largest ranch in the Rupununi. While this ranch was formed in a large part of the Wapishan territory, the tribe had unrestricted access to the remainder of their territory in which to continue living as they chose. The management of the

³⁶ The latex is no longer harvested in the quantities it used to. Today crafters used the latex to make rubber figurines for sale to tourists.

Rupununi Development Company interfered little with the tribe and provided assistance where it was needed.

In the case of the Makushi the situation was more disruptive. With ease of access to the northern Rupununi, more grazing permits were issued creating a number of smaller ranches in the Makushi territory. The treatment of the Makushi by the ranchers was also different to that of the Wapishana by the RDC. The ranchers had more influence on what was happening to Makushi way of life. Already influenced by Portuguese culture due to the continued movement of the tribe between British Guiana and Roraima State, Brazil; the Makushi were more susceptible to additional disruptive influences; looking to conform and fit in. Makushi were looked on as servants providing for the needs of their employers.

Many became dependent on the rancher, seeming more like serfs, having abandoned their means of self-sufficiency, as their needs were supplied by the rancher (Baldwin, 1946). It also provided ranchers with the power to victimise the Makushi. If cattle from the ranch invaded and destroyed fields and compensation was sought for damaged property it was denied and the complainant told to fence his field or move to the forest (Baldwin, 1946). The Makushi were also vulnerable to being kicked off the land upon which they lived. Their semi-nomadic nature made it impossible to indicate previous establishment on a piece of land before grazing permission was issued. It meant that should the rancher disagree with the group they could be thrown off the land.

The Makushi were, therefore, forced into the option of either moving to the established reservations at St. Ignatius or Karasabai³⁷ or heading further north to the fringes of the forest. Following the drought of 1941 and the continued battle with diseases, many

³⁷ 11 Reserves were established by the British Guiana Government for the Amerindians. Many of these were managed by the Catholic Mission.

moved north to the Annai area. But the situation with the ranches, disease and environmental setbacks created a doom and gloom pessimistic outlook in the Makushi.

The main consequence of the colonisation of the Rupununi was the dispossession of the tribe of their land. This action would have served to create some disconnect between the tribe and the land. Depending on the desires and feelings of ranchers, the Makushi were limited to the areas where they could potentially access much needed resources. This in turn would have affected the transmission of knowledge used to collect those resources and in knowing the land where those resources could be found. Another element to consider is in being cut off from certain resource use areas, the tribe may have only had limited areas to visit for resources and thus increased the pressure placed on those resources. This was seen happening at the mission at St. Ignatius where the fish resources were depleted (Lea, 1968).

4.3.2.4 The Makushi and the Church

The British Government paid little attention to the “civilizing” of the Indians (Schomburgk, 1840). It became the work of the various Mission Societies to provide religious instructions, schooling and guidance to proper etiquette when in polite company. Missionary efforts in the colony began around 1829. Bemaud and Youd were the main figures in that effort. Most of the work was done with the coastal tribes as they were within easy of access. A mission was set up at Bartica Grove, at the mouth of the Essequibo and Mazaruni Rivers. From there the missionaries could move out to visit the communities or the Indians could visit.

Youd made an effort to venture further inland to work with such tribes as the Patamona and Makushi. He first visited the Makushi in 1835 and was determined to establish a mission at Pirara. But it would take him three years to return to Pirara. Despite this setback, his impression on one of the Makushi chief was enough to have him visiting Youd

at Bartica Grove Mission (Veness, 1869). That same chief would be instrumental in helping to establish a permanent site at Pirara for when Youd finally returned to the location was to find a thriving village with a European style building erected for him to live and hold his lessons (Bernau, 1847). However, within months of settling in the village was taken over by the Portuguese and Youd expelled. He established a site at Waraputa on the Essequibo but never made it back to Pirara due to ill health and a decision made by his Mission Society to avoid conflict (Schomburgk, 1848).

It was another sixty years before another Mission returned to the Rupununi. In 1909, Bishop Galton, accompanied by Father Cary-Elwes undertook the trip to explore the Rupununi and identify a location for establishing a Catholic Mission (Guyana Jesuits, 2011). The Mission was built at a site called Zariwa and named St. Ignatius. From there Father Cary-Elwes could travel out to visit the various villages. Since the establishment of St Ignatius, there has been a continuous presence of Catholic Priests in the region but their main areas of work remain Central and South Rupununi and South Pakaraima Mountains.

It was the Anglicans who were able to establish a presence in the North Rupununi. First Mission is believed to have been established in 1902 where the village of Yupukari now stands, within proximity of Pirara. As villages established themselves in the North, the priests would go out to visit. Over the years both denominations built a network of schools to provide education for the students and adults if there was interest. The priest also provided medical services to the communities for the more common western diseases (Guyana Jesuits, 2011).

The establishment of the missions had a profound effect on the Amerindians. One of the first things was the establishment of villages near to or on the mission site. The village of St Ignatius for example has grown up around the Mission. This had implications for how

resources were used within close proximity to the villages. As mentioned in section 4.3.2.3 resources such as fish were heavily impacted due to increase use and higher off take. In order to communicate with the tribes the priests had to learn the languages. Many of them were known to speak them fluently. One of the offshoots of having to learn the language was working out the linguistics and as such efforts were made by some of the priest to document the language. Williams (1932) was one of the first to have an in-depth documentation of the Makushi language based on his work in Yupukari.

Other impacts the mission had on tribal culture related to language and practicing certain traditions. In the schools all students had to learn English. They were therefore, forced to stop speaking their language while in the classroom. They were beaten if they spoke their native tongue. In discussions during the COBRA Project, some community members indicate that they felt they were doing something wrong when they spoke their language and began feeling ashamed to speak it, many chose to stop speaking the language because of that, especially when in a public space.

In addition, because of the rules of the church, many would be forced to reduce the amount of local alcoholic beverages that could be consumed. That would translate to such cultural activities like the Parishara, which requires imbibing large quantities of local drink, not being carried out. It would also mean that tribal members would be discouraged from participating in traditional practices that may invoke or pay homage to other spiritual beings.

Today there are a number of Christian denominations established in the Rupununi that espouse many of the impacts highlighted above. While still one of the smaller denominations, Islam is also taking a foothold as, locals marry into the faith. The rules that are being imposed on the tribes through religion are having profound effects on the fabric of their culture and its continued degradation.

4.3.3 Rupununi Uprising

After World War II, a medical ranger program was put in place to deal with the medical issues facing the tribes (Roth 1948). Health wise there were improvements among the tribe but the situation between the tribe and the ranchers had not improved.

The perpetrators of the Rupununi Uprising were mainly members of the Melville and Hart families (Mistry et al., 2013; Nath, 1970). These were the descendants of H.P.C. Melville (mentioned in section 4.3.2.1). As his children married, Melville secured land for them in the North Rupununi. It was Melville's eldest daughter that married a Hart (Nath, 1970). When the Dadanawa ranch suffered financial setbacks most of the Melvilles left the south and settled on the ranches in the North. The living was hard and obtaining supplies was expensive (Nath, 1970). The ranches being worked were on short term leases from the Government. The leases were issued first for one year, followed by five years, and if the necessary investments were made – stocking and building - a twenty one year lease with option for renewal was granted (Granger, 2009; Nath, 1970). It is believed that the Melvilles and Harts were looking for a more permanent solution to this situation – full ownership of the land. Unfortunately, the Government did not grant such concessions to the ranchers³⁸.

On the other hand, the Amerindians found favour in the political party United Force (UF). This party saw the first Amerindian into Parliament, Stephen Campbell. Campbell foreseeing the successful bid for independence began petitioning the British Government to secure the rights and lands of the Amerindian people (Nath, 1970). An agreement was struck prior to the formal handing over of the country and a Commission was put in place to consult and make recommendations for securing Amerindian lands. One such

³⁸ Government could not deal with issuing land titles to the ranchers without first dealing with land title issues of the Amerindians. The Land Title Commission's report was not released until later in the year of the rebellion.

recommendation was the releasing of lands under lease back to the Amerindians (Nath, 1970). This placed the ranchers in an untenable situation.

As a group, the ranchers also supported the UF. However, their sense of isolation and insecurity increased when the UF was released from the coalition partnership it was in with the People's National Congress (PNC) before contesting the 1968 national elections. Further, news of a government proposal to grant lands to West Indian settlers spurred the group into action (Nath, 1970). Allegedly with some support from the Venezuelan Government, the group of ranchers and Amerindian supporters staged an uprising for secession of the Rupununi from Guyana on the 2 January, 1969. The skirmish was quickly put down and the rebels fled to either Brazil or Venezuela (Danns, 2014).

The consequences for the Indigenous population after the Uprising were both positive and negative. When the ranchers fled, the Guyana Defence Force (GDF) burnt the ranches and out stations and the lands reverted back to the Government (MacDonald, 2014) . This cleared the way for the issuing of land titles for Makushi (Granger, 2009). Granger (2009) also alluded that the removal of the rancher class was an opportunity to socially integrate the Amerindians into the wider emerging Guyanese society. The Amerindians, however, feel that the consequences from the Uprising were an unjust continued isolation, and the closing down of their livelihood and development (Mistry & Berardi, 2012; Mistry et al., 2013).

While the Government did not completely abandon the people of the Rupununi, efforts were slow in fostering development. In addition, with the ranches destroyed there was now little opportunity for work except the failing balata companies (MacDonald, 2014). One of the results of the isolation was that more people looked to Brazil for work opportunities but mainly the Makushi had to depend on their subsistence lifestyle to see them through. This forced isolation slowed the degradation of their culture, traditions and

practices. It kept the people connected to the land as this was their main source of survival.

4.3.4. The Iwokrama Rainforest Programme

For much of the 1970's and 1980's the Rupununi remained isolated from the coast with access only by the regularly scheduled flights to Annai and Lethem. This began to change with the Brazilian government's push to develop the old cattle trail into a road to link Brazil's interior to Guyana's deep water ports and the Caribbean markets (MacDonald, 2014). According to MacDonald (2014) a number of agreements were signed between the two governments for the road's development. In 1989, the Government of Guyana agreed to allow the upgrade of the trail to an all season laterite road.

4.3.4.1 Road Access

Prior to 1992, the Rupununi was a fairly isolated region. The location was reachable only by plane, boats in the rainy season and by trail in the dry season. 1992 saw the opening of the laterite road linking Lethem to Linden and onwards to the capital city of Georgetown. Access to the area was still difficult as the road deteriorated rapidly during each rainy season but that has changed greatly over the last 15 years. A trip that used to take almost two weeks or more in extreme cases can now be taken in less than 12 hours. The rainy season, however, still presents a challenge to traffic as there are sections of the road that degrade quickly with the rains.

Despite setbacks with the road, the changes that have come to the Rupununi with increased access have been rapid. The influence on the local culture which had previously been almost exclusively Brazilian, from the neighbouring Roraima State, now included influences from the Caribbean and North America. There has been increased access to information and technology, and changes in food, clothing and music. These have influenced the way the people perceive themselves, their culture and practices;

especially among the youth. The interests of the people are changing as they gain exposure through the internet and contact with tourists, researchers and personnel from non-governmental organisations especially Iwokrama. These were some of the changes witnessed with the opening of the road in 1992. It provided opportunities for community members to engage in myriad of commercial activities, especially expanding their agricultural opportunities. Some are also able to engage in paid employment with the expansion of shops in Lethem and within the communities.

4.3.4.2 Coming of Iwokrama

The opening of the Linden – Lethem road occurred at a time when concerns for tropical forests were growing. During that same year, the Government of Guyana reiterated its offer to establish a living laboratory for tropical forest management at the Rio Earth Summit. That offer was accepted and an agreement was inked between Guyana and the Commonwealth Secretariat to establish the research site. It took four years to consult on the boundaries of the Iwokrama Forest, establish its mandate, and draft and pass the Iwokrama Act. The Iwokrama Rainforest Programme began implementation of Iwokrama's mission by first exploring the forest and beginning to understand the communities that bordered the forest and their needs. While scientists from reputed research institutions documented the flora and fauna of the location, the Amerindian Research Unit, at the University of Guyana, was contracted to write a report outlining the culture of the people and their relationship with the Iwokrama Forest.

To facilitate gathering the data needed for the report, Janet Forte (nee Bulkan), an academic at the university, coordinated the project and worked with a group of Makushi women from each of the communities. This group was formed with the hope that they would continue documenting Makushi culture and life beyond the scope of the project. They became known as the Makushi Research Unit (MRU). Beyond the report generated for Iwokrama's purposes, the data was used to produce the book *Makusipe Komanto*

Iseru: Sustaining Makushi way of life (1996). The work of the MRU has become very important. They have worked with their Brazilian counterparts to establish the written format of their language and develop a Makushi dictionary. They have advocated and gotten approval for the language to be taught in the schools. They have helped to shed light on some of the social issues facing their communities such as alcoholism and domestic violence. But most importantly, the MRU take the time to pass on the knowledge they have gained from the elders to the younger generations and providing much needed advice to those who come to research and interact with the villages.

The establishment of Iwokrama spurred the communities to get organised. In 1996, the NRDDDB was formed to act on behalf of and represent communities' issues, engaging with Iwokrama, government agencies and other stakeholders. The role and function of the NRDDDB has expanded since then, providing a platform to give support to their constituent communities, while allowing stakeholders to meet and discuss issues of interest. Iwokrama's mandate is to engage with the communities and other stakeholders where necessary on the management of the Iwokrama Forest. Their core programmes for research and training are centred on sustainable management of the tropical rainforest, conservation and utilisation of biodiversity, forestry research, sustainable human development and information and communication. To erase any misunderstanding caused during the consultation process, Iwokrama first engaged in a prolonged outreach program to ensure that people understood the purpose and mandate of the organisation. They also engaged in education awareness relating to conservation issues and sustainable development.

4.3.4.3 Iwokrama, the communities and conservation

The outreach programme that was carried out by Iwokrama focused on defining conservation and sustainable development. There was heavy emphasis on stressing the link between Iwokrama's mandate and Agenda 21, especially where it relates to working

with Indigenous peoples. As mentioned above, it was believed that the community members should play a role in the management of Iwokrama but Iwokrama should also work to benefit the communities. To this end, a leader was elected to be a representative on the Iwokrama International Board of Trustees. In addition, Iwokrama supported and took part in the quarterly meetings of the NRDDB to provide general updates on programme activities. The communities were consulted on the many acts of managing the Iwokrama Forest and in return Iwokrama kept a constant presence in the communities.

Iwokrama's conservation engagement with the communities was on two levels; social and environmental. The Social Sciences Unit (SSU) works with the communities on ideas such as conservation contracts, community resource mapping and building capacity of community members to become community environmental workers. The conservation contracts³⁹ provided the communities with small grants to choose and establish a system to conserve an area of importance on their village lands. Over a three year period the SSU worked with the thirteen communities to document⁴⁰ and map their community resource use areas. The program was both desktop and ground truthing⁴¹. This program presented communities with resource use maps they could use for future planning of resource use. This process is ongoing as the communities continue to document how their resource uses are changing. Another program to help build the capacity of community members was the Community Environmental Workers (CEW), which trained people to assist the village councils deal with environmental issues.

From the environmental view point, the Wildlife Unit (WU) worked to build capacity in resource management and wildlife conservation. In the first instance, the WU worked with the communities to establish wildlife clubs. These clubs are run by students with

³⁹ Conservation International is now engaged in a similar idea of helping communities design strategies to sustainably use and conserve resources. The program in Iwokrama had limited funding but many communities have maintained or are able to use those sites in a sustainable manner.

⁴⁰ The process used a method call participatory human rural interactive appraisal.

⁴¹ Ground truthing is the physical verification of a location on the ground.

adult supervision, mainly the CEWs, teachers or graduated club members. Club members were introduced to ideas such as using citizen science to explore their environment and why it's important to monitor the environment and resources used. One element of interacting with the clubs was to link scientific knowledge with local knowledge e.g. documenting what is known about key species of trees and then verifying that information using phenology transects⁴².

Club activities culminated with the annual Wildlife Festival centred on a theme about the environment and their culture chosen by the children. At the festival, club members discuss issues of social and environmental importance and celebrate their Indigenous culture. Tracking the progress and development of club members from their time in and out of the clubs led to the idea of the conservation leadership ladder (see Hiebert and Commonwealth Secretariat, 2013 pg. 37-38) coined by Samantha James. The ladder shows how club members utilised the opportunities given to them within the clubs to become community leaders championing environmental issues or how the skills gained helped them in the world of work.

While the SSU and WU led the way in helping to build community capacity, Iwokrama in general added to their dimensions of learning and networking. As many organisations and resource persons visited the organisation, every effort was made to have them engage with the communities as well. This exposed them to many issues and ideas being discussed and developed in the world of conservation. This helped to increase their level of conservation awareness and also emphasised how important maintaining their culture and traditional knowledge had become.

The emphasis placed on maintaining and strengthening Makushi culture gave birth to the idea of the Bina Hill Institute Youth Learning Centre (located in Annai). The idea was the

⁴² Phenology transects are used to note the cycle of trees like when they are fruiting, flowering, shedding leaves, putting out new growth.

brain child of now Minister of Indigenous Peoples Affairs, Mr Sydney Allicock. He recognised that not every child made it through the formal education system and as such wished to have a space where youth could learn skills and be exposed to ideas that were practical for them to live sustainably. This included doing courses in forestry, natural resource management, agriculture and blending it with their traditional knowledge. The Institute encourages the use of Indigenous language and continues to expose young people to social and environmental issues their communities are facing, from climate change to drug use.

The work that Iwokrama has done with the communities has raised awareness amongst the Makushi about the need to maintain and strengthen their culture, and this has spurred many of the responses discussed in Chapter 7. But along with that awareness have come the introduction to new technologies, new kinds of knowledge, new ways of interacting with people, new economic associations. This has changed the way they think about themselves and the ways they consider to manage their land and resources. They have been able to grasp how important the outside world views the knowledge they hold and the practices they use. But while the older generations have and are utilising the political and economic capital they provide, the younger generation has yet to understand that importance. They have been quick to look to the new knowledge as the way to solve their current problems. But as is part of the dynamic nature of traditional knowledge, the new information collected will go through the process of being tested, and verified against traditional practices and incorporated into their social memory where they see fit as is suggested in Chapter 7 section 7.2.

4.3.5 Other conservation organisations

Iwokrama is not the only conservation organisation working within the Rupununi that have influenced the way communities now value their knowledge and culture.

Conservation International – Guyana (CI-G) and the World Wildlife Fund – Guyana

(WWF-G) have been working in the Rupununi region for approximately 20 years. CI – G has been working mainly in the south Rupununi with the Wai Wai and the Waphishan people during the consultations to demarcate the Kanuku Mountains into a protected area. Their relationship with the Makushi began when they started exploring the idea of using conservation concessions⁴³ as a means of protecting forests. WWF – G’s relationship with the Makushi is over ten years working to conserve the Arapaima fish.

The earlier programs of CI-G and WWF – G focused on the conservation of biodiversity. Many of their efforts were geared to conducting biodiversity surveys, and strategizing for species conservation and environmental awareness. In recent years, both organisations have re-evaluated their focus to be more people centred. CI-G has embarked on a number of programs that focus on community resource management and planning, and developing sustainable livelihoods. In the same vein WWF-G has been working to develop more participatory approaches in achieving their conservation goals. Their focus has been to work with communities to be more engaged with climate change mitigation activities. Some of these activities aim to integrate traditional knowledge with scientific techniques to monitor forest and other resources.

4.4 Conclusion

This chapter looked at some of the elements that contributed to change within the Makushi culture. From first contact to contemporary times there has been a slow decline in culture, traditional beliefs and practices. The decisions made by colonial settlers, from the Dutch to the British, first shaped the Makushi interaction. The choice to leave the tribes to themselves allowed the tribes to choose what level of interaction they wanted

⁴³ The premise was to pay the Government the royalties inherent if the concession was operated as per a normal timber concession. In 2008, Conservation International – Guyana applied for and was granted such a concession in the Upper Essequibo area. They held the concession for about 5 years before ending the programme.

with the colonisers and continued their ability to determine how they lived and utilised their resources.

The decision to settle the Rupununi stole that choice from the tribes. They had no say in how their land was allocated to others. Contact with these colonials brought some amount of conflict, opportunities for employment and cultural change. Colonisation forced the issue of having more permanent settlements and changed resource use patterns. Colonisation also brought the market economy to the region and the Makushi as well as the other tribes into the system. But for many while they were employed they were less likely to hold onto that money for long.

Colonisation also brought many changes to the social fabric of the tribe. Myers (1994) mentioned the decline in the quality of craft material being produced as obtaining steel implements held more prestige. Contact also brought disease. This disrupted the social order of the tribe with losses to the elder and parental generations. These reduce the capacity for the transmission of the knowledge and practice. In addition, this colonisation brought the missionaries which brought added change in their religious beliefs and rules, introduction to a new language, way of thinking, way of viewing their culture and practices.

Contemporary times have seen the Makushi the victims of an armed secession. The tribe suffered from neglect and were dependent on their subsistence knowledge to survive. This isolation slowed the cultural erosion but not by much as the tribe looked across the border for economic opportunities. But the opening of the road to the capital introduced technologies and access to information not easily accessed before. This has influenced how young people now engage with their culture. This process was speed up with the establishment of the Iwokrama Centre and their interactions with the communities in fulfilling their mandate. Even in highlighting the importance of traditional knowledge and

practices, scientific knowledge and practices has gain a standing with the younger generations and there would be a need to balance that input with maintaining their traditional knowledge process and not a whole sale buy into this new knowledge type.

The series of events that have touched Makushi society has left a people striving to find balance between embracing the changes that are occurring around them and holding on to their culture and spiritual beliefs that are proving to be important in farming how important these elements could be for forest conservation.

Their semi- nomadic way would have linked them to the rhythm of the land. They would have used those cycles for their benefits. In addition, the traditional beliefs and customs would have afforded some protection from overharvesting. This image proves the notion of some guardianship of the resources being used. This image however, becomes tarnished when the underlying factors of care – traditional belief and customs – begin to ware down and lead to abuse of certain resources.

The next chapter examines more fully Makushi's role as conservationists. It explores the historical use of resources and what element may have contributed to resource conservation. It then takes a look as how these practices have fared and changed in contemporary times.

Chapter 5 – Conservation or Care

“... The Indigenous People survived because of their respect for nature.” (Sydney Allicock, 2014)⁴⁴

“They have protected the forest for generations...and their insights are valuable not only for their communities but for the rest of Guyana and the wider world.” (Low Carbon Development Strategy Update, March 2010, pg.5)

“The peoples’ minds have changed.” (Uncle John, Rewa Village, 2013)

5.1 Introduction

As mentioned before (see section 2.2.3) there is a strong belief that much can be learned from Indigenous peoples to effectively manage forests sustainably (Berkes, 2012). This view is linked to the belief that Indigenous peoples have a close relationship with their traditional lands and how they use the land would normally reflect that association (Cajete, 1994). Some scientists think that this close association with the land give Indigenous peoples a unique position in providing insightful advice on resource management strategies, conservation issues and climate change (Berkes, 2009; UN, 2010). Their identity and practices are certainly developed around this close relationship to the land and with the acceptance of this identity Indigenous peoples are usually given titles like “forest stewards”, “managers of the forest” and “conservationists” (Alvard, 1994).

The knowledge generated through their close interaction with their environment is no doubt useful for the survival of Indigenous peoples. That knowledge has helped and continues to help them to subsist by knowing where the best hunting and fishing grounds are located, where the best farm grounds can be found or when is the best time to harvest forest fruits or other forest products. They have learned about the subtle changes in the environment which assist in making decisions on when to prepare for farming or when to

⁴⁴ Stabroek News (March 2, 2014) Concerns raised over use of pesticides, fertilizers on Rupununi mega-farm. Retrieved 4, March 2014 from <http://www.stabroeknews.com/2014/news/stories/03/02/concerns-raised-use-pesticides-fertilizers-rupununi-mega-farm/>

prepare for the rainy season. This knowledge, however, does not necessarily translate to their being the best forest managers or conservationists; neither is it proof that they have developed strategies for the wise use of resources. Such strategies, Johannes (2002) argues, can only be developed by Indigenous peoples who have used their resources to its limits and are aware of the state of these resources.

Johannes (2002) proposed that for Indigenous groups to enact conservation measures they would have had to have learned that there were limits to the natural resources they were using and they would have had to have identified what those limits were. Johannes (2002) further argues that most Indigenous groups never learned the limits of their resources because the quantities available always exceeded that being harvested. Despite this argument that Indigenous groups have not actively conserved their resources, Johannes (2002) suggests they could have achieved some measure of conservation unintentionally. This unintended measure of conservation is what could be termed “unconscious conservation” (Smith 2001), epiphenomenal conservation (Alvard, 1995) or what Johannes (2002) thinks of as conservation ethics.

Smith (2001) puts forward the hypothesis that since conservation is not an inherent quality of Indigenous groups and that their conservation is not necessarily an active process, it has to be an unconscious result of their everyday life. These, what I would term, passive conservation measures would have been exercised within the cultural settings of the respective Indigenous groups, developed through their cultural norms, taboos, beliefs, rules or ideologies (Smith, 2001). Smith (2001) further argues that Indigenous cultures can create norms for resource use that would lead people to conserve. This chapter explores the question of whether the Makushi should be conceived of as conservationists: active or passive. Despite being a savanna dwelling tribe, the Makushi, have utilised the resources of the forest for many generations. In doing so, their forebears would have accumulated a vast store of knowledge on the land and how the resources

therein can be used. It is assumed that this knowledge has been passed on through the generations to the present day and that it has been enhanced by the experiences of each generation. But the question of whether or not they ever had a need to develop conservation strategies for their resources has never been hinted at or explored. In this thesis I aim to examine this issue from two perspectives: a review of historical accounts written on the Makushi and the views of present day Makushi.

5.2 Signs of Historical Conservation

To gain a historical perspective of the Makushi and how they interacted with their environment I explored the historical writings of European travellers who spent time in Makushi territory using document analysis. In perusing these writings, I used four themes that would suggest whether or not the Makushi had a need to develop conservation strategies. The following are the four themes⁴⁵ used (see section 2.2.1):

1. Population size and distribution of settlements
2. Fishing and hunting: practices and attitudes
3. Knowledge of the landscape
4. Farming: use and attitudes

5.2.1 Population Size and Distribution

In 1840, Robert Schomburgk estimated the Makushi population at approximately 1500 individuals living on the British side of the Takatu River and a total of 3000 individuals overall in the Rupununi/Roraima area (I. Myers, 1994). This population was widely scattered across the savanna and encounters during travel was infrequent and unexpected. In his writing, Richard Schomburgk (1848) noted that many of the Makushi settlements consisted of a small number of houses with approximately 15 to 20 persons or fewer. Seldom would larger settlements be encountered. These small settlements usually

⁴⁵ It should be noted that the themes are important especially as it relates to how they impact resource use. They are factors used by researchers when looking at how Indigenous cultures use resources (see Alvard 1993, 1994, 1995; Foale et al, 2011, McDonald, 1977; Ross, 1978)

consisted of family groups. The permanence of the houses varied as residents tended to abandon their homestead and relocate to another area for any ambiguous reason (im Thurn, 1883). Bernau (1847) believed that the ‘Indians’⁴⁶ had an instinctive dislike of settling down, preferring to wander when the mood took them. To obtain sufficient bearers for their trips both the Schomburgks and im Thurn noted they had to wait a few days for enough persons to congregate at the main settlement after a message was sent out calling for workers.

5.2.2 Fishing and Hunting

The Makushi of the past were heavily dependent on fish and wildlife resources for their protein source. Notwithstanding, it appeared that the Makushi had no need for concern about accessing these resources. As stated by im Thurn (1879, pg. 248),

“From what has been said it will be sufficiently evident that the objects for which the Indians hunt or fishes are many and various and it is rarely that he is unsuccessful.”

This statement gives the impression that fish and wild game were in abundance and the Makushi had only to go out and catch it. Hunting and fishing were daily activities for the men and they were nearly always successful (Rodway, 1895) . The only indication of concern raised was about the rate at which the Makushi would consume the food resources that were available to them. Both Richard Schomburgk and im Thurn remarked on how much and how quickly food could be consumed by the Indians at a location or on their travels. While they in fact did not eat large meals, they ate frequently (Farabee, 1967). In fact, im Thurn had this to say about their eating habits:

“Far into the night the Indians, sitting in a circle round the camp fires, continued to gorge their food....their powers of gorging is really wonderful; I once was able to calculate the amount consumed in thirty-six hours by ten men, and found it to be 252lbs. of smoked fish, 62 lbs. of fresh fish, a whole wild hog, and an indefinite quantity of cassava bread.”(1883, pg. 15)

⁴⁶ The term Indian is used as it was how the colonials referred to the Indigenous peoples during those days and in the documents.

I had informal discussions with my research assistant who has worked outside of his village for a number of years, and an Elder, a chef who has cooked for various ranch outfits and community events, on this passage and was told that,

“Amerindians do not know about portioning. They would eat what was there as soon as it was there until it was finished.” (CW009, 11 Oct 2013)

The research assistant said his family was large growing up and so his father had to hunt or fish every day in order to feed them. They ate at least five to six times per day and therefore his father needed to provide large quantities of meat and fish, which was, of course, supplemented with produce from their farm. He indicated there was a change in thinking for him after having had contact with coastlanders⁴⁷ like myself and working at the then named Iwokrama Field Station⁴⁸. He came to realise that food use was rationed⁴⁹ and that provisions were made for the next day. For those where contact and exchange of experience is more limited, the attitude remains the same. This attitude towards food I have observed first hand while travelling on field expeditions with community members. The elder mentioned that he first learned about portioning while working as a cook at an operating ranch. He said that it was a lesson he has learned and which he practices in his work, especially when cooking for large groups.

This attitude of incautiously using food seems reserved only for when they are within their home territory. As Jim Thurn (1883) documented, if an ‘Indian’ was out of his territory and the hunting was successful and he had days of journey ahead he may be more circumspect in keeping provisions by smoking or salting the fish or flesh. This indicates that within their home territory Amerindians had the knowledge it would take to quickly access their food resources. Outside of that location they would be uncertain about the best places to fish or hunt, not knowing the lay of the land. I have seen this

⁴⁷ Coastlanders refer to all inhabitants who occupy the coast of non-native descent.

⁴⁸ The Iwokrama Field Station was renamed the Iwokrama River Lodge and Research Centre.

⁴⁹ Food is trucked in from the city and some fresh fish is bought from the neighbouring community.

occurrence when fishing with community members. They usually go to specific locations to cast their lines or set a seine net. Outside of their fishing area they would look for sites that look similar to where they would normally fish, but most times these efforts meet with little success⁵⁰.

As it is for fishing so it is for hunting. In the rainy season the men know where the high grounds are located in which they can find animals escaping the floods. They would, therefore, go to these areas to hunt. This knowledge is most useful during the rainy season because it provides an advantage for survival during a period when food resources become scarce. It also means the hunter can chart the shortest possible course to the location. As noted by Richard Schomburgk during his rainy season hiatus at Pirara:

“Like ourselves, the Pirara villagers were almost restricted to a vegetable diet, because their supplies of flesh and fish were only too quickly consumed, and even the former would soon be more than scarce...” (Schomburgk 1848, Vol. II pg. 101 – 250)

During these times, the tribe would be more dependent on their farm produce for survival as the animals would have migrated to high grounds and the fish would be widely dispersed over the flooded savanna and forest (Forte, 1996). During the rainy season trees are still fruiting in the forest (Forget et al., 2002) and, as Schomburgk (1848) noted, some families would drift off to other areas where procuring food would be more successful. However, those individuals who remained in the main settlements would carry out collecting expeditions in the forest to gather fruits from palms and various other trees to sustain them over this period.

Only twice, in the literature, have I noted any remorse expressed over the hunting practices or attitude of hunting an animal when there was no need to hunt. The first was

⁵⁰ As an example I was once told how difficult it was for fishermen, coming from the Rupununi River with its opaque waters, to fish in the Essequibo River with arrow and bow. The Essequibo River has a higher degree of clarity and depth perception is skewed as the fish are deeper than they appear to be above the surface of the water. I have also witnessed fishermen asking local residents for the best fishing locations if they are not from that area. But it was mentioned that some fishermen are reluctant to give this information out fearing that the location would be over fished by others.

expressed by Bernau (1847) in his description of Indigenous hunters mimicking animal sounds when hunting:

“In hunting they imitate the notes of the animals, birds, no regard to seasons being paid by them; it may be easily conceived that in destroying the parents, the young perish along with them. (Bernau 1847 pg. 39)

In using sound imitation the hunters can easily draw the animals, especially some birds which are territorial, to them; where they can readily be killed. In a time where there were no alternatives to obtain food but from the opportunities presented, it is understandable that there were no seasons of hunting. As Bernau pointed out, during the breeding season the young may very well have died with the death of their parent, but as will be pointed out later, Amerindians including Makushi had taboos that helped to prevent such consequences.

It was im Thurn (1892), whom during his trip to Roraima made note of the attitude of hunting when there was no need. He wrote:

“... We had got a deer but we were not hungry and we had plenty of food with us...my companions proposed quite equally to distribute the burden, by eating it there and then.”(im Thurn, 1892, pg. 24)

This sentiment gives the idea that the abundance of the wildlife resources was such that the Makushi people had no concern about their decline. They hunted whenever the opportunity presented itself or when the desire stirred them from their hammocks (im Thurn, 1883). The only time that I have witnessed hunters forego shooting an animal was during or just after the rainy season when they believed these animals to be diseased – infected with worms. Nevertheless, Schomburgk (1848) indicated that the Indians would hunt even these animals, especially given the scarcity during the wet season.

By the time the Schomburgks, im Thurn and other European travellers came to the Rupununi, the Dutch had introduced and made available “new technologies” to the Indians. The Amerindians were able to obtain such items as knives, axes, guns and

fishing nets through trading activities. However, for fishing the most efficient and less time consuming method would be to poison a creek or stream. Brown (1876) described the process of poisoning for fish. The first step was damming a section of a waterway that would still allow the water to flow through. The poison is then extracted from the plant⁵¹ material by pounding and, when ready, the juice is released into the water from the top of the dammed section and flows down towards the blockade. As it mixed with the water the incapacitated fish would float to the surface and could be easily extracted.

“In ten minutes’ time numbers of small fish came to the surface, and swam uneasily about, trying to raise above the water; these were soon floating about quite dead. After an interval of five minutes more, a small Pacu showed its back fin and also tried to raise its head above water. An instant more, and the whole place seemed alive with the fish, Pacu and Cartabac, all struggling and flapping at the surface or whirling round and round. Many tried to force themselves out of the water up the sloping surface of the rocks, and two were successful in this, dying on the strand....It was a most exciting scene for a time, as the Indians shot arrow after arrow into the bewildered, dying fish, and hauled them ashore or into the canoe. In about an hour the murderous work was over, and 150 fine Pacu and Cartabac were lying dead upon the rocks around the pool, the victims of the Indians’ prowess and poison.” (Brown, 1876, pg. 58)

This account gives the impression that not many fish, if any, survived this method of harvesting. However, in Thurn (1883) in his account of the technique said only the smallest of fishes died and the others quickly “caught themselves” surviving to then restock the stream, suggesting that the impact of this technique was minimal on fish numbers.

There is no measure of control over the amount of fish that could be caught when using this technique. It is likely that the impact would greatly depend on the amount of poison used and the flow of the water. Notwithstanding, from my time working in the

⁵¹ Makushi people use two types of plant poison for their fishing. The first is known as haiari (*Lonchocarpus densiflorus*) and Kunnami (*Clibadium asperum*). The Kunnami is usually crushed into a small ball and thrown into the waterbody to catch fish. This is used more on an individual level. The haiari poisoning was done more as a communal activity. A group or the entire community would go out for the activity. It would be treated like a picnic because, as the majority of the fish was being cleaned and prepared for home use some of it would be prepared immediately to feed the group who was fishing.

communities⁵², I noted from accounts given about the use of this technique that the Amerindians may have conducted the practice with some rudimentary rules in place. The two most important rules appear to have been that:

1. The poison source material was never to be left in the waterbody, and
2. The poisoning took place where there was continuous flow of water after the blockade was removed.

Following these rules would have limited the impact of the poison on the waterbody and washed away the lingering effects over time, but as one Elder resident of Yupukari stated,⁵³

“Poisoning fish was not just one person poisoning, you had to know (what the old people did). They did not poison just so, they did something so that the fish would always come back to the ponds. But today we don’t know what the cure is to bring back the fish in the pond for the next year.” (YUK001, Yupukari 17 Sept 2013)

From accounts I have heard, and as suggested from the quote, poisoning for fish was a communal activity led by the Piaiman or village leader. This way there was a large enough group to capture most of the fish affected and to ensure any rules that may have been in place were followed. The statement also suggests there was a belief that the ‘old people’ had some knowledge that would bring back the fish in the poisoned waterbodies. Another Elder, a cultural teacher, (YUK 005, 18 Sept 2013) mentioned in conversation that the Elders believed in an old charm called an animal master, that governed certain species and if these were taken care of —tributes paid yearly by the piaimen — the population of these species would remain healthy. Unfortunately, he said they no longer know the prayers and rituals used to pay tribute to the master or, in some cases, where they can now be found.

⁵² I spent 2010 to 2011 working with two communities to develop management rules for fisheries resources under the EU Project: Building Individual, Organisational and Institutional Capacities for Ecologically Sustainable Tourism Development and Fisheries Management in the North Rupununi Wetlands

⁵³ Informal discussions while observing the heritage celebrations

By the time I arrived in the Rupununi, the practice of poisoning had changed. If there were rules laid out as part of the practice, they were no longer being followed by all village members. People were poisoning ponds and lakes within the savanna where there was no flowing water and sometimes would leave the poison source material in the ponds. This practice, I was told, “killed the ponds” because the soil would become contaminated with the poison and could remain in that state for several years. Animals – both wild and domestic — could not use the water or they too would be affected.

For most communities in the North Rupununi this practice has been prohibited through village rules and it has been this way from around the year 2000. While the ban is not actively monitored, it would appear that most persons follow it and this belief is based on information gathered during fish management discussions with the communities. People who confess to still using the technique have indicated that it is usually on an individual basis using the kunnami ball. In fact, it was mentioned that at one farm location, where some persons have their permanent homes, and are not governed by village council and village rules, the fishing ground can now be considered over-poisoned as the poison has been applied to the waterbody on a continuous basis, especially during the dry season when the water level in the creek would have dropped creating pools.

5.2.3 Knowledge of the landscape

Hunting and fishing requires knowledge of the landscape to be successful. Hunters needed to know the behaviour of the animals and where they would most likely be found within that landscape; the same goes for fishing. It was noted that Amerindians who were outside of their territory hardly ever hunted:

“It is, however, noticeable that the Indian can generally hunt successfully only in a district which he knows, and that Indians travelling through a strange country seldom attempt to hunt, and when they do, meet with but small success.”(im Thurn, 1879, pg. 248)

Even though both the Schomburgks and im Thurn remarked on the patience used by the hunters to approach and shoot their target, knowing where the animals could be found would have reduced the amount of time they had to spend searching. They would have been able to just go to the general location and then pick up fresh tracks to ultimately find the animals.

With knowledge of their home ground, the Makushi would also know the areas that were considered sacred or inhabited by “evil spirits” and not traverse these locations to hunt. One of the reasons why Amerindians travelling in foreign locations are reluctant to hunt is because of their lack in knowledge of these sacred sites. Their superstitious nature would leave them wary of disturbing the spirits within an area (Roth, 1915) .

Knowing the land well enough to hunt would suggest that the Makushi would also be sensitive to any change that was occurring with their resources, but neither the Schomburgks nor im Thurn indicated witnessing any such concerns over the use of said resources. Their accounts indicated constant success of either fishing or hunting trips keeping their camps in constant supply of fresh protein.

“On returning to our camp we found that our huntsmen had been very successful: seven fine deer had been shot in less than three hours.” (Schomburgk 1843, pg. 46)

5.2.4 Farming

As in the use of their fish and wildlife resource, the same attitude prevailed in the farming aspect of their life. im Thurn said of the Makushi:

“As the life and prosperity of the Indians depend so much on the produce of their fields...what becomes of these people when their crops failed? This happens, sometimes, owing to the improvidence of the Indians, who use their cassava freely, so long as it last... sometimes in consequence of prolonged drought. The failure from the first of these two causes is met by the habit of mutual hospitality which prevails among the Indians. When a family finds its stock of cassava exhausted, the goods are packed up, and all walk to some other settlement, inhabited by Indians of the same tribe in whose fields there is still plenty. Without invitation, and without excuses, the strangers take up their quarters in the new

settlement, where, as a matter of course, there is a stranger's house; and it is an understood thing that the present hosts will return the visit when they have need; and there they live and eat as long as the cassava lasts, or until some one of their own fields is again ripe.”(1883, pg. 253-254)

As a result of the difficulty in cutting large farms, Amerindians, during those days, would have a number of small farms strategically positioned (Allicock, pers. com. March 2013). This would allow the family to move when the resource from the farm was used up. Cassava, as the main crop, took an average of 10 months to mature (im Thurn, 1883). The cassava would be replanted once it had been harvested. If there was need, the cassava could be harvested before full maturity (Lee, 1968). However, pulling cassava before maturity meant that more of the root would be harvested in order to produce the desired amount of product because the roots were smaller. This early harvest could result in faster consumption of the cassava. In the event of drought, the family groups seemed to have generally moved away to more moisture laden locations until the situation changed. The old and infirm were left behind, as noted by im Thurn (1883) during a severe drought in March – April of 1878. The loss of the older generations due to these conditions meant the possible loss of knowledge to the Makushi community especially if the people who left did not return to the location. In addition, those returning could return with new ideas and technologies.

5.2.5 Looking for Signs of Conservation

In reviewing the material written on the Makushi as laid out by the Schomburgk brothers and im Thurn, it would appear that the Makushi worried very little about accessing resources. One could envision from these accounts that the wildlife and fish were in abundance and that the Amerindians harvested without restraint. Their farms were small owing to the limitation of tools that had to be used and perhaps the number of males available for clearing the farm. Notwithstanding this, some families were known to have had multiple farms. They, however, again were shown to have very little restraint when it came to using their farm produce. Cassava could be harvested before or after full maturity

and hence the possibility of the farm's total production being used out in a short space of time was more than possible. However, they could move to another settlement for hospitality if they ran out of produce and this belief provided a social safety net for them and they would have been expected to reciprocate should their neighbours have a need.

In examining what was written about the Makushi during this early period it can be assumed that the Makushi did not test the limits of their resources, according to Johannes theory. This meant that on a large scale there was no need to develop conservation measures or strategies to pass down to the future generations. Rules developed for practices like fish poisoning could have been a consequence of witnessing the impact of leaving the poison source in the waterbody and not necessarily because the fish resource was impacted to its limit.

One of the problems in determining whether Indigenous communities are conserving their resources lies with determining what is meant by conservation. According to Alcorn (1993) there is no word or phrase within Indigenous cultures that translate to conservation. It is believed that in these cultures conservation translates to a notion of "taking care of nature". This idea was confirmed with the Makushi, it was indicated that when translating conservation to community members during discussions, phrases such as "taking according to what you need" or "to keep" or "to mind" or "to look after" are used. Having never had this concept within their culture, how can tribes such as the Makushi judge whether they are actually carrying out conservation? This is an issue that was pointed out by Alvard (1995) and Smith and Wishnie (2000).

In his paper, Alvard (1995) indicated that prior to recent times there was no working definition of conservation to judge or test the existence of conservation in Indigenous communities. In addition, very little data are offered to substantiate claims of sustainable use of resources. The problem still remains in the sense that in most scientific papers

researchers do not identify what definition of conservation they are using in order to judge the conservation effects of Indigenous practices.

From a present day perspective, conservation is considered an active pursuit to ensure that nature remains in tack (Callicott, 1990). This sense of activity is confirmed in the definition used in this thesis for conservation (see section 2.2.1.1). This idea of active management is also presented in the Merriam-Webster's definition of conservation: "a careful preservation and protection of something especially; planned management of a natural resource to prevent exploitation, destruction or neglect" (Merriam-Webster, 2016). These definitions project the image of actively discussing and making decisions on actions that should be taken to manage resources and land spaces. The historical accounts not only show that the resources were not used beyond limits but that there were no documented signs of active management of resources and landscape to ensure sustainability.

Smith and Wishnie (2000) believe that the idea of Indigenous conservation is linked to the notion of long association with an area, failure to overharvest or exterminate species and cause habitat degradation. These characteristics are more aligned with the idea of sustainability and not conservation (Alvard et al. 1995, Low, 1996). But this is not to say that Indigenous lifestyles and actions did not result in some form of care or nurturing of their environment. Smith and Wishnie (2000) indicate that factors like low population density, low resource use and limited technology, as examined previously, is expected to contribute to the sustainable use of resources with conservation as a by-product. It is perhaps these factors along with Indigenous worldviews that has led to the maintenance of their environment and resources.

5.3 Role of cultural taboos and norms in resource conservation

The historical review suggests that the Makushi, by population pressure or overharvesting, did not test the limits of their resources and did not have to engage in the active management of their resource. It also suggests that resources were used in abundance. If this was the case, what were the reasons for the continued abundance of their resources? As Smith (2001) suggests, the resulting conservation of their resources was derived as a result of the taboos, norms and ideologies practiced in their everyday lives.

Amerindians as a group have had a very strong belief in the existence of spirits . It was observed as an important part of their belief system in the earlier days (Aird, 1980). As noted by Aird (1980) they believed that the plants and animals were in possession of a spirit and as seen in the stories told, allowed them to develop relationships with them. Roth (1915) in his publication on Amerindian animism; noted their belief in the legion of spirits that inhabited every realm – forest, water, earth and sky. These spirits impacted their lives, bringing illness and death, and so they always had to be on guard.

In other Indigenous cultures, such as the First Nations of Canada, the relationship with the spirits helped form a different philosophy. Their belief was that humans were connected to the natural world through their relationships to the spirits who were their ancestors (Pierotti & Wildcat, 2000). The connections recognised both the value of the resource as an entity and the value people placed on it for their use. This belief further recognises that people are not stewards of nature but a part of it and should respect it (Pierotti & Wildcat, 2000). It is believed that this respect is what would constrain tendencies to over exploit and informs how traditional practices are carried out (Berkes et al., 2000; Pierotti & Wildcat, 2000). But according to Berkes et al. (2000) not all traditional practices are ecologically sound as they are not carried out with this worldview in mind. This is borne

out by research such as Alvard (1993, 1994, 1995), Smith (2001), Jones et al. (2008), Foale et al. (2011)

To stand as intermediary between the spirits and the tribe was the Piaiman. His⁵⁴ is an office of “religious leader” and “medicine man” (Schomburgk, 1848; Waterton, 1879). One of the gifts of the Piaiman was his ability to speak with the spirits and thus he would be able to intercede on the behalf of his people to help cure the sick, distribute medicine, make places accessible, create protective charms etc. (Schomburgk, 1948). Many of the historical accounts of the role of the Piaiman only centre on his medical role; most of which the authors believe was a fraud perpetrated on the tribes (im Thurn, 1883; Veness, 1869) . However, the role of the Piaiman was more than being the healer for the sick in the tribe. As the spiritual channel he would be able to discern any imbalance in the environment due to his communication with spirits within the different realms (Brett, 1851; Roth, 1915). With this knowledge it was then his job to direct his people to allow the balance to return.

I would suggest that through his position as a community leader, cultural and spiritual advisor, the Piaiman helped to shape the rules, norms and taboos that were followed within the tribe. There is no direct way to trace the development of these institutions. It is assumed by researchers such as Johannes (1978), Berkes (1999), Berkes and Turner (2006) that institutions such as food taboos were developed to embody a conservation ethic and was a response to resource scarcity (Foale et al, 2011). According to Jones et al (2008), despite the conservation values demonstrated by food taboos their origin does not lie within an attempt at being sustainable. These local institutions for the Makushi helped the tribe guard against the actions of evil spirits and indirectly protected their resource base.

⁵⁴ The Piaiman was the spiritual leader of the tribe. He was chosen based on his ability to perceive the spirit realm. I have not come across any historical record of a female piai. With the decline of the practice those who have some knowledge of the craft have passed that knowledge on including to their daughters.

Given their ecological benefits Colding and Folke (2001) in their review of social taboos identified four types of examples that can be readily identified within the Makushi culture.

Table 0-1: Types of Taboos

Type of Taboo	Definition	Examples from Makuski Culture
Temporal	Banning access to resources during certain time periods. Taboos may be imposed daily, weekly, seasonally or sporadically.	There were some ponds within the communities that were protect e.g. Devil Pond and Pine Pond and people could only harvest when the Piaiman did the blessing and this was just for the day.
Method	Banning the use of certain methods and techniques for extracting species - especially those that may easily deplete or drastically reduce the stocks of the resources.	While the ban on fish poisoning is a recent event, there appeared to have been simple rules governing the practice that had to be followed
Life History	Banning the use of species at certain vulnerable stages of their life cycle based on size, sex or reproductive status.	The Makushi do not utilise species that are at certain phases in their life cycle pregnant, juvenile
Habitat	Total ban on the killing and detrimental use of specific species in both time and space. There may be sites where no form of harvesting is allow while there are others where there is a limited amount of extraction.	There were sections of the forest people did not go because they are considered sacred and were not allowed to enter unless they were properly blessed.

Source: adapted from Colding and Folke 2001 with examples taken from interviews.

These taboos or rules did not only apply to the use of the resources, but also to the members of the tribe. There were dietary restrictions for men e.g. before hunting or fishing when applying a bina⁵⁵, while the wife is carrying and caring for a child and for women at various stages of their lives e.g. starting menstruation, during pregnancy, after giving birth, caring for the baby and infant until a certain stage in their lives. As part of the culture, the Makushi as other tribes, believed in transmogrification; where parts of a

⁵⁵ A bina is a charm that may be used to achieve good or evil outcome to a situation

person or a person are transformed into another being. Their stories of the twin heroes⁵⁶ describe many an instance where a person may have been converted to an animal for one reason or another. For this reason, these species may become taboo, the feeling being that they would be eating human flesh.

There are some species that were believed to be “oma⁵⁷”, an evil spirit and were therefore taboo. There were also some species that were not used as they affected the outward appearance of a person e.g. the perai was not eaten by females as it would affect the growth of their hair. Many believed that by breaking these rules, taboos or norms their children would be the recipient of the consequences. Restrictions were not limited to the use of animal resources but were also applied to how the forest was used. It is believed that various spirits resided in the trees and when entering the forest to conduct an activity such as hunting, extracting timber or farming, the tribe needed to prepare themselves. As indicated by two Elders, the Piaiman and the leaders of the community would direct what the people were to do.

“While there were no special ceremonies there is a belief that there were spirits that live in certain trees. When you go to cut farms and you are aware of these spirits than you have to move them as they would not be good for your farm. So people would bless themselves and then go to deal with these spirits. But these spirits do not move very far. They only move a couple of trees over.” (MRU002, pers. comm. May 2013)

“... the Toshao had the say about which trees in the forest can be cut. They always had a chief who would tell them how to cut the farm. So they don't damage the trees as people would be killed. The trees had spirits and people were not welcome because they were taking life from the forest and people could be killed if the cutting was not done right.” (SRM 003, June 2013)

Some believe that these trees possessed guardian spirits and to destroy them would bring bad consequences to the people. In this way key species of trees were protected⁵⁸. As noted by an Elder from Annai, ANC 001, by protecting species like the bulletwood

⁵⁶ Inishkeran and Anekee

⁵⁷ An Oma according to the Makushi Dictionary is a beast, spirit, unknown entity. These creatures are usually thought of as evil.

⁵⁸ As was discussed with the focus group age 25-39,

(*Manilkara bidentata*) the people are able to obtain the fruits to eat during the rainy season when fish are hard to catch. He believes the beliefs and traditions helped the people have respect for the resources and that it was important to keep that knowledge.

As a social institution, taboos help to conserve the resources that are important to the group that have established these taboos (Colding & Folke, 2001). While the review of the historical records may have shown the Makushi displaying scant regard when extracting resources, these accounts do not show the overall impact of their traditional practices on the resources. It could, therefore, be said that these taboos provided checks and balances that prevented the overuse of the resource. In addition, as noted by James (1895) because of their beliefs on the consequences of angering the spirits, tribes only took what they needed and did not kill for sport. This attitude guided by the Piaiman is what most likely led to the continued health of the forest and other resources.

Taboos work to influence social preferences, which in turn can affect the wider demand for certain resources (Jones et al., 2008). These taboos can be internalised and affects the way people view their environment and the resources they utilise. Many of the taboos are kept due to the fear of repercussion (Barre et al., 2009). It reduces the pressure placed on certain resources. The variety of taboos that are observed means that the pressure on resources is distributed. An example would be if a woman is pregnant she may not be allowed to eat certain foods at various stages of her pregnancy and the same would go for her husband. This means that over the course of nine months the pressure on certain resources will vary. As concluded in section 5.2.5 there were no signs of active management of the resources utilised by the Makushi. Based on the definition of conservation being used in this thesis, there needs to be some form of active engagement in assessing and making decisions on actions to be taken to indicate conservation is seen. Taboos as an institution initiates a level of care to be taken when resources are being

utilised by the community. This care is however, tempered by the awareness that without that care, there would be consequences.

5.4 Traditional History

My historical review of written accounts on the traditional lifestyle of the Makushi ends at the 1890s. From this decade Myers (1994) believed that colonisation really began to make itself felt on the Indigenous populations in the Rupununi. Up until that time, except for the attempts by Rev. Mr. Youd at establishing the mission at Pirara and the expeditions of European explorers, the tribes were left to live their lives as they usually did (see timeline section 4.3). im Thurn (1886), Rodway (1896) , Schomburgk (1848) all noted that this was the policy followed by both the Dutch and British when they colonised the land (see section 4.3.1).

The relationship established with the Indians changed when Britain emancipated the slaves. The tribes, mainly the Caribs and Arawak, were no longer needed in the capacity they held as slave catchers and protectors and many retreated back to the forest (Menezes, 1979). The British, however, maintained the policy of not interfering with how the tribes lived. Many Christian societies for the spread of the Gospel, however, felt that more should be done to “civilise” the tribes and bring them to God. That started a series of missions being established in the colony. Again it was largely the coastal tribes that were targeted. This was mainly due to the difficulties of penetrating into the hinterland. However, with more information about the region becoming available⁵⁹, by the 1890s colonists had begun to move steadily into the Makushi territory. The establishment of missions and the rise of the cattle industry all began to disrupt the Makushi way of life (Myers 1994).

⁵⁹ Robert Schomburgk suggesting the area was prime for cattle ranching.

As with the coastal tribes, bringing civilisation and religion to the hinterland tribes began to turn them away from their cultural practices (Brett, 1851; Veness, 1869). One missionary strategy was to convince the Piaimen to turn to the belief in God and this would in turn have tribe members following (Bernau, 1847). Having their spiritual and cultural leader turn from their traditions would have had a profound impact on not only the Makushi but the other tribes as well. Piaimen were not only targeted by the missionaries, but the law of the land also prevented them from operating as tribal doctors. Myers (1994) indicated that Regulation 9 of the Aboriginal Indian Protection Regulation of 1911 prevented Piaimen from operating within established reservations⁶⁰. If they were caught they would have to leave. To ensure their people still had access to their healers they took to moving from one community to the next⁶¹.

How the tribes interacted with other colonists were also changing the way they saw themselves and their culture. As Myers (1994) noted of Makushi members expressing the state of being “modern” by exchanging elements of their culture for those of the colonists. She also noted that there was a reduction in the types of craft and artistry being produced; only the essentials were in production. By the 1930s and 1940s, Myers indicates that the Makushi residing in the Kanuku Mountain area⁶² were being slowly drawn to the Catholic Mission established at St. Ignatius near Lethem, the regional administrative centre. The move served to introduce the Makushi in this location to the cash economy. Many of the Makushi transactions, however, were by barter and when required stocks were running low they were not inclined to accept money (Myers, 1994). The Makushi living in the St.

⁶⁰ In 1904, 11 Amerindian reservations were created. In the Rupununi they were St. Ignatius, Aishalton and Karasabai.

⁶¹ This regulation was put in place at a time when there were no medical doctors in the region, and the influx of people brought diseases that the tribes in the area were not immune to. The lack of doctors was still an issue when Myers left the Rupununi in 1944. Myers, however, indicated that an appeal was made for medical officers and action was taken in the form of a medical ranger program. This helped some of the people as not all were convinced of the powers of the medications being issued (Henfrey, 1964).

⁶² The Kanuku Mountains cut the Rupununi into North and South. In the literature from the explorers the north base of the mountain was where most of the Makushi villagers could be found.

Ignatius area was, however, more dependent on jobs for their subsistence. The life of the Makushi away from the administrative centre was one of carrying out usual subsistence activities interspersed with paid work taken either at a ranch or the balata bleeding companies (Baldwin, 1946).

Colonisation of the Rupununi served to disrupt the structure of Makushi society. A number of epidemics had a huge impact on the population. Myers (1994) indicated that many of the villages listed by the likes of Robert Schomburgk in his publications and Williams (1932) were no longer in existence. The 1940s saw a severe drought that brought food shortage to the communities that were scattered around the North Rupununi and World War II created shortages of much needed steel/iron implements which further disrupted their ability to produce food.

In Surama, some villagers recounted what it was like in 1941/42 when the drought hit. They had no food and had to eat green mangoes and arisuka⁶³. Things were bad; they could not eat the animals because they had worms. (Field Notes, 5 Aug, 2014)

While these events do not indicate a loss of culture and knowledge, it does show a slow degradation of both. With the drought and diseases, many persons died especially the knowledgeable persons and the generation who were the parents. This loss could be seen in the population dynamics of many communities where there are very small numbers of elders remaining in the communities as their contemporaries had died (CDO, 2013). Despite the efforts of the missionaries, the tradition of the Piaiman did not fully die. Their numbers had vastly decreased and they had taken to travelling around to assist where they could⁶⁴. The transmission of that practice was no longer according to the old traditions (see in Thurn 1883 for account). The position was hereditary, unless there were no sons. The persons being trained now were those who showed an interest and passed the main tests (Elder, SRM 003, Surama, June 2013).

⁶³ Arisuka is a thick form of the cassava bread

⁶⁴ SRM003 indicated he was trained by two travelling Piaimen.

With the Piaimen, the beliefs of the tribe had a strong centre of instructional memory. They were still maintaining some of the old taboos and sacred sites. People were still showing caution when entering the forest and what they ate. But the belief system was not as strong as it was previously. Interactions with colonists and others from the coast were changing the way the Makushi saw their beliefs, for example the dietary taboos where certain species were not eaten because they were “oma”. The Arapaima⁶⁵ is believed to be one such species. However, during the balata bleeding period salted Arapaima was issued as part of the ration kit (Elder. YUP 001, 16 Sep, 2013). With scarcity of resources some tribal members might convince a Piaiman to open a site that was protected by Oma, making it safe to now access the resources therein.

The slow degradation in the belief, cultural and knowledge systems has impacted what the current generation now know or would accept about the tribal traditions. As the medical ranger program began to work, the Makushi population began to recover. In the 1960s, Guyana petitioned and gained its independence. The Indigenous population used that platform to regain access to their land. Following independence, the policy of the Government was to promote integration of the tribes into wider Guyanese society. The 1969 Rupununi Rebellion, however served to continue the isolation of the Rupununi (Myers 1994). The isolation perhaps served to slow the continued degradation of the Makushi culture from Western influence but left them opened to the influences of Brazilian culture (MacDonald, 2014). Being told of the consequence for breaking a rule and experiencing or witnessing the consequence in having that rule broken creates a positive re-enforcement in ensuring those rules are maintained. Having others show that those rule could be broken without consequence releases you from that bond. The care that resulted from following the taboos and norms of the Makushi society was broken

⁶⁵ There is some contention in the claim that Arapaima is Oma. im Thurn (1883) and Richard Schomburgk (1844) indicated that while the Makushi would hunt the fish for their expeditions they did not part take in the eating. Farabee (1967), on the other hand indicated that the species was important resource. Farabee’s work that included the Makushi was first published in 1924.

when outsiders showed that resources could be used without consequence. This meant that the harvesting pressure increased on some species where it would have been distributed if the taboos were followed. This has resulted in certain resources declining in the North Rupununi e.g. fish species like the Arawana (*Osteoglossum bicirrhosum*)

5.5 Contemporary Knowledge

Contemporary Makushi find themselves almost fully merged into a market economy. I say almost as many persons are still dependent on the land for their daily subsistence while they seek ways to source money to pay for the parts of their lives which are linked to the economic system, like providing for their children's school supplies, accessing health care and improving their living condition⁶⁶. Things have been changing rapidly in the lives of the Makushi and they find themselves at a crossroads and trying to decide which direction to take. In a sense they are a people with an identity crisis. With many of the changes that have occurred within their society over the last one hundred fifty years, the Makushi now find themselves at a position where they are being told that their traditional practices and knowledge are invaluable to the conservation of the forest and other resources.

Answering the question of what kind of knowledge the Amerindians have to contribute to the conservation process is, therefore, a pertinent one in light of the fact that Guyana's Low Carbon Development Strategy heralds the Makushi and their sister tribes as being important to this process (refer to opening quotes in this chapter). This belief places a heavy burden on the Amerindians of Guyana to live up to. To get a sense of the expectations placed on Amerindians, the foreword of the first ever published book on

⁶⁶ Many persons are looking to improve the design of their homes and to use better building materials like burnt clay bricks and zinc roofs. They are also looking to improve home furnishing.

Makushi lifestyle by the Makushi Researchers gives evidence. It was written by Vanda Radzik⁶⁷ and states:

“What a wonderful book this is! It overflows with information, insight, details and the poetry of Makushi names and establishes, beyond the shadow of a doubt, the comparative advantage of the Amerindian peoples’ capacity over the centuries to preserve, conserve, develop and sustain Guyana’s natural resources.” (Forte, 1996, pg. vii)

This quote demonstrates the general belief of the Makushi and other Amerindians of actively managing the forest, making conscious decisions on actions needed to ensure sustainable resource use. This claim may be the projection of a stereotype of Indigenous peoples living in harmony with nature – the tale of the ecologically noble savage. (Hames, 2007). It is a stereotype believed to be unfair, placing a burden on Indigenous peoples to keep a standard impossible to live up to in practice (Redford, 1991; West et al., 2006). To demonstrate if the faith placed in such claims is justified, the question of having such knowledge was put to the people of the communities participating in my research.

5.5.1 Forest Conservation Knowledge

The question asked was; Are there any rules/guidelines or beliefs passed on to you by your parents/grandparents that tell you how to protect the land and resources? Asked in the context of information being passed on in the form of stories, the answers were varied but mainly followed two lines of thinking. There were those respondents, who claimed to have no knowledge, and there were those whose parents/grandparents shared stories with them or they were able to learn from the elders within their villages. There was one respondent who felt that the “old ones” had knowledge that they did not pass on but was uncertain as to the reasons.

⁶⁷ Vanda Radzik is a social activist that works on gender and women’s issues. She has worked for many years on these issues within Indigenous communities. She has advised and worked with Iwokrama as it relates to Indigenous issues. She was also a Trustee of the NRDDDB.

“The old people had a way of keeping this (referring to the forest) but we don’t really know what it is.” (CW 008, male over 40 years, Crash Water, Oct 2013)

Some respondents could not remember what information had been shared with them when they were children. I was told that training in such matters began young and if not repeated often many of the adults tended to forget what they were told. For those who did not have this kind of information the reasons deduced for its lack, based on responses, could be categorised into:

1. Lack of parents or elders to pass on the knowledge
2. Migrated from another location
3. Refusal of the elders to pass the information on
4. The beliefs in these stories are no longer there and so there is no interest in learning them
5. A belief that there was no such information to pass on and so it was not.

The lack of parents or elders to pass on the knowledge: As told by Myers (1994), the 20th century had taken a toll on the Makushi population. Drought and disease had killed a large number of people leaving many children orphaned. When asked where Makushi people came from an elder, having misunderstood the question⁶⁸, explained how she came to be in Surama:

“They came all the way from the same place. She belongs to Karasabai. The mother earth was treating Karasabai people bad. They didn’t have food to eat, although they asked for food for them. But mother earth did not give them food. So she came. A whole set of them came from Karasabai to Kuribu and from Kuribu they came to Wowetta. Meet all these Makushi people that come from that side - Brazil. And she get her children and from there now at Wowetta they cut farm. Her husband talk that how I am cutting farm here please don’t be mad with me. Talking to the land or what you may call it. Right there they got lots of cassava. So they had food to eat.”(SRM 006, June 2013)

A number of respondents from the Annai, Surama and Kwatamang area also indicated that either they or their elder generations came from Karasabai looking for good farm lands to escape the drought. Many of them travelled with siblings or other families to

⁶⁸ My original question was asking where Makushi people came from in mythology.·

survive. Some, it was said, were taken in by another family who taught them the basics, but for others they indicated that they observed what others did in order to learn what they needed to know. For some even though they had parents, it was essentially like being orphaned as when they farmed at great distance from the village the children had to stay for schooling while the parents lived at the farm to tend the crops. One respondent told me while observing the heritage celebration in Yupukari that his father advised him that when he saw someone doing something he wanted to learn, ask them until it was completed so that you may have the knowledge to do it yourself and that was how he learnt to do many things.

Migrated from another location: The villages of Crash Water and Rewa⁶⁹ were only recently established. Families from some savanna communities moved to the locations to either access farming land or be near family who had already moved there permanently. Many are savanna born and as such had little interaction with the forest. There is, therefore, a feeling that they lack the knowledge that might be known to forest dwellers.

“I don’t know those things, I only recently come here about 20 years, I use to be that side (old village in the savanna). I only come because of my son.” (CW001, Crash Water, Oct 2013)

This statement was made by a village Elder in response to the questions on rules or taboos that the older generations may have had in using the forest and other resources. This feeling seem to stem from the fact that they had previously lived in the savanna and may not have the same kinds of knowledge of the forest as the older generations did. However, the families of this community have been farming in that location for generations. The taboos or social norms they would have followed would be tribal and something handed down.

⁶⁹ Rewa was first inhabited by the Edwards family in 1951. The population started to expand in the late 1970s. Crash Water became a permanent home for some families from Yakarinta in the early 1980s.

Refusal of elders to pass the information on: I was told that some traditional practices could be quite painful, physically, for the recipients. They, therefore, have made the conscious decision to not pass on the knowledge of these practices. They have only given instruction on practices pertaining to the survival of their families. SRM006, a female Elder, was one such respondent

“She has never passed on anything to her grandchildren, she pass on nothing only like doing cassava work. She just show that part but she ain’t tell them no stories about beliefs. Only about farming, about cassava”. (SRM006, Surama, June 2013)

When asked why she would not pass on the beliefs and stories to her children/grandchildren her response was:

To her it don’t worth anything telling children stories. (SRM006, Surama, June 2013)

As I was told some of the traditional practices she experienced involved the use of pepper⁷⁰. For some participants it proved to be too painful and are not practices they would be willing to subject their children to.

The decision to share stories and practices are those of the parents. In Crash Water, one of the respondents commented on some of those same practices and also mentioned how painful it was but thought it provided certain strength to the body. Nevertheless, he made the same decision of not performing those practices on his children. As to the sharing of stories, I interviewed three of his sons and they all said he does not share stories. I found that interesting especially since I’ve spent camp time with this elder and have heard him recite many stories. When asked about it he said he was never asked. There is an interesting perception between the elders and the younger generations about the interest of sharing traditional knowledge. The elders think the young are not interested while the youths think they do not want to share.

⁷⁰ Pepper used to play a prominent role in certain Makushi traditional practices. In this case the pepper was placed in the anus as a bid to make the person less inclined to laze around. They would therefore get out of bed early so as not to repeat the experience.

The belief in these stories was no longer there and so there was no interest in learning them:

“You talk to them and they can’t learn they get away. They won’t listen to you. One body got to get experience. One person got to sit down and listen. Not everybody. Some like, some don’t like. Like my sons them they don’t want to hear they just get up.” (CW 008, Crash Water, Oct 2013)

This was expressed by an over 40 years old farmer, who was attempting to pass on what he knows. Not all of his children were interested in learning. Having been exposed to other ideas and beliefs many of the younger generation no longer pay an interest in the stories shared by their parents. As one adult from Rewa, engaged in farming and forestry, puts it, *“there are the true stories and then there are the fairy tales” (RWA021, Rewa, Jul 2013)*. The true stories are those that account the history of the Makushi people, surrounding the tribal wars and how the people used to live. The fairy tales were those perceived to be fantasy such as those told about Inishkran and Anakai and how certain animals came into being. As expressed by CW008, there is the hope that at least one person within the family will take an interest in learning what little is known. The elder from Annai, ANC 001, believes that there are many things within the beliefs and stories that would help people to still live today. There is, however, a need for those with the knowledge to share and for the younger generation to be willing to learn.

A belief that there was no such information to pass on and so it was not: There are some respondents who feel that the Makushi never had any rules to manage their resources. It is believed that these ideas came in with conservation organisations like the Iwokrama International Centre. This message gave the Makushi the sense that action was needed to conserve their forest.

“Rules did not exist. We got to learn how to take care of the forest mainly to oversee this place. We learned about inventory and the naming of the trees. Most of us that went to work on the concession learned about what should be cut, how it would be cut, the size of trees that should be cut. Before that came to happen, the people of Rewa, we used a lot of forest for like boat making and the wood was

right from around the village and now it is finished...all those people who have to make boats they have to go further. When the conservation come in it was late we cannot do anything, everything around is finished.” (RWA 021, Rewa Village, Jul 2013)

This opinion of there being no rules proposes the idea that with conservation there were rules. The same is not perceived in Indigenous practices. The implication is that rules are things that you sit together, discuss and decide on. An example would be the development of the village rules and by-laws. Institutions such as taboos have been passed down through the generations and are part of their life; culture so it does not have the same connotation that westerners ascribe to rules. It was expressed that the idea of conservation came with the white man; that the Makushi did not need to conserve as their circumstance did not require large extraction of resources.

“To my understanding we people don’t know anything about forest management, maybe because we don’t need it. If we were like the white people them maybe because we Amerindians poor it look like if we keep the forest standing it’s not that. It’s just because we don’t have any machines.” (CW013, Crash Water, Oct 2013)

“...that Guyana has forest and they want to protect this thing and you mustn’t cut this thing, they bring that idea to us. But we don’t have the machine like that. Like them! We use little, little thing you know. We getting the chainsaw, work slow (meaning extraction and ripping materials is slower than if they had advance saw mills). That is why we keeping our forest. They know what they did long, long years for them. For now we must protect the forest. After we pass away this bush five years, 20 years this bush will be here just so.” (CW005, Crash Water, Oct 2013)

The idea of conserving is one of conflicting demands. As expressed by one participant the request for conservation conflicts with the demand that Amerindians increase their agricultural production. The best soils for planting in the Rupununi lie within the forested areas (Rutherford & Hills, 1979). To farm in the savanna would require the inclusion of large amounts of chemicals⁷¹, the majority of which could have significant impact on the seasonally flooded wetlands with high run off and accumulation of these chemicals in the

⁷¹ (2014, March 2) Concerns raised over use of pesticides, fertilizers on Rupununi mega-farm. Stabroek News. Retrieved 4, March 2014 from <http://www.stabroeknews.com/2014/news/stories/03/02/concerns-raised-use-pesticides-fertilizers-rupununi-mega-farm/>

rivers, creeks, lakes, ponds and potentially the water table. One Elder believes the messages of farming and conservation being pitched by Government agents from the various Ministries is creating confusion among the people on what they are expected to do.

“But is two things agriculture and the conservation and you know which one they say you have to conserve you land, conserve the forest. The other is agriculture, how will you get agriculture? Now you have to cut so much acres of farm to plant, get our market. So its two things you have to do conserve the forest and you have to plant so much acres of rice, so much acres of peanuts. Where you gon plant this thing? In the savanna? No you have to cut bush.” (CW005, Crash Water, Oct 2013)

From these arguments there appears to be a belief by some that not only was there no active management of Makushi resources, there were also no rules to follow. The lack of specific rules, however, does not discount the rules embedded in the tribe’s traditional stories, taboos and norms. If these were followed by the elder generations it would explain the sustainability of the resources.

5.5.2 Stories and Taboos

The knowledge that was passed on, for the forest and wildlife, was either general or specific. In Surama one participant said her grandmother told her that she needed to generally respect the land or the consequences of not taking care of the land would come back to harm them. This advice they believe would serve as general warning for all. One young woman was told if we did not take care of our environment we are the ones that would be adversely affected in the long term as reflected in her quote.

“The only belief I have is that you have to be careful of how you treat this grandmother earth. You can’t just throw anything at it. Because my granny would always say if you mess the land the granny would get vex or the oma would get vex and would make us sick or our children sick. That is the only belief I have that was passed on to me from granny.” (SRM 025, Surama, June, 2013)

For others the beliefs and advice given were meant to protect the person. The unanticipated consequence was that the resources would have been protected as well. As

these young men attested the receipt of knowledge can shape how you look at your environment:

“Well my father use to tell me long, we talking about long time, don’t cut the forest wild, like you see today now, ... and when you had to cut farm, in maiden forest - high bush, he say you have to do traditional things - blow and bathe yourself and sprinkle it in the bush so you give the forest a gift before it affect back on the people.” (RWA 007, Rewa, Jul 2013)

“I could say that my father never tell me any stories but I use to hear from other people, the older people like my grandparents, not my great grandfather but my grandfather. He uses to talk about it but not much. He used to say you can’t go here or there and that’s it but I want to hear stories about how it come about but just like that he would only say don’t go there and don’t go there, that place is dangerous part, you can go straight or whatever. That is all he does tell me about it. (RWA 025, Rewa, Jul 2013)

A number of respondents mentioned the caution of cutting down too much of the forest for farming though no one could say why the caution was given. One suggestion taken from a young man whose interaction with the forest was fairly new was that respect should always be shown to the forest. As he was told when he started working in forestry:

“What I have learnt from that same Uncle Theo is when you go into the forest to fell a tree you should talk to the tree before you kill it. Because that tree was standing there for a long time and to take the life of the tree in a few minutes is terrible because a tree could be there for 500 years and you come within let’s say 2 seconds or 2 minutes with a chainsaw and you just cut it down.” (SRM 010, Surama Village, Jun 2013)

From the historical review it was concluded that the “old people” did not have a need to develop a conservation ethic for using their resources as they appeared to be abundant. They, however, did have taboos on the use of certain species⁷² and going to certain areas of the forest. During our discussions there were no mentions of these beliefs as being the possible reason for the conservation of the resources when asked. It would appear that many participants do not see these beliefs as having these unintended results. It is also possible they do not think it is relevant as these beliefs are being left behind.

⁷² Schomburgk (1922) mentioned the Makushi aversion to eating *Arapaima* sp.

There are, however, some that have made the connection between traditional beliefs and its unconscious results. In 1999, I had the opportunity to attend a regional workshop on wildlife management in Lethem and occasioned to hear the Chief of Chiefs⁷³ give his speech on traditional wildlife management.

“Many times we could not fish or hunt in a certain place because of sagimau⁷⁴. That was because we would suffer the consequence. Today the consequence may be jail or a large fine. Sagimau worked for a time in my village until a youth came from Georgetown. Now the fishes in Toka Creek are few. He was not afraid of the sagimau.” Chief of Chiefs, Lethem, 20 Jan 1999

He was aware that when the old beliefs went, so did the conservation effects. Another example of the consequences of losing the protection of the ‘oma’ could be seen in the following story and its unintended consequence.

Long, long ago people did not go to Puma Pond because it was dangerous (it was a big pond on the other side of the river from the village). People never used to go there even though it had plenty of fish like Arapaima and Arawana. People were all afraid. There used to be a big Puma that use to float to the surface of the water and it would carry people away. Long ago we use to have a Piaiman, but now we don't have. Long ago people told the Piaiman to look after the Puma and the Piaiman look at it and it made the Puma stop coming up. Now and then people start to catch fish and the pond is not dangerous now as the Puma is not there. Now the people going and fish. Now the people done all the fish. (YUP 005, May 2013)

This story was told to demonstrate the power of the piaiman but also the persuasion of the people in getting their way. In historical times the power and authority of the Piaiman prevented villagers from going against the Piaiman’s dictates in fear of being “spoiled⁷⁵.” I believe for the Piaiman to give into the demands of the villagers to remove the ‘oma’ from the pond there must have been extenuating circumstances.

One potential reason could have been that there was a scarcity in fish resources and people needed access to the pond to be able to harvest the resource. In 1968, Dr. Lee from

⁷³ The Chief of Chiefs was elected to lead and represent the Toshaos either in a specific location or the country as a whole. Since the enactment of the National Toshaos Council the Chairman is referred to as the Chief of Chiefs.

⁷⁴ Sagimau is an oma or bad spirit that occupies a waterbody.

⁷⁵ Being spoiled refers to being cursed by the Piaiman.

McGill University noted that around the settlement of St. Ignatius-Kumu the fish resources in the streams had been over fished and over poisoned. To obtain fish, villagers had to go on expeditions to distant resource rich locations. Lack of knowledge of these locations could have resulted in “accidents⁷⁶”. If there were enough perceived accidents at this pond a request would have been made to have the oma removed to be able to access the fish safely. But now that the oma is no longer in place the fish populations are declining. But as told by the Chief of Chiefs it is not only the removal of the oma that has brought about this effect. The loss in the belief in these traditions is also of consequence.

5.5.3 Transmitting Knowledge

The passing of knowledge to protect the land has been incomplete and only a part of the Makushi population now holds a semblance of the knowledge that seems to be important. The 20th century changed many things in the Makushi territory and they were forced to settle into more permanent communities (Myers, 1994). With full colonisation of the Rupununi came the missions, market economy and schools (Watkins 2010). This meant that the Makushi, as other tribes in the region, had to adapt to a lifestyle vastly different from the semi-nomadic one they knew, that left them ill-equipped to adapt (Watkins 2010). Both Myers (1994) and Henfrey (1964) alluded to the fact that the Makushi traditional way of life was slowly being eroded as they interacted more and more with the colonials. In addition, the setbacks from limited access to resources, and diseases and failing farms left them with a mind-set of gloom, unmotivated to act on their own behalf (Myers 1944).

While much has changed in the fortunes of the Makushi since Myers’s and Henfrey’s accounts, the erosion to their traditional lifestyle is still occurring. The beliefs and advice mentioned by respondents are only partly being adhered to and for the younger

⁷⁶ An accident is perceived to have occurred when a person entered a location with a bad spirit and was killed.

generations the opportunity is being lost (CWI021, Elder, 15 Oct, 2013). This continued loss or decline is attributed to many reasons. Some of the reasons identified by respondents include:

1. Education
2. Religion
3. Travelling and interacting with non-Indigenous cultures
4. New ideas from television and the internet.

5.5.3.1 Education

“The world is changing from what we know and experience and the young people don’t understand it, they are looking for jobs....We will leave our culture, we have to leave our culture because long time ago we use to plant cassava, fetch warishi⁷⁷ but things are different. Now they cutting farm with chainsaw not axe, when they fishing they don’t want to go paddling they take engine and they gone. When they come back the wives and daughters don’t want to use fire wood they want stove. The young girls they use to spin and weave cotton but now it is beds. So we have left our culture.”(RWA 004, Rewa Village, Jul 2013)

This was the sentiment expressed by an elder about the focus of young people when they left secondary school. Formal schooling provides a more Western form of education than traditional (Angelucci & Marchetti, 2014). Gómez-Baggethun et al. (2010) suggest that formal education and introduction to technology affect the outlook of students. Secondary education came to the North Rupununi in 2000. Before this parents who could afford to send their children to the St. Ignatius Secondary School in Lethem. The Annai Secondary School is residential for students from distant communities. Those that live in the nearby villages attend daily. One of the problems, as noted by a Crash Water respondent CWI 021, was that the age at which they start teaching the children traditional practices is the age at which they now have to start attending secondary school. For students who traverse to school on a daily basis, there is an opportunity to learn their traditional practices. For those who are boarders, things change.

⁷⁷ Warishi is a local basket used to carry load, similar to a backpack. It is woven from the nibbi vine and framed with sticks. Straps for the warishi are made from stripping the inner bark of the Maho tree. When carrying load the warishi is set on the back and a strap is placed on the head to act as a counter balance.

It was explained by a former teenage student from Annai (Focus Group Meeting, 13 Aug, 2013) that she was able to learn her traditions and eat her traditional foods but for the residential students their attitude towards their traditional food and practices changes. It was explained that when live-in students first start at the institution they have problems with the food they are given but by the time they leave they have an issue with the traditional food that their parents prepare. And when they return home they do not want to participate in household traditional activities. These changes in attitudes, values and behaviours were noted by Gomez-Baggethun et al. (2010), Redford (1991), Rival (1997) .

There are feelings among the older generations that did not have the opportunity of a higher education that these students are getting a chance. These feelings have translated that in having this opportunity to learn new ideas their children are somehow now better than them.

“When they come back they want jobs. When they come back the boys don’t want to go with their fathers to the farm or the girls to help with the cassava work. They learn a lot so they become more than us.” (RWA 004, Elder man, Rewa Village, Jul 2013)

As mentioned in Section 2.3.2 formal schooling provides marketable skills and activities such as farming no longer hold appeal (Angelucci & Marchetti, 2014). The opportunities to teach traditional practices become less when children begin to take this attitude. The parents do not push the issue so the traditions continue to erode away.

5.5.3.2 Religion

Religion can be a hot topic in the Rupununi. Since the missionary days there are now a number of Christian denominations in the region. While I was in Crash Water for the first round of interviews members of a church were visiting with the hopes of setting up a branch in the community. When the motion for the establishment of the Church was placed before the community it was voted down. There is a general feeling that churches segregate the people by imposing rules on the people. The problem comes when people

see the “Christians” behave in certain ways and make comments. One of the major issues is said to be with the consumption of traditional drinks. Its consumption is forbidden in some churches but it is a Makushi tradition to offer such drinks when you have a visitor, to not accept is seen as an insult. The participation in the annual heritage celebrations has also become an issue. Some communities fear that their participation would require people to get naked. Organisers have tried to convince these communities that it was not a requirement for participation, but they still chose to abstain. In discussing this issue with the Crash Water focus group (26 Nov, 2013) it was mentioned that perhaps the people lose something in not participating because by being together they may help each other bolster their culture.

5.5.3.3 Travelling and interacting with non-Indigenous people

As indicated before, when students return home from secondary school they have more of an interest in getting jobs. For those who cannot find a job in the community they leave for Boa Vista (Brazil), Lethem, Georgetown or the mines. This opens them to new lifestyles so when they do return home they come with these ideas. These experiences seem to reinforce the desire to move away from the traditional style of living.

For those who are able to find employment in the villages of Rewa and Surama it may be related to their eco-tourism development. This avenue of employment also exposes them to foreigners and new ideas about how others live. These interactions and the plans the villages may have changes the perceptions of the young people of what they can potentially expect for the future of their communities. Young people may also go outside their communities to find jobs, such as at Iwokrama International Centre and Rock View Lodge. These institutions also build the capacity of these people and expose them to new ideas. When I asked a group of young people in Rewa what they thought their community would be like in the next 20 years or so the response was a city (19 Nov, 2013). The

youths are seeing the development of the community beyond what it currently is and traditional practices may not have a place in the future they are envisioning.

5.5.3.4 New Ideas from Internet and Television

Communication is becoming more accessible. In the communities of Rewa and Surama, people have regular access to internet and satellite television. These not only provide access to information but to social media and a way to see how other people live. They want that lifestyle even if they do not fully understand the consequence of it. As one of the poorest groups in the country, they are well aware of how difficult it is to live a monetary lifestyle. But one young lady believes that her compatriots are seeing what is out “there” and wanting it.

“They are seeing what is happening outside, like they want to be in more populated areas where they can just play games, sleep and have someone maid their house. They are watching movies, they are on the net, and they are going outside. Maybe they want to practice these things instead of going to the farm and depending on themselves to do things. They are only depending on the adults or their parents to do all these things.” (RWA 010, Rewa Village, Jul 2013)

While many people are still dependent on the land and its resources for their subsistence living, the Makushi are getting pulled more and more into the cash economy. Where before there was a barter system in place, there are now only cash transactions. Those who are employed full time sometimes have difficulty in maintaining a farm, especially if the farm is located some distance from the community. They are, therefore, dependent on shop supplies for their daily subsistence. This is not always an easy thing if only one person is bringing in a salary.

“We were like living off of money and it really difficult with money side. When you don't have money you wouldn't get anything and I was grieving to have a farm again.” (SRM 007, woman > 40, Surama Village, Jun 2013)

In the event that they are able to farm or perform their traditional practices there is a tendency to find shortcuts in the activities that would reduce the amount of time spent

performing it. As I was told in Crash Water during the focus group discussion on traditional farming

“why do I need to go through the rituals of praying and all that when planting when without that I get the same amount of cassava?”(CW0013: male 25 – 39, Focus Group, Crash Water, Nov 2013)

In the same way people with money are buying the technologies that can make life easier. In using these technologies, however, there may be negative consequences for their resources as being seen with both farming and fishing. An example is with the introduction of the seine net. With a seine a man might be able to capture fish faster and return home quicker with a meal for his family. With this same technology he would be able to catch fish in quantities to sell in the village. This can have unintended consequence in that he may overharvest the fish in a location that is used for subsistence harvesting, robbing someone else of their opportunity to fish.

While there are more contributing factors to changing attitudes, with new technologies the impacts can be far more detrimental. In the case of fishing, more and more fishermen with seines are setting their seines out on the river at the start of the rainy season when fish, including gravid females, are “marching⁷⁸” to their spawning grounds. The long term implication for such actions is a damaged fish population especially consequential for a resource that they are heavily dependent on. In this case it is not a lack of knowledge that underscores this behaviour, but attitude. During my work on fisheries issues the communities indicated how important it was to have rules in place to ensure the resource use remains sustainable. If there are indications that the resource is being overharvested it will be because a choice was made not to follow the rules as they have designed them.

For farming, those who can afford to, can buy or rent chainsaws to clear their new farm sites. Again this has both positive and negative outcomes. On the positive side, less time

⁷⁸ Marching is the local term used to refer to the yearly fresh water fish migration to the flooded forests and savanna to spawn and feed.

can be spent clearing the site, the more useful trees can be stripped for construction materials, other trees can be cut up for firewood. On the flip side some people are cutting too large farms that they are not using. Some see this as a waste and disrespectful to the tradition of not cutting more than you need.

In Surama, at the focus group meeting one of the participants (female > 40 yrs) said:

“We asked for development and when asked if we could handle what development meant we said yes. But as I look at it, it seems that development handling us and not the other way around.” (SRM 032, Surama, Nov 2013)

The Makushi people have experienced a lot in the last 200 years and they are still trying to find their footing in a world that is rapidly changing and they are playing catch up. As SRM032 said the people are calling for development but can they handle what that means. The more important question to ask is what do the Makushi constitute as development? What changes can be considered development? This was however, not a question that was explored.

CWI005, an Elder man, said the message being received about development is mixed. On one hand the Makushi, like their sister tribes, are being told that they must be traditional and hold on to their culture but no one is really explaining what that means. Some get the impression that they are expected to live in wattle houses with thatched roofs and walk around in traditional dress. Then there is the message to develop and join the “modern world.” But one community leader is trying to get his people to walk a middle path of embracing what is the best of both worlds. The idea presented is to make use of the modern technologies to foster community development and wellbeing while maintaining the cultural practices that are beneficial to their survival. But people have not correctly figured out how that can be done as yet and it is a struggle.

Of the three communities researched, Surama can be considered the most technologically changed. The leadership has recognised how to advance the community’s progress by

utilizing the networks and resources available to them. They have been able to provide job opportunities to their community members and develop a mechanism that allows each an equal opportunity at earning a living. But with these advances also come changes in their lifestyle. Parents are so busy that they no longer have the time to spend with their children. As one respondent, female over 40 years, said:

“Sometimes, whenever his father has time I would tell him you can’t allow this boy to grow so. You have to teach him to hunt, fish, do this farm work. Even this mechanic work you can’t allow him to grow like that.” (SRM007, Surama, June 2013)

But time has become an issue for many who work. Another participant (SRM 035, a Village Elder) was adamant that they should not allow employment and the things gained through that employment to take time away from being with their children. But if they did then they would have failed the generations coming as they failed to pass the knowledge on to this generation. As a way to address these concerns Surama has started a culture group (to be discussed in Chapter 7). This group performs cultural items both old and newly created. It is seen as a way of sparking interest in the younger generations and even the older folks. An Elder in Crash Water mentioned the group and the materials they perform, calling their authenticity into question. He noted that they were not true Makushi songs and dances. I presented the idea of change in culture to him and explained, as it was explained to me, that many of the songs performed were based on stories of old. The material was not being presented as old songs but simply part of the culture and as was said to me it encourages those who join the group to learn the language and traditions of making certain items used for costumes and props.

But in many ways Surama has already embraced the present way of doing things. The leadership, while encouraging the utilization of traditions, has embraced many of the modern conservation tools being utilised by the Iwokrama International Centre. To secure the products for its eco-tourism business, the community has zoned the land under its

control promoting a conservation site where only tourism is allowed. Community members are asked to not farm in these locations and they are also being encouraged to explore farming in the savanna, something they have never tried and so far the community has not seen fit to bring in strategic technical assistance. Those members who still hunt are also being asked to relocate hunting activities away from the main conservation/ecotourism sites. This way there would be little conflict between the two activities, but as I was told, the hunters are concerned about their level of success as their prime hunting grounds would have been in the tourist areas. In addition, the locations they can now hunt include active forestry sites.

The community of Rewa is a little more isolated than Surama, but with its tourism business quickly developing things in the community are changing to match. The leadership of this community is not as dynamic as Surama, but the ecolodge is slowly building a network to aid in its development and likewise transfer that to the community. Job opportunities are less available than seen in Surama so more people are still dependent on their farming to supplement their living. The community has worked on a resource management plan and the zoning is such that their activity does not conflict with each other. The community, however, needs to look at the resources it needs for the future and work on managing those. As RWA021, indicated, the people have heavily utilised the resources around the village and now are finding it difficult to access some of these resources (Alvard, 1993). They would have to be more strategic moving forward in how they use their resources. Unlike Surama, Rewa has not developed any program that would help foster the continuation of its traditional practices. The first attempt at a program was based on a small grant. When the money ran out the program came to a halt. The teachers expected payment to continue the lessons. Some of the younger community members have asked the question of why these teachers should be paid to pass on the knowledge

they had gained for free. This is a debate that the communities will have to have and hopefully find an amicable solution.

Crash Water is the least technologically changed and by appearance the most traditional of the three communities but presents a juxtaposition. Crash Water has very few economic activities and many of its working adult population have left the community in search of jobs. The others that remain in the community are working on processing farine for sale to make a living. The soil type around the community is ideal for planting cassava and little else. Hence community members have to shop quite often. Some respondents indicated that they may shop every week if necessary. The fishermen and hunters often go out to secure meat or fish.

The respondents feel that the community would be able to maintain its traditional practices but it is difficult to see this happening when more and more students are leaving for high school at the age training starts and when they graduate from school they leave for Lethem or Brazil to find jobs. While I was there in October 2013, it was difficult to find young people in the village to interview as many were out of the community and it was therefore not possible to get as many opinions on the issue of keeping their traditions and beliefs alive. Of the four persons interviewed the opinions were split on where their young people stood in learning their traditions. CW 024, a young woman 15 – 24 years old, (Crash Water, 2013) believes that if you taught the beliefs, stories and practices to the children when they are small they will grow up knowing it. CW 022, a young man 15 – 24 years old, believes people are teaching the practices but they are leaving the stories out. CW 019 and CW 023, young women 15 – 24 years old, believe that the young people were not interested; they were just interested in getting a job.

In the focus group discussion we talked about the traditions, the beliefs, the culture and who they would be as a people without those things. It was stressed that they did not need

certain beliefs to conduct certain activities, like blessing the land before farming. It was believed that there are other ways they could now conserve their resources but acknowledged that it was important to keep certain aspects of their culture alive to help identify who they are. The community leader indicated a desire to work with the group to plan and implement some of the things being done in other communities like the campfire for storytelling to begin reviving some aspects of their culture.

5.6 Conclusion

In this chapter the question of Makushi as conservationists was explored. It was examined through the lens of whether the tribe was carrying out active conservation measures or providing care through their traditional practices. The research followed two lines of argument: firstly in order to be seen participating in conservation activities the tribe would have had to at some point recognised they had reached a critical limit in the use of their resources and therefore developed a conservation ethic (Johannes, 2002). The historical examination of Makushi use patterns of their resources indicated that resources appeared to be in abundance and that the tribe used these resources with impunity. The only restrictions imposed on resource use were those from their cultural beliefs, taboos and norms.

The second line of argument was if there was no conservation ethic found to be in place what was the cause for the conservation effect being seen as regard the use of their resources. It would appear that Smith's (2001) postulation that the conservation effect was born out of the restrictions imposed from their cultural beliefs, taboos and norms. The beliefs, taboos and norms as institutes restricted how Makushi accessed and utilised resources. This resulted in a system of care that may have ensured that harvesting pressures on the resources were distributed across a wide range of species. It was found, however, that these institutions have eroded away as Makushi society changes.

While some fundamental changes came to the Makushi society when their territory was colonised, contemporary changes have had a more profound effect. Colonisation began the erosion of Makushi culture. This included their belief system and other cultural norms and taboos which overshadowed perceived consequences for accessing or using resources at certain times. One of the most profound blows was the prohibition of their piaimen from practicing on the reserves created for them. This loss of their spiritual leader was compounded with establishment of the missions, whose teachings would have contradicted and undermined their spiritual beliefs. The more contemporary introduction of technology and scientific knowledge may have further underscored what they perceived as the frivolous nature of their belief system. So while many practices like fishing, farming, and hunting continue, it is being done without the associated spiritual and taboo requirements in place. The consequences of which are the once sacred sites are being accessed for resources, many species that have had some protection under the taboo system are being utilised and are under considerable harvesting pressures as can be noted with the request to develop a management plan for fisheries within Makushi territory.

The care that cultural beliefs, taboos and norms provided for resources was an innate part of Makushi culture. It is something that was part of the fabric of daily life and as such was not something that was actively considered as management. Conservation is seen as separate from their daily activities (Alcorn, 1993) and therefore, any act to achieve conservation has to be considered especially how it may affect their daily activity. As an introduced concept how conservation is dealt with is dependent on the goals and objectives to be achieved. It is important that conservation goals and objectives follow along the same lines for both the tribe and conservationists and more essential are being driven by the tribe. It has shown by the COBRA project the problems to be solved can find local solutions, it means that those solutions could be partly incorporated into daily

activities of the tribe and could be instituted with little resistance as it would follow ideas they are familiar with.

One of the things to note about the degree of degradation or loss of traditional beliefs, taboos and norms has to do with level of change in the society. For those tribes that are isolated and very rarely engage with the market economy the level of loss is low as compared to those more ingrained in the market economy and have higher levels of access to technology and information. It means their level of care would have to be replaced with more active measures of management to achieve their conservation goals. Peters et al. (2012) suggest that tribes to engage in active conservation and manage will need to develop management plans. Few communities have that capacity and would need to push an agenda to train their people in the necessary disciplines that would give them the ability to better engage with governments, commercial markets and the global conservation communities (Peters et al., 2012).

It cannot be looked at that Indigenous communities gaining access to land would reduce the potential for economic development (Stevens, 1997) nor can it just be thought that Indigenous lifestyles and patterns of resource use (Alcorn, 2005) will achieve conservation goals. It can be surmised that while traditional beliefs and taboos have achieved some level of care, but the erosion of those systems suggest that active management will be needed to achieve the same effect.

The next chapter explores farming in the forest and the savanna. It looks at how the consequences of change seen throughout this chapter affects the way this practice is being carried out. It will explore how the definition of the practice has changed from what is believed to be its historical definition to contemporary times, how the practice is changing, how it impacts the forest and attempting to answer the overall question of whether the practice maintain a sense of care for the forest.

Chapter 6 – Farming in the Forest

6.1 Introduction

Traditional shifting cultivation has been a vital part of Amerindian culture for many generations (Forte, 1996). It is a system designed to make maximum use of the limited fertility of tropical soils (Rutherford & Hills, 1979). The practice can be considered a resource management strategy where fields are rotated to allow the rejuvenation of soil through long-term fallow after a short period of cultivation (Bruun et al, 2009; Mertz et al., 2008). Early European travellers did not understand the practice and wondered at the constant need to rotate farms observed while travelling through Indigenous locations. This was demonstrated in the Rupununi by Everard Ferdinand Im Thurn (1883), for example, who noted in his writings:

“The field is deserted after three or four crops have been taken from it; and a new clearing is made and planted. The reason of this periodical desertion of the old and clearing of the new ground is uncertain, but it is perhaps connected with some superstition.” (Im Thurn 1883, pg.253)

He made light of it, especially given the “superstitious” nature of the Makushi people he was visiting, where a family group may up and leave a cultivated field in the belief that Kanaima⁷⁹ was in the location.

Bruun et al. (2009) have suggested that shifting cultivation can be seen as the wisest choice economically and environmentally for subsistence farmers with limited resources. As discussed in section 2.4.1 traditional shifting cultivation has been seen as a driver of deforestation and forest degradation (Fox et al., 2000; Ickowitz, 2006, 2011; Mertz et al., 2008). These assumptions are being challenged as new evidence shows the contributions that shifting cultivation makes to forest ecosystems (Bruun et al., 2009). Recent studies indicate that traditional shifting cultivation, in fact, has the opposite effect; maintaining

⁷⁹ Kanaima is the supernatural boogie man of certain Amerindian tribes of Guyana. He is the method by which a wronged person may seek revenge or seen as a mischief maker bringing bad luck to a person (see Roth, 1915).

ecosystem function⁸⁰, including its role in forest hydrology, increasing biodiversity in the location and storing carbon in both the soil and vegetation (Bruun et al., 2009; CCMIN-AIPP, 2010). As an agent for deforestation, Angelsen (1995) argues that the magnitude of shifting cultivation's effects needs to be measured in relation to other land use activities. One of the problems, Angelsen (1995) further argues, lies with how shifting cultivation is classified as an agent of deforestation. He argues that no differentiation is made between land permanently cleared for other land uses and that which will revert back to vegetation. In addition, if traditional shifting cultivation stays true to its roots it could be 20-30 years before the site is cleared again, providing that populations remain low (Mertz et al., 2008). Increased population can change the way people farm, affecting farm size and length of rotation, and thus how intensely the farm is utilised (Chidumayo, 1987; Ickowitz, 2011).

Shifting cultivation has been defined by Sanchez et al. (2005 pg. 5) as being a “*traditionally long fallow rotation system*”. All other systems of farming were classified as slash and burn agriculture which utilises the slash and burn technique to clear the land with short term or no fallow (Sanchez et al., 2005). Traditional shifting cultivation as a practice is, however, believed to minimize its impacts on soil structure, seed bank and root mat, as it involves no tilling of the soil (Liang et al. 2009). This is essential as it allows for the quick regeneration of vegetation at cultivated sites. Over the centuries, the Makushi would have accumulated a store of knowledge on cropping using this technique and how it may affect the forest. As they come more into the mainstream cash economy traditional shifting cultivation, like other traditional practices, is being influenced by the changes occurring in Makushi society. These changes include but are not limited to education, technology, traditional beliefs and community management of their resources.

⁸⁰ De Groot et al. (2002) define ecosystem function as the capacity of natural processes and components to provide goods and services that satisfy human needs.

Guyana is a participant in the setting up of REDD+ systems. It has also embarked on its own LCDS. Guyana will need to examine the extent to which shifting cultivation activities are being conducted to develop a strategy on how the system should be managed in the long term. In considering a classification system, judgments would have to be made as to whether the form of shifting cultivation being practised by Amerindians is considered 'traditional' as per Sanchez et al.'s (2005) definition or be considered just another form of slash and burn agriculture⁸¹.

Whatever the definition of the agricultural system being practiced by the Makushi, shifting cultivation is an activity that is closely associated with the forest and it can have a major impact on the forest and its conservation if it is not wisely managed. According to Dalle et al. (2011), in order to balance forest conservation initiatives with societal needs there needs to be an understanding of how land use, in this case agriculture, is evolving. The aim of this chapter therefore, is to explore how traditional shifting cultivation is evolving. The chapter will examine how communities define their traditional farming system, what are the changes that are being seen in the practice, and the impacts and implications of these changes for forest conservation.

6.2 Defining Traditional Shifting Cultivation in the Rupununi

6.2.1 Historic description of Makushi Farming

The agricultural system practiced in the Rupununi by the Makushi and other tribes has been described by European travellers⁸² through the region during the 1800s. It was noted that this form of agriculture was not practised in the savanna where the soil was exposed to the sun and was hard packed (Schomburgk, 1848) . It was practised in the forest,

⁸¹ In Sanchez et al. (2005) there is an indication of the struggle to define shifting cultivation beyond just the use of slash and burn as the key element of the practice. This brings in the idea of traditional practices of the Indigenous peoples and the practices of people who have been transplanted to remote areas and encouraged to conduct shifting agriculture.

⁸² Schomburgk (1922), Im Thurn (1883), Brown (1876), Farabee (1967)

where the trees offered some shade and the soil maintained some moisture (W. C. Farabee, 1967). For this reason the farms were located some distance from settlements unless the family chose to live in the forest where provisions would be planted near the home, though the family may have other farm sites scattered in the forest (Im Thurn, 1883).

The main characteristics of the system highlighted from these historical descriptions started with the clearing of a forest patch of undergrowth and easy to cut trees, which was then left to dry for a few weeks. Upon drying, this material was gathered and burnt. Those pieces not completely burnt may be heaped together again and relit (W. C. Farabee, 1918). Once the field was sufficiently cleared, the planting began. Cassava⁸³ was the main crop that was planted. Within the farming system there was an obvious division of the tasks to be carried out by the men and women. The men cleared the site to be farmed while the women planted, tended and harvested the farm produce (Im Thurn, 1883).

In describing the system, little was said by the travellers about the mechanics of clearing the field. In discussing the history of the practice with Makushi Research Unit Coordinator Paulette Allicock, she recounted what the elders thought the practice use to be:

“They never did any big farm. They would look for 3-4 big trees close to each other and they would pound the bark⁸⁴ of the big trees, this will cause the trees to dry and die. They would then burn the trees. To burn the trees they would use a rock, like flint, and cotton to catch the fire. Before they never planted cassava, just yams and maybe banana sucker. The Makushi people were never stationary but would move around to where they have other farms.” (Personal communication, March 2013)

⁸³ Cassava comes in two types sweet (*Manihot dulcis*) and bitter (*Manihot esculenta*). The type is dependent on the amount of cyanide that can be found in the roots. Sweet cassava can be cooked and eaten without being processed. Bitter cassava has to be processed to remove most of the toxic cyanide (Forte, 1996 pg. 177).

⁸⁴ This practice is known as girdling. A strip of all the living material is removed from the circumference of the tree. This results in the death of all the material above the damaged area (<http://ohioline.osu.edu/fact/0045.html>).

Metal implements were introduced by the Dutch to the tribes. It is not known how quickly it took for these implements to reach the Makushi. It is known from the journals of Van Gravesande that the Dutch had established a post, Port Arinda, by 1731 in the vicinity of the Makushi territory to establish trade (Harris & De Villiers, 1967). This would have increased accessibility to metal implements by the tribe. However, while Walter Roth (1924) postulated that the tribes continued mixing the use of stone and metal tools in their daily work, it can be assumed that by the time of Im Thurn's travels in the Rupununi, the use of metal implements would have been more widespread.

However, despite the availability of new tools, the tribes would have needed time to adapt these new tools into their practice. Dummett's (1968) recounting of the practice by the Wapishana, in recent history, suggest that given the availability of tools at their disposal the strategy used for felling trees was to only partially cut the many trees present in the site while a larger tree, strategically located, would be cut through in such a manner that it would bring the others down. It is postulated that the Makushi may have used the same strategy in the clearing of their farms. This reduced the amount of work and energy needed to bring the trees down. Whittlesey (1937) suggests that the farm sites were chosen in the primary forest to reduce the amount of undergrowth that needed to be cleared away as the tools available limited the size of the fields that could be cut by the tribes. As recalled by one Elder,

“When growing up, my parents died when I was young. I grew up with different people and used to see people cutting farm but not big. They used to have more than one. A patch here, a patch there and they use to plant it but it never last long. So as we got bigger the father would ask us the children to help him cut a bigger farm. As I got bigger I now start to work with them, cut farm, plant. They would cut it a little bigger, they would invite friends to help them cut and help them plant. That is how they use to do it long time. (SRM003, June 2013)

The small size of the fields limited the amount of cassava that could be produced and used. As noted by Im Thurn (1883) this made the settlements vulnerable to disasters and the changing seasons. But as he also noted, during these times of need, families would

supplement their diets by gathering fruits and nuts from the forest. This practice was still in effect in the 1930s based on the account of an Elder, SRM 003, from his childhood days:

“They use to get wild fruits from the forest; fruits and nuts. When they didn’t have cassava they would depend on the forest. Kokrite (Maximiliana regis), lu (Oenocarpus bacaba), balata (Manilkara bidentata) for in those days we never had shop. Most food was from the forest not the shop that was the backup of the farm.” (SRM 003, June 2013).

It is possible that shops were not within the vicinity of SRM 003’s location. Most ranches in the Rupununi, owned by Europeans, had some form of stores. Barter was the main form of transaction between ranches and the Indigenous populations. It is more than likely that community members may have had little to barter with⁸⁵. Distance would have also been a deterrent to accessing supplies. This would have most likely been the case for SRM003.

6.2.2 Contemporary Description of Makushi farming

During discussions with some members of the Makushi Research Unit⁸⁶, the researchers gave an account of how farming is currently being practiced. Farming is done predominantly in the forest. Today, more the 60% of villagers claim to farm in secondary forest areas within 1-5 miles from home (CMRV, 2012). These include bush islands, the transition zone between forest and savanna (called bush mouth), along thoroughfares (rivers, creeks and roads) and alongside mountains. Farmers access these locations mainly by walking or using bicycles or canoes. Secondary forest sites maybe chosen for ease of clearing vegetation and for forest conservation. Secondary forest sites may have smaller trees to remove based on the time the area has been in fallow.

⁸⁵ Myers (1994) pointed out that bartering was the main method of the tribe obtaining items they needed. She indicated that during the 1940s when goods were scarce at ranch stores the Makushi would refuse payment by money as they thought it had little value to them than the goods they were in need of.

⁸⁶ Meeting held on 12 Feb 2013 in partnership with COBRA Project.

The researchers said farms are always prepared for the start of the wet season beginning in May. Farmers commence farm preparation between the months of February and March. The husband is responsible for choosing the farm site. RWA012 (male, over 40 yrs., Jul 2013) indicated that traditionally a young man may consult his elders about good sites to clear a farm if he was not that familiar with the forest. He would also gain this knowledge while hunting in the forest. He would make note of the soil, presence of water source, where the high ground was in relation to that water source and distance from home.

Today, the man may take his wife to see the site to help assess the soil quality before making the final decision to clear the area. This is a noted change from earlier accounts where the sole responsibility for deciding the location of the farm lay with the men. That view has changed in some communities with credence being given to women's experience with planting and reaping the crops and being able to provide advice on soil productivity. With the choice made, they would together mark the site using sticks and cloth markers. If the site is located in primary forest it will be cleared⁸⁷ using self-help/family work⁸⁸. The newly cut farm is left for three to four weeks before it is burnt. As the new farm is left to dry for burning the family will resume tending their current farm. The new farm is burnt⁸⁹ after drying. After burning the debris will be cleared away. The site will then be left for the rains to soften the soil and also beat the ash into the soil. Some families may wait four to five days before they begin planting. Depending on the condition of the soil the family will plant a variety of crops. Corn (*Zea mays*), pumpkin

⁸⁷ Trees are cut using axe, under bushing is done with a foice (sickle) and cutlass, planting is done with a hoe or pick axe but depending on the soil, the old tradition of using a sharp piece of stick maybe used.

⁸⁸ The family clears the under bush and then uses self-help to cut the larger trees. Self-help is a communal effort of getting work done quickly. At an individual level it entails inviting other family members and friends to assist clearing or planting the farm. This includes the host providing local drink for the participants. Food may also be provided.

⁸⁹ Burning is done from the west or downwind of the farm. This ensures a slow burn allowing more of the debris to burn. If burnt in the same direction as the wind only the smaller debris would burn as the fire would burn faster. It is a traditional belief that as the fire burns the man or woman can make a wish to have all their crops give fruitful productions.

(*Cucurbita maxima*) and watermelon (*Citrullus vulgaris*) is planted first; corn in particular as it has a higher demand for nutrients and moisture to grow than cassava (Farabee, 1967). How the planting is done is laid out in the accounting of SRM 008 (male, over 40 yrs.):

“You plant corn first; when the corn meets to a certain height, you plant cassava between the roots. That is how my father taught us. Corn, cassava, yams - of course yams you put in the burn heap, eddo and dasheen is also the same or you plant in the wettest part of the farm; the mud part of the farm or the lowest part of the farm. This is in some places that are low spots but when you cutting cassava farms you cut it on high land so you plant corn and cassava, banana and plantains where you burn the heaps and the vegetable farms you plant at the hill foot or swampy areas.”(SRM008, June 2013)

To plant bananas (*Musa spp.*) and pumpkin, material is piled up at tree stumps and burnt before the sucker and seeds are planted. Other produce like sugar cane (*Saccharum officinarum*), yams (*Dioscoreacea spp.*), eddo (*Colocasia esculenta*) and dasheen (*Colocasia spp.*) are planted in the swampy sections of the farm. Crops like pawpaw (*Carica papaya*), kasiri potatoes⁹⁰ and bina plants⁹¹ are planted at the edge of the farm. Once the corn has been harvested a variety of sweet and bitter cassava⁹² are planted. When all other crops have matured and harvested, cassava may remain as the sole crop in the field. This farm on its first planting is usually referred to as a duck farm⁹³. During

⁹⁰ Kasiri potato is a type of purple potato used in the making of the local drink Kasiri

⁹¹ Bina plants – binas are charms within the Makushi culture, so bina plants are plants believed to have charms that assist in one pursuit or another, be it enhancing a skill, provide protection or obtaining a desired objective.

⁹² When planting the cassava stick it needs to be inspected for latex. If no latex is found it should not be used as the plant will dry out. If it does grow it will not produce well.

⁹³ *“In Shanta, when the world was new yet there was Duck and Owl, who were sons- in- law for a lady. Duck a willing man could cut a farm without rest, but Owl who was lazy cut down one tree and each they when they went off to work on their fields Owl would sleep on the stump for the whole day while Duck would do his work and go home early. The mother in law always wanted to know why Duck use to come home early and thought he was lazy and not working as hard as Owl who always came home at evening. One day the mother in law said let us go check to see what this man does do. When they got to Duck’s farm they found it planted with all sorts of crops from corn, cassava to sugar cane and bananas. When they checked Owl farm they found only one tree cut down and Owl sleeping on the stump. A first farm is referred to as a duck farm as it always has a variety of crops as Duck’s farm did.” (YUP001, Male Elder, Sept 2013)*

October – November, some people may begin to prepare a smaller field, called a deer bed to catch the December – January rains⁹⁴.

When planting is completed, the farm is maintained by the wife. She will tend the banks, preventing the seedlings from being smothered by weeds. As the cassava grows she will cut away any branches so only the main stem remains. This will ensure that most of the plant's food resources will be directed to the root and increases its biomass. Depending on the variety of cassava used, the first crop can be harvested between four to nine months, some after a year. By traditional custom this first harvest consists of just one warishi⁹⁵ to make the traditional drinks of parakari, arwo or kasiri⁹⁶. This is to be shared among friends and family. The cassava should be used for no other purpose.

After the harvest, the banks may be replanted immediately. It was noted from interviews in the villages that this was not the way of the “old people”. SRM007 (female, over 40 yrs.) said during her interview:

“The old people use to hum whenever they finish reaping the cassava. They would weed, they don't plant back right away like what we do, which is plough back and plant back right away. What they do was put the bushes over the bed and burn, that is to mold⁹⁷ up, maybe to get the ash for the fresh sticks to plant. So whatever they do they would go back maybe after leaving it, overnight then go back to burn.”(SRM007, June 2013)

This act would serve to re-introduce nutrients into the soil before replanting. It is a process that would also increase the length of time the farmer could potentially use the site for cultivating crops before having to move to a new location.

⁹⁴ These rains are known as the Cashew rains as it is the period when the cashew nut trees start fruiting and the nuts become available for harvest.

⁹⁵ A warishi is a traditional carrying basket weaved from the vine nibbi (*Heteropsis flexuosa*) or the cane mukoro (Marantaceae). When packed with load it is carried strapped to the back with a head strap helping to ease some of the pressure off the shoulders.

⁹⁶ Parakari, Arwo and Kasiri are all locally fermented drinks made by Amerindians through different cooking processes using cassava as the base.

⁹⁷ Molding is a colloquial term used when attempting to add nutrients to the soil. For some it is adding cow manure or in the case of Amerindians burning dried vegetation.

6.2.3 Makushi Definition of Traditional Farming

The account given by the Makushi Researchers highlights what is believed to be the typical process involved in traditional Makushi shifting cultivation. As way of confirming this description, community members through the Community Monitoring, Reporting and Verification Project (CMRV) farm surveys were asked to define their concept of traditional farming. Their interpretations were varied but highlight a number of similar characteristics. These include: the practice is carried out in the forest; it must appear to be as their ancestors carried it out; they use the tools which were used traditionally; traditional beliefs are a part of the system; no fertilisers are added; only “man power” is responsible for the work; the crops planted are mixed; work is done by family and self-help; there is rotation of fields every 3 - 4 years; and, the practice appears sustainable and the land is used in a wise way. There was no mention of fallow time in their description of their farm practice. From the literature, the key element of traditional shifting cultivation maintaining its integrity is a long term fallow (CCMIN-AIPP, 2010; Fox et al., 2000; Mertz et al., 2009). To lose this element means that the benefits gained from the forest going to rest is lost.

Looking at the characteristics identified, a number of things stand out as important to people in maintaining the traditional aspects of their farming practice. These are farm location, use of traditional tools, the social interaction, and maintaining a mixed cropping system. One characteristic highlighted that is not within the traditional model of “old Makushi” farming is the sustainable use of the land. As discussed in Chapter 5, the Makushi were a constantly moving group and, as such, thinking about the availability of cultivatable land would not have been of concern. Today, like the other Amerindian tribes of Guyana, the Makushi live a more sedentary life and as their population grows, ensuring that there is enough land for cultivation to secure food and using it sustainably becomes an important priority for community leaders.

6.3 Impact of Traditional Farming on Local Area Forest

As pointed out by community members in the CMRV survey, Makushi farming has always occurred in the forest. The positive and negative impacts of shifting cultivation have been debated in the scientific literature, and the implications of the changes seen in the practice will be discussed in section 6.4. I, however, wanted to understand what community members thought the possible impacts of the practice were on the forest. A large number of the respondents did not think their farming practice adversely affected the forest. They held this belief because they felt their farming was done only at a small scale. As explained by RWA 010 (female, 25 – 39 years):

*“No, it could if it’s on a large scale but I don’t think it affects the community.”
(RWA010, July 2013)*

There was little consideration of the potential cumulative impact of all the farms on the forest area being utilised, though one person mentioned the general impact of opening up the forest. Many of those interviewed or part of the CMRV survey indicated that their farm size was one acre or less. Ground truthing⁹⁸ of this information indicated that many farms were in fact smaller than an acre (C. Jacobs, personal communication, 18 June, 2013). While in some cases the farms may be smaller, in the case of a community like Rewa more persons were utilising the space. While this observation will be addressed later, the increase in intensity of use changes the patch dynamics of the forest. A shifting cultivation landscape has a distinct variation in vegetation based on the length of fallow. An increase in the number of persons and reduction in fallow period changes the landscape makeup.

Those who did think there was some form of impact pointed to fire as the cause. It was, however, felt that fire only became an issue if care was not taken during the process of burning. According to Uhl (1998) tropical Amazonian forest are not easy to burn but

⁹⁸ Ground truthing is the physical verification of information received either through interviews or images (satellite or aerial).

where there is prolonged drought the area is more susceptible. For farm preparation the dry season is key for burning and it is the time to pay close attention to the fire:

“Yes, during the dry weather time when the farms are burning and people don’t look them after.” (CW019 female 15 – 24 yrs., Oct 2013)

“In the forest when you burning keep an eye on it before it stray way, before the forest catch afire. Because it happen one time with me over so (pointing to the forest on the western side of the village). I left the fire on and it destroyed the whole forest at the back. Now the forest is share razor grass and bamboo all grew up in there.” (RWA007, male 25 – 39 yrs. July 2013)

In some farm locations where there is continuous firing of the sites due to shorter fallow periods there has been some transition from forest to scrub savanna⁹⁹ (also noted in Annai farming area, ANC 002, Apr, 2013). In the case of Rewa, where the observation was made, the site was adjacent to land that had already transitioned to a new vegetation type and when the fire destroyed the forest in the location, this transition area expanded.

A few also believed that wildlife would be affected either directly or indirectly because of fire, losing their shelter or being killed outright.

Another consequence seen from run-away fires is burning of large patches of forest resulting in the destruction of valuable medicinal plants:

“...but you know we destroying the medicinal plants so my sister-in-law was saying that we destroying some good plants and so she came and taught us to make antibiotics and she show me some bush medicines she does use. We don’t know the values of some plants and so we burning them not knowing.” (SRM007, female over 40 yrs., June 2013)

⁹⁹ In Surama, they are seeing the opposite effect of vegetation transition. *“Yes ... we were told if we continue to cut down the high bush it would turn into savanna, yet this savanna becoming a forest.”*(SRM 007, June, 2013)

The reference to the savanna turning to forest was made in reference to Surama’s role as a cattle post along the cattle trail used to move cattle from the Rupununi to the coast of Guyana. Some community members feel that the cattle suppressed the vegetation and now that cattle are no longer at the numbers they use to be the vegetation is encroaching. Historical records show Surama as a natural savanna valley. The growth of vegetation could be a natural progression of the forest. Surama sits right at the transition zone of forest to savanna. In addition, the community has suppressed the use of fire to subdue the vegetation due to threat posed to houses being destroyed from runaway fires.

Medicinal plants are found throughout the forest. When a farm is burnt some may attempt to harvest those plants that are within their farm site for use. However, if the fire escapes they recognise that these valued trees are also destroyed.



Plate 0-1: Farm location that is in transition from intensive farming and fire; Awaramay, Rupununi River (Source: Author)

Escaped fires can destroy wildlife habitats and deter wildlife presence. One participant also felt that constant human presence in the farming area would deter wildlife from

remaining. However, during the interviews many people identified wildlife as threats to their farms, showing that the animals are attracted to the food. Another point noted was a general feeling that



fewer persons hunt around the farm as was done by the older generations.

Plate 0-2: Cassava eaten and left exposed by wildlife (Source: Author)

This conclusion was based on farmers' responses to questions about how they dealt with the wildlife destroying their crops. They felt that hunting one or two animals would hardly impact the situation. The feeling being that there was a high number of animals around. In addition, they indicated that most hunting was now done during the rainy season when the animals were concentrated on high grounds within the flooded forest. This supposition, however, was not fully supported by the CMRV data. From their surveys it was found that more than half the respondents hunted in their farm for home use as seen in figures 6-1 and 6-2, though there was no indication as to when the hunting was done.

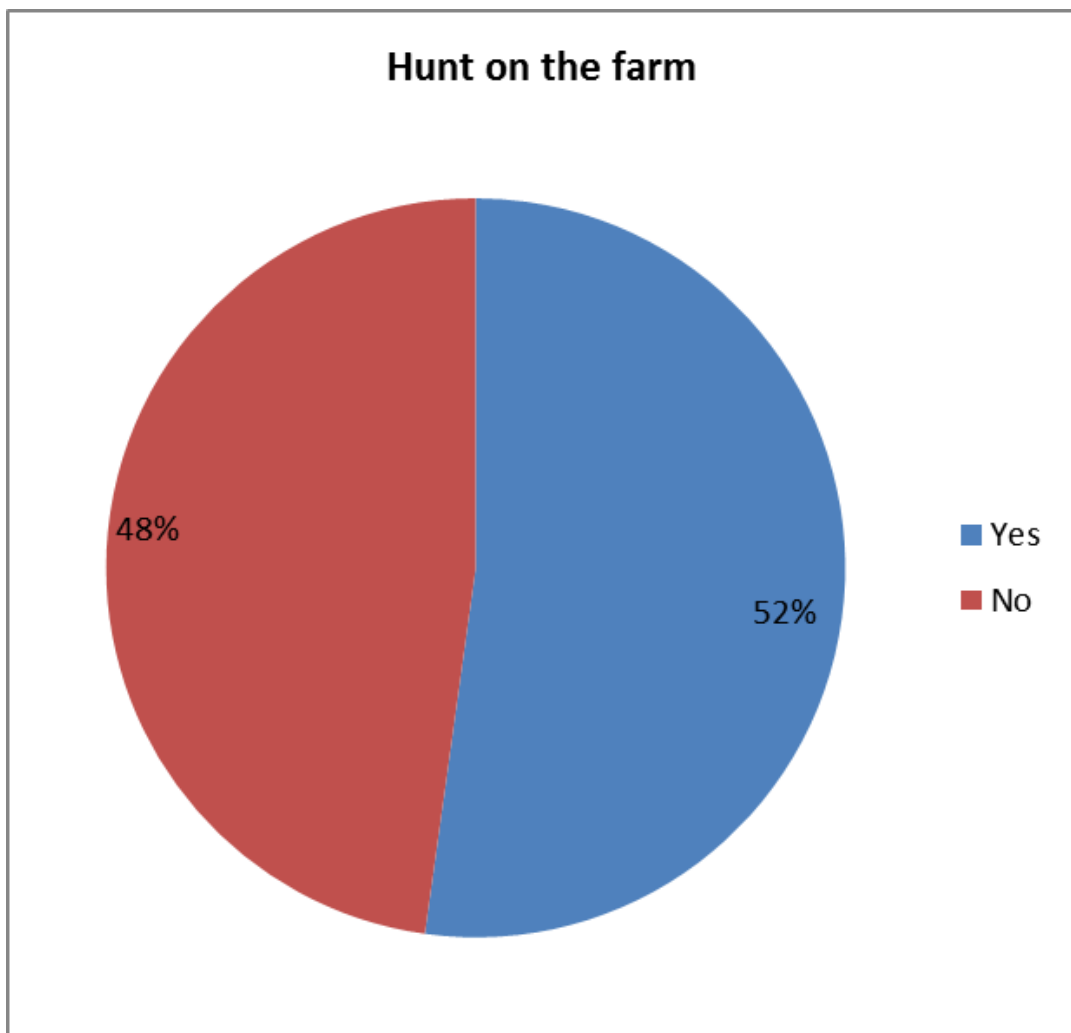


Figure 0-1: Hunting on farms (Source: CMRV Data)

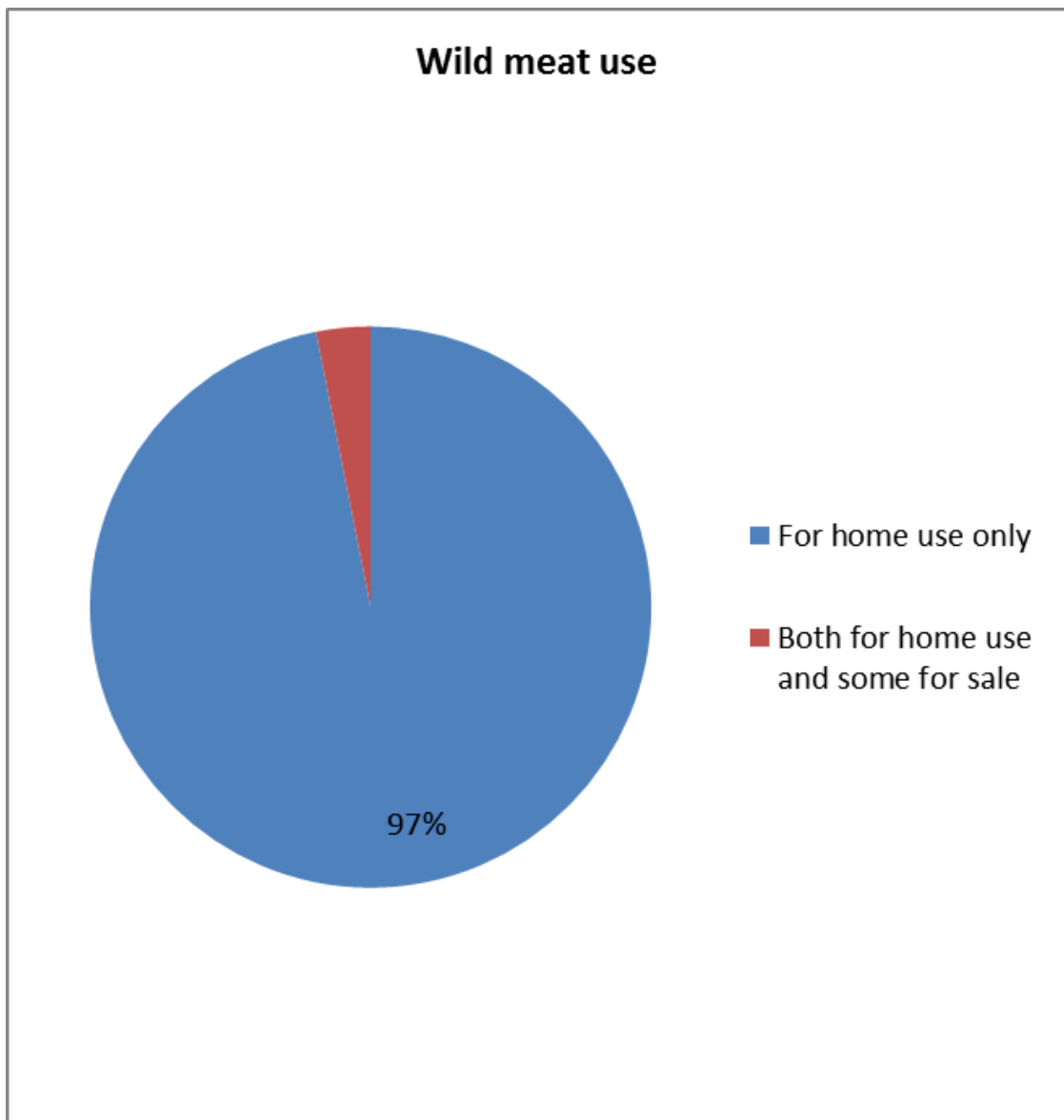


Figure 0-2: Use of hunted game (Source: CMRV Data)

Edge effect is an important consequence of forest based farming. The trees and land contiguous to the opening created by the farm are exposed to the elements.

“When you open big farm, it gives the breeze more power to destroy the trees because you opening up space to affect the tree and so it fall.” (CW006, male 25 – 39 yrs., Oct 2013)

The participant was referring to the trees at the edge of the farm being exposed to more wind and not having the support of other trees and so more trees may fall as a consequence. Studies of edge effects on forest have indicated both biotic and abiotic effects (Murcia, 1995). The gap opened because of the farm would affect the soil

moisture content at the edge of the forest and the amount of light penetrating that location. These changes would impact the species composition now found at the site (Murcia, 1995). In addition, these gaps created for farming, if not used, create the ideal conditions for starting forest fires (Uhl, 1998).

6.4 Changes to Traditional Shifting Cultivation

Various levels of change have come to the Makushi population of the Rupununi over the last 200 years but the changes have never been more rapid than those seen since the opening of the Georgetown-Lethem Road (Watkins et al., 2010). As highlighted in Chapter 5 some of the noted changes seen in the Rupununi relate to knowledge, beliefs, technology, and social interaction. These changes can also be seen within the Makushi traditional farming practices. The changes noted are directly related to the land and can have serious implications. These changes can also be linked back to the characteristics highlighted by the communities in their definition of Makushi traditional farming practice (see section 6.2.3).

When asked what has changed about Makushi farm practice many respondents were quick to point out nothing had changed. They saw only the repetition of what they have done since they began farming, discounting the little additions and decisions made at village and individual levels. Further discussion, however, began to highlight simple features that have changed or are slowly changing. These changes include technological, land use planning, commercialisation of farming practice, and farming beliefs. Many of these issues are not standalone but are intertwined in their implications for forest conservation.

6.4.1 Technology

Since the introduction of metal implements, the cutlass and axe have become an integral part in clearing farms. At some point the hoe, mattock and foice were added to the list of

tools used. During the interviews most people highlighted the essential use of these implements in preparing their farms. However, a few indicated that the chainsaw was being used more frequently. Its use was conditioned on the user having the available finances to either purchase or rent one. According to Ickowitz (2006) income and wealth determine the technique used for clearing farms.

“Yes, right now all the farms are done by chainsaw, but before was axe. Right now when I was walking through the farms I didn’t see any axe marks, all was chainsaw. They use the axe yes but to junk (cut) up pieces for firewood.”(FG3 – KWM 001, female 25 – 39 yrs., Aug, 2013)

“What they do is cut up the small ones (trees) with axe and cutlass and then spend money to bring in a chainsaw man, so not even a day pass and you’re finished.”(FG3 – KWM 002, male 25 – 39 yrs., Aug, 2013)

The chainsaw is being used to cut the larger trees found within the farm site. It provides the advantage of being able to clear the site faster and if desirable, clearing a larger space to cultivate. This is certainly the case for some families or communities who are engaging in commercial scale production of cassava products. However, a consequence of using chainsaws is that farms can be cut larger than the farmer intended especially if it is not the farmer operating the chainsaw.

“I worked with my uncle in cleaning my farm. He junked the larger trees. I used the saw to junk up some of the logs that could be used for materials that is what we do so we don’t waste logs. That way we get house materials. It so happens that he junked a bigger portion than I could clean all so there is still that piece needed to be planted and bush has grown back high already. So that is what I’m working on.” (FG3-KWM 002, Aug, 2013)

It had not been the intention of the farmer to cut such a large farm. He indicated that they took the decision to plant only part of the land prepared while the rest returned to vegetation. He further indicated that they would be utilising that piece of land when it is time to clear a new farm. This way the land would not be “wasted”. However, in some of the villages there have been complaints of farms being cut using chainsaw and not being utilised. This is seen as a waste of forest especially if the timber was left to rot. This was a concern raised in Surama where most new farms are cut in primary forest or long fallow

minabs. The use of chainsaws is not as prevalent in Rewa and Crash Water as most farming is being done in minabs and the effort needed to clear these sites is minimal.

Having access to a chainsaw also means that the large trees cut at farm sites can be directed to alternative uses. More people using forested areas are beginning to reclaim the materials from these trees for housing, if usable for that purpose. Others are using the timber for firewood and fence posts. They are seeing the reclamation of these materials as an alternative means of earning a little income as certain community projects and commercial enterprises¹⁰⁰ have a demand for timber that is quickly accessible.

In addition to chainsaws, tractors are also beginning to play a role in Makushi farming. This technology expands where farming can be done and promote the active management of land use. The use of the tractor is linked more to farming the savanna than the forest, though communities do have tractors that are used to get to forest farms and to bring produce and other forest products¹⁰¹ out.

“In the savanna area we use the tractor for ploughing and this reduces all that cost of you would incur. What you would pay 10 men to do, the tractor can do it in half hour.” (SRM 008, male over 40 yrs., June 2013)

Over the last two years, some communities have been exploring and experimenting with the idea of farming in the savanna, despite the essentially poor quality of the soil (see soil profile map 3-3). The main driver for attempting this type of farming is the lack of inadequate forested land and the fact that some communities that do have forested lands have to travel far distances to reach those lands. Attempting to farm in the savanna is one way of bringing the farms closer to home and avoid cutting more forest as the population expands. These farming trials are being done on titled land so there are no conflicts with state land. They would attempt to use land with the highest possible elevation not ear

¹⁰⁰ The community of Kwatamang instituted a ban on harvesting firewood from the treeline bordering the Kwatamang Creek where the material was being harvested for the brick-making enterprise. The firewood is now being partly sourced from those cutting new farms.

¹⁰¹ Some communities mainly use their tractors to extract timber or bring other products such as fruits and nuts out to the communities for processing.

marked for other activities, but most crops planted are short term, to be harvested before the annual flood. The tractor, which is usually obtained with Government's assistance, is used in preparing the land for planting, the main activity being ploughing and harrowing the soil. The main issue with using this method of preparation is the disturbance to the soil structure. In ploughing, the nutrients and organic matter in the top soil are overturned and buried. Ploughing buries the surface soil twelve to eighteen inches, depending on the size of the ploughs, removing any accessible nutrients from planted materials (field notes, 13 Apr, 2013)¹⁰². Harrowing loosens the soil leaving it exposed to erosion. Concerns were raised by Dagon (1967) about using tractors and power tills in cultivating the savanna. It is believed that these technologies would increase issues related to soil fertility and soil structure. In addition, it is believed that tilling hastens the leaching of nutrients and accelerates soil erosion. Concerns were also raised about carbon emissions from tilling of soil (Barbosa and Fearnside, 2005; Houghton et al., 2000).

Large scale mechanised agriculture did not take off in the Rupununi as feared by Dagon (1967); the main reason being access to markets. With the reduction of flights to the Rupununi following the Uprising (see section 4.3.3) and only the cattle trail linking the coast, the communities had no way to get products to external markets. However, with the Georgetown-Lethem road now providing better access to markets and changes in ideas about land use, especially for communities with limited access to forest, planting in the savanna provides an alternative with the use of tractors making land preparation easier.

While market demand for farine has been driving its production, it is the availability of tools like chainsaws and tractors that allow community members to prepare larger farms to plant cassava that would enable that production. If more persons are so inclined the communities in the North Rupununi can see a dramatic raise in the number of large farms

¹⁰² 13 Apr 2013 visited the Santa Fe Rice Development where one of the topics discussed was their farm plot for beans, cassava and fruits.

created to feed the farine demand. The demand for farine does not just come from the mines, but also from other communities and even within the study communities themselves (C. Jacobs, pers. Comm. 17 June, 2013). As more people begin to work they have less time to farm and as such have to purchase what they need.

This practice may lead to deforestation or forest degradation at the least. The location of farms is now tied to accessibility for both those engaged in commercial farming or for subsistence. Those who are working indicated a preference to having their farms located close by (within a mile of home if possible) that would allow them the opportunity to plant if they have time. Farmers engaging in commercial activities would not want to locate their farms where transportation access is limited. It means that cultivation, even if rotational, would eventually lead to forest degradation and eventually deforestation (Styger et al., 2007) . This comes as the farmer would leave his field for only short periods of fallow giving the soil very little time to recuperate. It means in time that the farm site would come to lack forest type vegetation through the destruction of its seed banks (Smith et al., 1999).

Some community members are concerned about the impact commercial farming could have on the forest (discussed in section 6.4.3). In the CMRV surveys, some Surama respondents indicated that the only way they could maintain their forest would be to continue their traditional farming:

“It will help keep the forest how it is.” (SRUHHQ29, female 25 – 39 yrs., Oct, 2012)

“This is the only way to keep our forest but if we choose commercial business we are going to lose our forest and everything in it.” (SURHHQ7, female 25 – 39 yrs., Oct, 2012)

To this end many members of the community are supportive of alternative developments that promote the conservation or sustainable utilisation of the forest over clear cutting

extractive activities. This explains the wide support eco-tourism has received in the village and the encouragement to expand on similar ventures.

In Crash Water, on the other hand, most the respondents in the survey indicated that their traditional farming was about their livelihood and some expressed the desire to see it expand.

“I would like to see traditional farming on a larger scale for commercial business for future generation.” (CRAHHQ07, male 60 yrs., Aug 2012)

With that expansion, Crash Water respondents also wanted to see the introduction of new technologies to the community like drip irrigation and hydroponics. This, they accept, would be non-traditional, non-forest farming. Crash Water’s available lands would encourage the development of large farms for commercial purpose but lack access to market both physically and strategically. In addition, the soil only encourages the planting of one crop – cassava. It therefore, means they would have very limited options in diversifying their production.

One other technological introduction to communities is the use of chemicals to treat the pest affecting the crops. These items number among those seen introduced to traditional farming systems (Mertz & Christensen, 1997). The main farm pest is the Acoushi or Leaf cutter ants (*Atta sp.*). The main form of treatment is through the use of baits and poisons. Participants were asked about local solutions to this problem. It was indicated by many that they did not know of one. Those who were aware of local remedies indicated that the chemicals proved stronger and is now preferable to farmers as they act faster.

Technological introductions can prove beneficial to farmers. It can help with the reclamation of wood materials ensuring that there is maximum use of these materials where previously they would have been burnt. Technology could also promote the economic development of farmers as they are now able to prepare larger farm sites. But

this raises concerns as farmers would have to make the decision to either remain stationary using fertilisers to enrich the soil or continue with field rotations which means large areas of the forest would be cut for these activities. The other concern, which will be discussed in the next section, is what options are available to farmers when land use is managed on communal lands.

6.4.2 Land Use Planning

Historically there was no active management of farm locations. Villagers could locate their farm in any suitable location in the forest they felt had the correct soil type to give them good crop yields. This is still mainly the practice in many villages. The areas chosen if used by a family for many generations is associated with that family and younger generations may choose to establish their farms in old minabs. If minabs have not been used for many years and are now being utilised by a different family, conflict does not arise. It is usually because the family is no longer in the area or have found other farming grounds. The general outlook, however, is there is plenty of land available to be utilised so there should be no contention.

The message about forest conservation and the concerns surrounding shifting cultivation as a contributor to deforestation and hence its role in climate change have prompted some village councils to examine the issue and begin making decisions, with village consent, for better management of their land and other resources. Surama and Rewa have been actively working on resource management plans for their communal lands. Crash Water has yet to consider the issue in this manner.

Most of the communities under the NRDDDB have done some form of resource mapping. The maps generated from these activities are now being used to produce community

management plans¹⁰³. The management plans have zoned the community's land and have designated areas for the various activities occurring in the villages including farming, hunting and extracting forest products. The idea of management planning and zoning follows the management strategy implemented by Iwokrama for the Iwokrama Forest (see section 4.3.4.2 and 4.3.4.3).

The mandate of Iwokrama is to develop innovative models that would demonstrate the sustainable use of tropical forests. The official legislation of Iwokrama instructs that at least 50% of the Iwokrama Forest should be conserved. It was therefore, necessary to zone the forest, identifying the areas that were more suited to economic development and others for protection. Some community leaders feel that communities should not only participate in the decision making process of managing the Iwokrama Forest, but also implement activities such as the zoning. In attempting to zone their own lands, communities have been identifying resource management issues that need to be planned, for example ensuring there is enough land identified and allocated for farming. As part of its sustainable development/conservation message, Iwokrama promoted the idea of zoning, protecting the forest and finding alternatives to extractive activities. The communities are attempting to achieve some of these goals within their titled lands.

Over the years forest conservation was linked to carbon sequestration and climate change and provided a stronger incentive for communities to protect their forest. But the forest conservation issue, especially carbon sequestration, is still a big question for the community. Community members are unclear of what the issue is about but know that it is linked to forest conservation. To this end the village councils have been exploring options for forest conservation including the designation of a conservation area and

¹⁰³ WWF has recently launched a programme to help communities be opt - in ready for REDD+. This includes developing detailed community management plans (http://www.wwfguianas.org/publications/wwf_guiana_launches_opt_in_readiness_project/).

advocating for alternative farming areas. Communities such as Surama have asked its villagers to begin experimenting with savanna farming.

“Farming in the savanna, since we talking about conserving the forest, using a bit of savanna is not too big an impact because we not doing large scale farming, just a couple of acres.” (SRM 008, male over 40 yrs., June 2013)

“Yes some of them are doing the farming in the savanna, but we were advised to do the farming in the savanna because with the conservation of the forest we are not supposed to be destroying it. They told us that we should not cut down the old farms...” (SRM007, female over 40 yrs., Jun 2013)

“...It’s only the early part in the year we come out in the savanna because they say you must not destroy the forest. The forest is getting more and more carbon. Me ain’t understand this carbon but they say come out in the savanna to farm. That is how we start.” (SRM021, female over 40 yrs., June 2013)

Farming in the savanna may be an experiment for Surama, but for those communities, such as Toka and Massara, who have limited access to forested lands and have to travel far distances to access what is available, being able to successfully farm and maintain viable crop production in savannas is important. At the community level, experimenting with savanna farming is being driven by the village councils. They see it as a potential way of conserving the forest, especially if they can obtain adequate and continuous yields from the soil. For Surama a number of community members participated in the experiment. There were villagers who were looking to see if they could produce enough cassava for their commercial business, for other it was an opportunity to see if they could have a plot closer to home, instead of having to travel a great distance to obtain a small quantity of cassava. Others were just exploring possible techniques that could be used to have better yields.

Savanna farming is not a new concept to the Makushi. At the height of the cattle industry in the Rupununi some degree of savanna farming was done:

“Years ago the first place we use to farm was in the savanna, with the ole people them. But that was corral spots right. You have a corral and you move it and you plant and plant and you use to get good cassava in the savanna.” (TK001. male over 40 yrs. Apr, 2013)

This style of farming utilised the old corral sites where the soil was fertilised by the manure from the cattle. As in the forest when the fertility of the soil began to wane and production decreased, the farm was moved to the next abandoned corral site. This style of farming faded with the decline of the cattle industry, though the knowledge is not completely forgotten by some. Farming in the savanna, however, did not move beyond this small scale of cultivation, as feared by Dagon (1967) until recently. Mega farms in the savanna are a government initiative. It is seen as a way of utilising what is considered wasted landscape but also diversifying Guyana's agricultural production from just cane and rice. The bid to put the savanna under production is in a sense emulating similar activities being carried out in the Brazilian¹⁰⁴ savannas. One such farm, Santa Fe - funded by a businessman from Barbados, began operations during the course of my field work.

Farming in the savanna is currently being done with little treatment to the soil (see plate 6-3). There are not enough cattle in the communities to actively manure large areas to convert for cultivation. To be able to have sustained and quality yields farmers would have to add inorganic fertilisers to the soil. During discussion with one experienced farmer who has been farming in the savanna for over ten years, a number of advantages and disadvantages were given for farming in this habitat (Table 6-1).

Table 0-1: Pros and Cons on Savanna Farming

Pros for Savanna Farming	Cons against Savanna Farming
1. The farm can be sited closer to home. This gives you time to do other activities around the home during the hottest period of the day when no work can be done in the farm.	1. There is little vegetation to enhance soil fertility. 2. Only a limited variety of cassava traditionally planted in the forest can be used in the savanna, other varieties had to

¹⁰⁴ In Brazil, the Cerrado – the largest savanna land system believed suitable has mostly been converted for the production of soy, wheat and cotton. It was suggested by Conservation International in 2004 that if action was not taken the cerrado would disappear by 2030 (Nature 2004). Since then efforts are targeting saving at least 15% of the landscape. However, land conversion continues and now there are concerns about the hydrological cycle as loss of vegetation reduces the ability of the system to contribute to the water cycle and help generate rain (Brown University 2016). Any limitations placed on land conversion for agriculture purposes means that businessmen are looking for land elsewhere to invest in.

- | | |
|--|--|
| <ol style="list-style-type: none"> 2. Tractors can be used to quickly prepare the site. 3. There are few insect pests to affect the crops. 4. Good first year crop. | <ol style="list-style-type: none"> be brought from Brazil. 3. Cassava can only spend a short time in the savanna; it has to be harvested before the height of the wet season. 4. It is more difficult to keep the cassava sticks in the savanna; the sticks would dry out and lose their viability. 5. Planting needs to be done early to catch the rains. 6. Crop cultivation time is shorter than in the forest. By the second year crop productivity decreases by half. 7. In the savanna, the cassava plants are more easily affected by the weather. 8. The weeds take over the farm site quicker and are difficult to control unless chemicals are used. 9. Linked to No. 3, the short stay time of the cassava in the savanna means only small yearly business can be conducted in selling cassava by-products. |
|--|--|

(Source: TK 001, Toka Village, Apr 2013)

The implications of this list suggest that there is really little to be gained from farming in the savanna. From a commercial point of view, it would be difficult to build a sustainable business with cassava by-products as only a limited amount of time is available in which to harvest and process the cassava. In the forest, as already has been suggested, cassava can be maintained in the ground long after its maturity has been reached (Farabee, 1918). Farine over the course of 2013 has seen a rise in demand and buyers are looking for a constant supply for their markets. Only being able to produce a limited quantity, including home use, limits the market that can be targeted.

The fertility of savanna soil will always be a problem unless chemicals are used to sustain production. Water supply may also prove to be an issue. There is resistance to the use of chemicals in this area as the Rupununi savannas are a seasonally flooded wetland system that is the spawning ground for freshwater fish species (Watkins et al., 2010).



A



B



C



D

Plate 0-3: Pictures showing savanna farming. A - prepared farm site; B- planted sticks; C – growing cassava; D – mature cassava (Source: COBRA Project and Author)

For those who took up the challenge of farming in the savanna I asked about their expectations and if they would be able to sustain cultivation. For them it was a learning experience. Many did not think they would have more than one planting.

“For the savanna plots, no the soil is poor, after three crops or so and you would have to use fertilizer, or you have to rotate the crop - you have to put in peas or peanuts to build back the soil before planting back cassava.” (SRM008, male over 40 yrs., June, 2013)

Those who know a little about cultivating in in this environment are aware that there would have to be investment for it to work out. In addition, given the nature of savanna vegetation, there will be a constant battle with weeds. With no shade, weed growth is not

suppressed as it is in the forest during the first planting. If the weeds cannot be controlled, the cassava yield is reduced. This was pointed out by an experienced savanna farmer:

“Just the grass because if you get grass in you farm you ain’t gon get no cassava.”

“Just weeding and you does get wary and the grass grows jus fast out here than in the bush. in the bush you go and chop 1 or 2 trees, you chop a whole piece in one day and you lap it down but down here you can’t lap it because the weed out here different. Grass appear 2-3 years from now in the bush. Randy was telling me you have to have something that is systematic because when you spray up top it comes back. You have to have something that goes down to try and kill the whole thing.”(TK001, April 2013)

For this reason the farmer indicated he would be moving back to farming in the forest. It would appear the decision to explore and promote experimenting with savanna farming in Surama is linked to the REDD+ initiative and Guyana’s LCDS which are promoting forest conservation and the community seeing the potential of gaining economic benefits from carbon sequestration and other ecosystem services¹⁰⁵. This decision may be based on the premise that young forests sequester more carbon than older forests. That regenerating forest sequesters carbon rapidly is a confirmed and documented fact (Brown and Lugo, 1990; Houghton et al., 2000; Silver et al., 2000) . What may not have been taken into consideration by the community is the age of the forest under regeneration in the minabs that community members are being asked to leave standing.

Carbon sequestration declines with the age of the forest (Houghton et al 2000). Brown and Lugo (1990) estimated that secondary forest can rapidly accumulate biomass within the first 15 years of regrowth. This figure has been revised to 20 - 25 years where 70% of biomass is expected to be that of the original amount removed during the first clearing (Houghton et al, 2000). This accumulation rate decreases by a factor of two and it is expected that beyond year 40 the accumulation is negligible.

¹⁰⁵ The Guyana Forestry Commission has been working on an opt-in process for communities to benefit from a REDD+ mechanism. The opt-in process is supposed to be test piloted in the coastal Indigenous community of Mauritaro, Demarara River.

In addition, it has been estimated that carbon emissions can be seen as almost neutral in Amazonian areas as the amount of land being cleared is almost equal to the land in fallow returning to a vegetative state (Houghton, 2012). But in considering farming in the savanna the same thought should be given to the amount of carbon that can be released in the preparation of the land. Tropical savannas are fairly productive ecosystem (Grace et al., 2006). The value and critical services are undervalued as is the amount of carbon that can potentially be released or absorbed (Parr et al., 2014).

In the community, villagers have areas that they farm continuously in rotation that are at various stages of regeneration. There are also family plots that have been in long fallow that they could return to. I was uncertain whether people were being asked to leave these newer areas to farm in the savanna, to allow these sites to continue regenerating (see figure 6-3). So I returned¹⁰⁶ to the community of Surama to help clarify what the thinking really was.

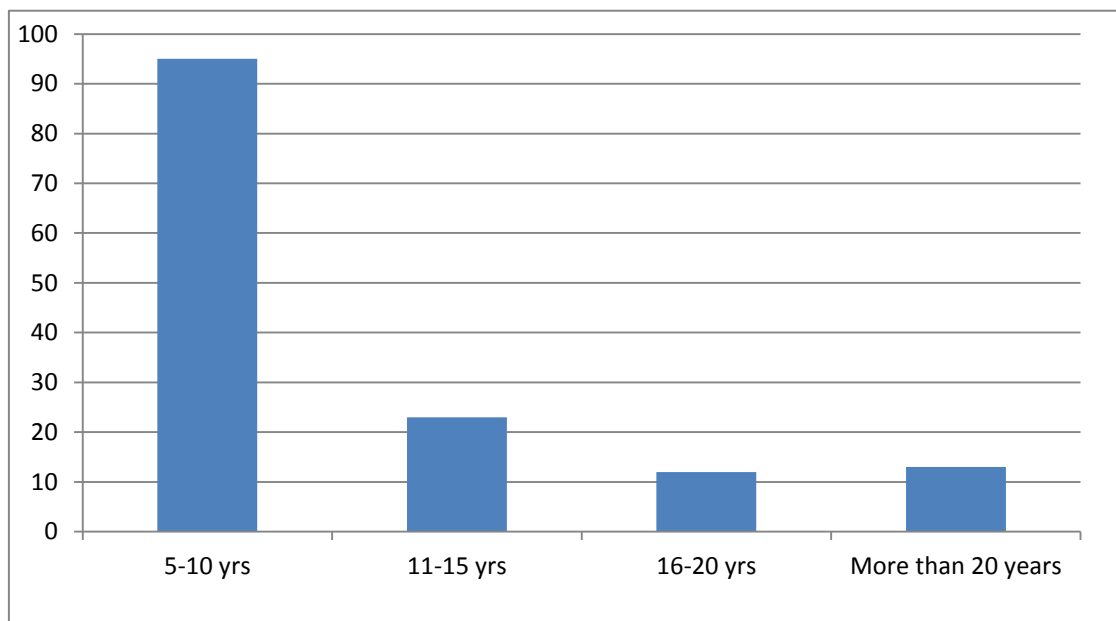


Figure 0-3: Graph showing the distribution of farming areas in use by age of site (Source CMRV Data)

¹⁰⁶ I returned to Surama on 5 August 2014 to have a group discussion with the villagers. Eight persons attended the meeting.

It was explained that the savanna farming was an experiment. They wanted to see how well crops especially cassava would fair. These savanna sites were planted at the start of the rainy season in May – June 2013¹⁰⁷. It was confirmed that since the first planting, most persons have not returned to plant in the savanna. A few persons still had cassava in the ground but I was told they were unlikely to replant after they completed their harvest. They explained that while the yield was satisfactory, it did not reach the levels of production of the forest. In addition, the Senior Councillor acknowledged that it would be too large an investment to plant in the savanna. It would require mechanised preparation of the land and also large inputs of fertilisers and insecticides to obtain good yields. The Senior Councillor said that they were not very keen on using these chemicals especially if they are talking about conservation. He pointed to the failure of Massara's¹⁰⁸ project of savanna farming as a reason why he would not advocate this practice in his community.

At the time Surama were experimenting with savanna farming I asked many of the respondents, who indicated they had an experimental plot, whether they had the knowledge necessary to plant in the savanna. Some said they did not but were willing to try and see the results. Some indicated that they knew they needed to add a fertiliser source to help enrich the soil but were planting without one because they believed that the first planting should be fine. One respondent¹⁰⁹ indicated when they first started discussing the idea she had started experimenting in her yard. She used the cassava peel as a mulch and fertiliser for the plants and had gotten good results from the experiment. She indicated she was willing to show others what she had done.

¹⁰⁷ I was present in the community during my field work when some of the community members were planting their experimental plots. I was able to ask them a few questions related to the activity.

¹⁰⁸ Massara is a savanna based community whose access to forested land is limited. They have to travel more than half a day by boat and foot to access the land they do have. They hope with planting in the savanna they would be able to improve food security for the community. The project failed for a number of reasons including lack of technical support, wrong cassava variety for the savanna, lack of labour among others.

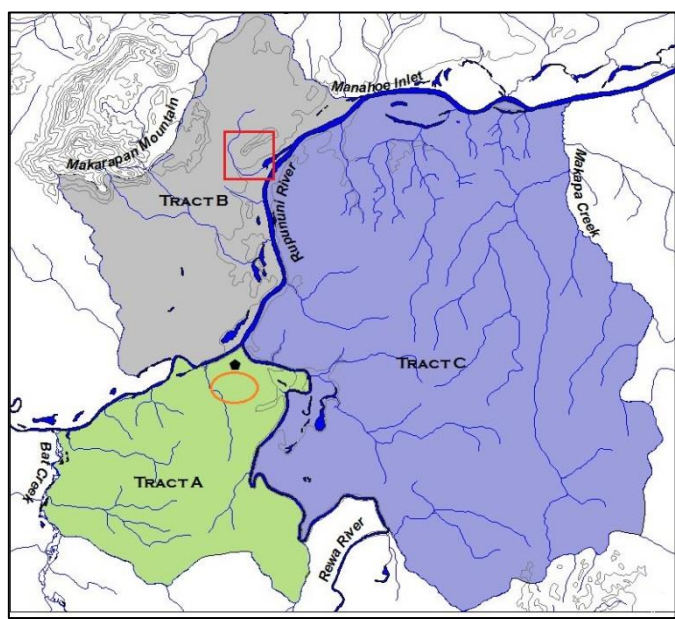
¹⁰⁹ My interview was conducted in the yard of this respondent and I could see the evidence from the garden she had planted. The plants were all healthy and larger than those I've seen planted in the savanna without inputs.

On returning to Surama, only one person was maintaining the effort to continue planting in the savanna. This was mainly in a bid to supply the cassava processing plant that was revived in the community. While there were indications to being open to sharing ideas based on what was learned, I did not hear of any concerted effort to share experiences and make a second attempt to ensure a healthy production could be had. My observations of the e crops from the lone farmer showed dismal results.

I asked the question if the decision to experiment with savanna farming was linked to carbon sequestration, REDD+ and the LCDS, explaining the literature on how it is believed carbon sequestration works for tropical forests. The participants admitted that they knew very little about it and that the villagers, in general, did not have that kind of information in which to make informed decisions. They said that what they were trying to do would hopefully align in some way with these schemes, but more importantly it was to help to conserve their forests.

As a forest based community, Rewa's land management issues are quite different. They have one main farm location that people use (see Map 6-1). This farm site is located at the

base of the Awaramay Mountain range. From the CMRV dataset it shows that some people have been using their farm sites for more than 20 years, while others have only recently started using the area. Families tend to share a site to help each other with preparing the land.



I was told that the fallow period was between three to four years. The

Map 6 -1: Map showing farming areas of Rewa, red square denotes primary farming

more people that farm in a location the shorter the fallow period (Chidumayo, 1987). This was far less than what the two other communities have indicated. The reason for this short fallow had to do with the availability of land. With families sharing what used to be larger family plots, and as each household established their farm, it meant that there was less land for longer fallow. The result was that the rotation became shorter. Many of the respondents indicated that the site was still producing good yields, but many also indicated that they have now started to establish farms closer to the village. The most obvious reason had to do with their employment at the community's eco-lodge and the lack of time to travel to get to their farm sites. This move would reduce pressure on the farm site with the reduction of the number of persons farming there.

Some of the villagers indicated that the farms they are opening up, at the southern end of the village where the forest could be found, are old farms from when the village was being established. The village has also allocated land on the apron of the recently constructed airstrip for those villagers who are interested. Villagers said that the gravel soil is good only for planting cassava. This move allows the village to control to some extent where people are farming. While they are looking at resource management planning, the village has not made any hard rules as to where people can or cannot do certain activities. In all my interviews the respondents indicated that they have not been moving to primary forest to cut new farms; it has all been minabs.

For Crash Water, with no village management plan, community members are free to establish their farms wherever they choose. Many, however, have established their farms close to the village if not in their yards (see plate 6-4). They indicated that the laterite is prime soil for planting cassava and so they have no need to travel far distances to establish farms. It was said that a person would travel the five to eight miles to find good sites in the forest only if they wanted to plant bananas, pumpkin and other crops.

People are making use of such good soil for planting cassava. Many of the villagers, especially the women, were making use of this opportunity to plant larger farms, as large as five acres, to be able to produce large quantities of cassava by-products for sale. With cassava being the only crop that can be grown, many households have to purchase other



food items to supplement their diets.

Plate 0-4: Shows farm taken near participant's home in Crash Water (Source: Author)

It was indicated that some households may shop almost every week. Others indicated that they were dependent on the flow of cash.

Some of the changes that are occurring within the communities prevent some house hold from farming as they wish especially if they have to go some distance to access farm land. If savanna farming proved to be a worthy activity, it would provide those families with land close by to farm. This could prove beneficial especially to women, many who are left in the communities when their partners have to leave looking for work. These savanna farms would not only provide for the home but could potential help to generate needed revenue. However, not all savanna communities have the land space for savanna farming. There is also the need to keep experimenting to see if this type of farming can be done organically and not with inorganic fertilisers due to the nature of the environment. The community of Toka has the most experience with farming in the savanna and they can be the one who provide the most insight. Effort need to be put into documenting what their experience have been and explore what can be done to improve any areas that prove challenging.

6.4.3 Commercial Scale Farming

Integration into the market economy has increased the need for community members to earn much needed capital to participate in this system. Surama and Rewa have both been able to successfully establish an eco-lodge providing gainful employment to its community members on a rotational basis. Those members of the communities who do not have employment at the lodge acquire income through fishing, timber harvesting and the sale of cassava by-products like farine and casreep. In Crash Water the main source of income mentioned was from farming or villagers¹¹⁰ would have to leave to find employment elsewhere, especially in the gold fields.

With the increase in gold mining activities in the interior, many young Amerindians have been going to the mines for employment. This high influx of Amerindians into the mining fields¹¹¹ has driven the demand for farine up. Farmers are, therefore, tempted to expand their farm sizes to grow more cassava to produce more farine. Some communities, through the village councils, are also creating communal projects for farine production that have their own farms but also encourage community members to grow extra cassava to supply these enterprises. The extra cassava is purchased off the farmer gaining him a source of income.

Many of the community farms are also done with the objective of improving community food security. In 2010, the Government started a “grow more food campaign”. The aim of the campaign was to bring more products to the market at a cheaper price, targeting the more vulnerable groups within Guyanese society, of which the Indigenous peoples are included. The implementation of such a program in the hinterland proved difficult

¹¹⁰ While conducting field work most of the men were out of the community. It was indicated that they were either in the mines, timber concessions or working in Brazil.

¹¹¹ Over the last few years the price for gold has been at an all-time high, though it has dropped some over the last two years. The price is still high enough to create a demand and it provides an opportunity for obtaining large sums of money in a short time span. Farine as a filling food is a staple in demand by Amerindians. That mining is an activity that causes forest destruction is known but is not linked to their activity of providing a food source maybe fostering the very activity they have some concern about.

especially with getting produce to the markets. The markets targeted, therefore, are the mines and communities where there is a decline in farming. These communal commercial farms are looked at as a potential source of income or as a means of obtaining cassava by-products at a cheaper cost, especially for those who cannot farm.

Those engaging in this enterprise are opening farm areas that are 3-5 acres in size. Many of these farms are cleared using chainsaws and the species that are valuable are extracted as timber while others are set aside to be used as firewood in the parching process. Venturing into this business provides job opportunities for some people. Those persons who sell farine as a side enterprise hire someone perhaps just for the days that work is to be done. Those who aim to make production a continuous process hire people to do the necessary work.

A consequence of engaging in commercial farming is that many persons are changing the variety of cassava they use to a short term cassava. During the first farm survey that was done by the MRUs in 1995 they identified over 147 varieties of cassava (Forte, 1996). Data from the CMRV surveys indicate participants identifying only seven varieties of cassava in farms. This trend is not just associated with those engaged with commercial production and in need of quick growing cassava but it is also being seen in individual farms.

The loss of these varieties means the loss of genetic diversity of cassava in the region. Shifting cultivation has always been characterised with having high diversity of crop species (Peroni & Hanazaki, 2002). Altieri and Merrick (1987) points out that introduced cultivars are less reliable than the ones being replaced and are more susceptible to disease. No one gave an indication that their cassava was being affected by disease, only insect pests – especially caterpillars. The loss of genetic/crop diversity not only means the loss of species more adapted to this environment, it also means the loss of agricultural

legacy or in this case traditional knowledge (Peroni & Hanazaki, 2002). As these native species disappear so too will the knowledge associated with them.

A push to conduct commercial level farming can have potential long term impacts on the forest. One potential impact is reduction in rotation time. In Surama and Rewa, where land use planning is in effect, farmers may have limited ability to move farm sites. They would have to utilise the same areas more intensely. On an individual basis it was said a one acre farm is the size most families can handle. If given a five acre plot to manage the family can have a 15 – 20 year rotation cycle. This is a system that was described to me in casual conversation by a Fair View villager. It was indicated that it was a system they hope to institute and something that can be done in Surama and Rewa. In this way even though people have to farm within a specific area they would not jeopardise the fertility of the soil. On an individual basis a family can decide how much cassava they are willing to reap for commercial sale. When conducting a commercial enterprise, however, production is based on product demand. High demand would mean that cassava is reaped and planted back quicker and that can lead to the soil being exhausted faster than usual even with rotation within the farm. The farmer would need more land to prevent the complete exhaustion of the soil otherwise the end result would be deforestation as the area transitions to another vegetative state as the soil would be unable to support the recovery of the forest.

Another potential issue with commercial farming would be the introduction of chemicals. With limited land space and potential soil exhaustion the farmer may resort to the use of chemical fertilisers to maintain his cassava production. Fleskens and Jorritsma (2010) suggest that shifting cultivators who rely on their traditional knowledge have no knowledge to cope with shortened rotation periods. This would suggest they would use the modern methods available. In addition, intense use of farm sites increases the potential for pest/disease affecting the plants. This has been seen in Toka where the

community shifted to savanna farming because of limited forest space. TK001 (male over 40 yrs.) indicated that one of the reasons many persons moved to the savanna, despite its difficulties, was that the plants were quickly affected by aphids.

“See all them people continue in the bush and the bush de getting poor and the Trealea (aphids) taking over inside there, right now we don’t have any trealea outside here don’t know the sun might be too hot for them.” (TK 001, April 2013)

As he explained, the limited space caused the site to be used on an almost continuous basis, giving it little time to recover its fertility and to allow such pest die off. As the literature indicates long fallow allows the soil to rejuvenate but it also allows time for agricultural pest populations to decline (Ewel, 1986). Without the option of a long fallow period farmers will have to depend on pesticides.

6.4.4. Changes in Rotation Patterns

Changes in rotation patterns is not a driver for or against forest conservation, but it does have implications for forest conservation as a consequence of community land use planning as briefly discussed in the previous section. In Surama, before the zoning of the land, many persons had established family plots. These are areas that have been used by the families for decades and the land is rotated between ten to fifteen years by any member of the family (P. Allicock, pers. com., Mar 2013).

The establishment of the land use zones in the village means that some of the formerly established plots would have to be abandoned if they fall within another zone. It therefore means that some families will have to establish new farms in primary forest or utilise an old farm site no longer claimed by another family (C. Jacobs, pers. comm., June 2013). One issue identified with the zoning was the size of the area identified for farming. As the population of the village expands more people will have to farm within the farming zone. The landscape will first change to the usual mosaic of various stages of secondary vegetation. Increased population will eventually mean intensification of cultivation as

rotation periods reduce and the landscape with transition increases as it loses its ability to grow anything beyond scrub.

In Rewa, the situation is slightly different in that their total area of land available for farming is already limited. The primary farm site, despite maintaining its productivity, is already showing signs of transitioning (see plate 6-1 and map 6-1). It was indicated during the resource management planning that a large portion of the village title area was swamp land. That leaves very little high land suitable for farming. This was one of the areas the community aimed to explore as it continued its resource use planning. Crash Water has no land use issues as of the end of my field research but have ample lands available to expand farming should they zone their title land. One observation I have made based on interview data is that although there is land available for community members to expand where they are farming, they are refusing to do so in their bid to conserve the primary forest (See figure 6-4). These were sentiments expressed by some:

“... I am not cutting high bush any more, that is the maiden forest, not cutting that anymore. What I am using is secondary forest...” (RWA 007, male 25 – 39 yrs., Jul 2013)

“For the longest while I personally haven’t farmed in the forest. This was forest before but it’s a use up forest soil just go over it and does my little farming on it and about 2-3 years when everything grows back again I go over it again. I didn’t use forest, high forest as a farm for the longest while”. (RWA 021, male over 40 yrs., Jul 2013)

The message of forest conservation and sustainable development was introduced to the communities by Iwokrama, whose mandate ¹¹²of sustainable forest use and forest conservation changed the way people perceive their forests. As one of the persons who conducted many of those outreach visits to the communities, I can attest to the emphasis that was placed on forest conservation and the need to be sustainable. Attempts were made to link Makushi traditional beliefs to these ideas as a way of fostering

¹¹² Iwokrama’s message of sustainable development and conservation introduced concepts such as alternative business like tourism and using non-timber forest products for furniture and tapping into the essential oils market. The belief in the conservation message and finding alternative had many people disagreeing when it came time to demonstrate forestry could be done sustainable.

understanding. Whether they had rules or beliefs that helped to maintain the forest, based on this message, people are in some way making a conscious effort not to cut down the forest if they do not have to. By reverting back to minabs they indicate a desire to no longer cut down primary forest to do cultivation.

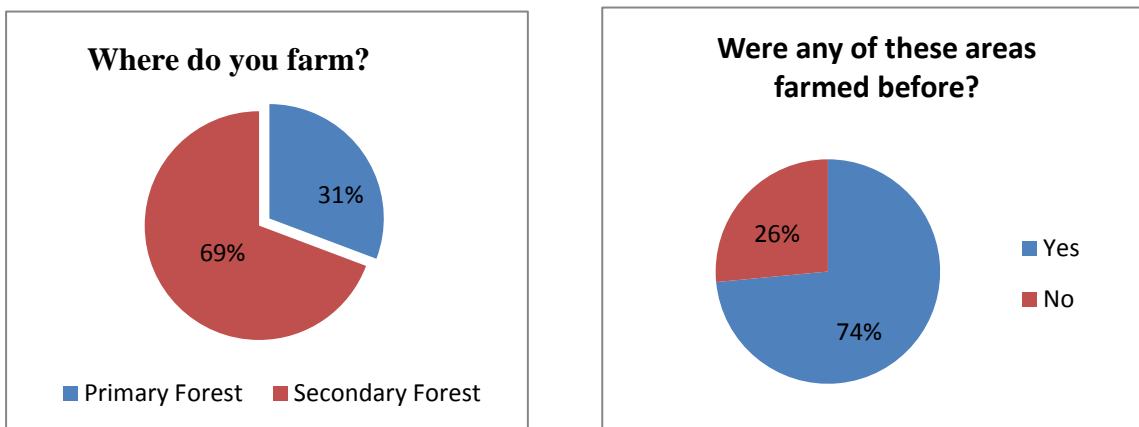


Figure 0-4: figures showing preferences for farming in primary vs secondary forest locations. (Source: CMRV data)

However, I have found a conflict with the responses from interviews and the CMRV responses. In my interviews all of my respondents indicated they were farming in minabs. In the CMRV data, however, they indicated a combination of locations but most were moving to primary forest when they moved farm. What they did indicate is if they did move to a virgin site they tended to farm there longer than they previously did. In the minabs they were farming for a shorter time period hence decreasing the time it would take them to require a new farm.

Rotation or fallow period may not directly affect forest conservation but it does influence how the forest can be affected. The ability for farms to generate secondary vegetation is dependent on the intensity at which the land is used. Intense farming would reduce soil fertility and destroy seed banks. This leads to degradation and eventually deforestation.

6.4.5 Farm Beliefs and knowledge

There has been no documentation in the historical accounts of the rituals and beliefs associated with traditional shifting cultivation. That means there is no material available that would allow comparison of the present account with what may have been practiced previously. One of the key components that separate shifting cultivation from simple slash and burn is how entwined it is in the culture of the people (Conklin, 1961). Byers et al. (2001) believe that traditional beliefs and values influence human behaviour which in turn affects how forests are treated. These beliefs and values begin to change with exposure to other ways of thinking.

The main cultural element highlighted by participants that appeared central to the farm beliefs and practices entailed invoking “Mother Earth.” In every part of the farming process there was praying or entreating of Mother Earth to ensure the process was successful. On locating a farm a blessing was done as it was prepared for cultivation:

“Yes, they celebrated a new farm, when they cut a new farm...the celebrating is when you done cut your farm you tek you lil drink. You tek woe or lil kari you just sprinkle lil kari on the land; aaassshhh bear, give us good bearing in this farm and you throwing away the kari nah and then you do matruman for the people to help you clean up. You gon go in front and you talk to the farm and then the people will go and they gon clean and then they gon come back now and you gon talk to the farm again say I going home now and next time I coming back. After they do lil work, then they do lil drinking to celebrate the work (SRM011, female over 40yrs, June 2013)

When burning the site there was some practice or speaking done to burn the site cleanly. During the burning the names of crops would be called to ensure success when the crops are planted. When planting the women would be singing or talking or making special sounds as the cassava or other crops are placed in the ground:

I use to go with my grandmother to the farm. I remember she would be whispering as she plant and weeding between her cassava plant she would be whispering. I never knew what it was. Then my mom said she had a way that she would talk to her plants as she plant and weed and mulch. But I never knew that is what she was doing. I just thought because she is an old lady she just deh whispering up by

herself. But then afterwards as we grow older she uses to tell us we need to communicate with the plants. (SRM032, female over 40 yrs., Jul 2013)

These vocalisations were an entreaty to Mother Earth to provide a bounty as the crops began to produce (P. Allicock, pers. comm., Mar 2013). One respondent demonstrated to me how she would plant and the sounds she would make as she planted her cassava. She said it was what she and her sisters had learned from their mother and she still does it to this day. I later had a chance to interview her daughter and she indicated she was aware of what her mother does when she plants but it is not a practice that she carries out as she plants. She said it was something that made her feel silly.

Harvest also had a ritual, a prayer was said for the first harvest and drinks made to be shared with friends and family. At a larger scale the communities used to celebrate a successful harvest by hosting a celebration – the Parishara with sister communities.

“I remember the parishara, they had it here when I was small, 6 or 7 years. I remember the Captain inviting people and they were there drinking kari as much as their stomach could take...they had invited Wowetta and it was a gathering of two villages and they had lots of kari. We were small and being inquisitive and they had the dances. That’s what I remember.” (SRM032, July 2013)

The Parishara was a big celebration of the first harvest. It was, however, much more than that. It was a social gathering where people could exchange news and families could catch up. It was also an occasion where young people could meet potential partners. The celebration could go on for days. It continued for as long as the drinks lasted. At the end the invited communities replicated the invitation and the host community would then return the favour of visiting. The last memory anyone has of the Parishara in the North Rupununi was in the latter part of the 1970s. No one is sure why the celebration disappeared. It was said that an old Toshao banned the practice after he witnessed visitors to his village laughing at the people for being naked and drunk. During the annual

Heritage¹¹³ celebrations some effort is made to demonstrate what the Parishara procession was, but some are unhappy with it as the songs and dances are all but lost and it does not offer the full experience of the celebration. In addition, this enactment is no longer linked to a specific purpose; therefore it is difficult for the older generations to engage with it.

I asked participants to give an account of any farm practices/beliefs they were aware of that were done by older generations or that they carried out. The responses highlighted three things. The first is that those who went to farm with their grandparents are aware that they practiced certain beliefs but are unsure what it was they were doing or saying. The second is that some people are not interested in learning and carrying forward what their parents or grandparents are doing. The third is that there is some interest as to what the older folks are doing or saying, but there is reluctance in finding out at the moment and there is the feeling that they will have the time to find out at a later date.

*Yes, I do hear my grandfather before he plants he would be talking in Makushi.
Do you do the same?*

*No, because I don't really hear what he does say. He does be saying it easy.
You ever thought of asking him what he is saying?*

No

You think you will ask him?

No, I think I gon do it when I ole (laughing) (CW023, female 15 – 24 yrs., Oct 2013)

The Makushi, like their other Amerindian brothers and sisters, have always had a connection to the forest, to the land. This connection was fostered by the presence of a piaiman within the community (see section 5.3). With the loss of this spiritual leader and the introduction of other belief systems it would appear that the Makushi lost part of their connection to the land. The practice of the traditional beliefs and practices that fostered that connection can still be seen in some of the older generations, but for the young

¹¹³ Amerindian Heritage Month is celebrated every September with a series of activities highlighting the culture and practices of the 9 tribes of Guyana. Heritage Day first started in the North Rupununi in the early 1990s when the people were calling to have a special holiday to celebrate who they are as a people. That holiday was never designated but every year a village is selected to showcase a tribe's culture on the 10th of September, the day they called for the holiday.

people, they see it as an element of the past. As indicated previously by the respondent it makes you feel silly and as such no longer has a role to play in how things are done. The implication for forest conservation lies not in the actual cutting of the trees or degradation of the environment but in whether there would be a pause in the thinking of the young people on whether an activity that would cause these things should happen or not. This comes from an inner belief and not from the “scientific knowledge” being gained from training and access to the internet.

6.5 Conclusion

Shifting cultivation is a central part of many cultures and livelihoods (Dalle et al., 2011). This is no different for the Makushi. It still remains a vital part of people’s livelihood despite the changes that have been influencing the practice. This chapter attempted to answer the question is traditional shifting cultivation a conservation method and what are the implications of change for forests.

An important starting point was to have the Makushi define what traditional shifting cultivation means to them. The key factors highlighted was that it had to occur in the forest, must be done under human power and traditional tools must be used. In doing it this way the practice maintains its traditional elements. In using the tools highlighted and using manpower it keeps the family unit involved in the practice as it is usually the family that undertakes the cutting of a new farm, and it is extended family and friends who help to clear the larger trees. It is family and friends who sit together to enjoy a meal and drinks after the work is done. Such activities help to build not only social cohesion in the community but also social memory (to be discussed in Chapter 7). When technology such as chainsaw is used these things are lost as only one person needs to go to clear the area. The introduction of new technology, while beneficial, serves to impact other areas like

the time spent in sharing and building knowledge, and its potential cost to the forest if not properly managed.

In examining the practice, fire was identified as the one element that could greatly affect the forest. Run away fires could destroy vast areas of forest especially in very dry conditions. There is also concern regarding the amount of carbon that is emitted when biomass is burnt from a cut farm or escaped fire (Fearnside, 2000). This issue is even more of a concern as it relates to the clearing of secondary vegetation especially since community members in a bid to conserve primary forest have been reusing their old farms more frequently. There is obviously a lack of information in the communities as it relates to carbon sequestration and emission. These terms are readily used in communities, introduced by Government and Iwokrama in discussing the LCDS and REDD+, but how they apply to everyday activities is never fully explained. This gap needs to be addressed if communities are to make wiser decisions concerning their land use planning and management.

In a bid to reduce the threat of forest fires from shifting cultivation there have been suggestions for fire free alternative forms of farming such as using fertilisers (Kato et al., 1999). I was told that one community member in Surama was experimenting with this in partnership with the Agriculture Extension Office. This project may prove useful if the results are positive. There are, however, concerns about the use of fertilisers and such chemicals in the wetland system (Wetland Partnership. 2006). The importance of the wetland system has community members reluctant to use such chemicals. The project would therefore, have to provide answers on the types of chemicals being used and their potential impacts on the environment, Most importantly if they are going to be in use, quantities and frequency of application are the main need to know along with dos and don'ts.

Another issue of concern related to community members' unspoken decision not to use virgin forest for their farming is the idea of leakage. Leakage refers to the shifting of their practice to land outside of their immediate areas, so there is little impact on the land that is to be managed or conserved (Aukland et al., 2003). While there has been no direct mention of people moving to new areas outside their titled lands specifically for the purpose of conserving their forest, persons are known to move to other areas for other environmental concerns like finding high lands to avoid floods. It is therefore, not difficult envisioning some moving to prevent forest loss.

For the changes that have been documented in this chapter, they have the potential to impact the forest in the long term. In Guyana's assessment of shifting cultivation as a forest based activity it was indicated that the practice was considered small scale and could be considered as 'balanced' i.e. the amount of carbon emitted was equal to the amount of carbon sequestered (Cedergren, 2009). Cedergren (2009) further noted that it was unlikely that the practice could be classed as forest degradation and is unlikely to cause deforestation. The only area of concern that could potentially change this classification was the expansion of the practice in response to increased mining activities. The increase in farine demand was a direct response of a need from mining areas as many young Indigenous persons were going to the mines to work. What the current state of demand now that gold prices have fallen is unknown.

Literature and Makushi description of traditional shifting cultivation indicates when done correctly have little impact on the forest. While it cannot be termed a conservation method it served as an enhancer. It enhanced the biodiversity in the area, creating feeding niche and habitat for animals. It may also serve some of the biogeochemical processes that occur within the forest. Some of the changes seen in the practice however, have the potential to have negative consequences for the forest.

The first is the land use planning farming in one location while may prevent the short term loss of forest may eventually result in the degradation of large land areas and the destruction of forest seed banks as the soil from these areas could become overworked and exhausted. In addition constant fire will kill the seeds. Another consequence of being boxed into specific farming sites may lead to the reduction in farm sizes. This in turn affects the rotation pattern of the farms and it may mean that there will be short fallow periods to enable families to produce enough food. Many of the decisions made regarding traditional shifting cultivation are based on the forest conservation and sustainable development messages communities received from government and conservation NGOs. To be discussed with communities so that better decisions can be made going forward. More time should be taken to discussion the implications of making certain decisions before they are implemented. It is important that these agencies also think about the potential influence certain messages will have on community decision making before the message is disseminated. It may help maintain practices that are healthy for the forest.

The next chapter will look the transmission of traditional knowledge and the building of social memory. These two areas are important in the building up of farm based knowledge and they slowly being lost in this practice.

Chapter 7 – Makushi Traditional Knowledge and its Transmission

7.1 Introduction

“You (Indigenous Peoples) are vulnerable but we have a lot to learn from you. Because your traditional practices help us and allow us to adapt”

This quote from Environment Minister of Peru Manuel Pulgar-Vidal (4 Dec 2014) at the opening event of the Conferences of Parties for the United Nations Convention on Climate Change helps to demonstrate the value of Indigenous knowledge and practices in helping our society in adapt to the changes occurring within the environment. There has been a strengthening of the belief that Indigenous groups, through their Indigenous knowledge, hold adaptable solutions to some of our more pressing environmental problems.

Indigenous knowledge is the vehicle through which the values and practices of an Indigenous group is passed on. This knowledge, which is normally people and place unique, is built up over time through experience, experimentation and observation. The holders of this knowledge, of these memories are the elders (McLeod, 2000). The elders together hold pieces of the knowledge puzzle and in meeting and speaking together create the collective or social memory of that Indigenous group. Through the generations these pieces of the puzzle are handed down and added to as new things are experienced. These puzzle pieces- traditions and practices - reside in the language, stories, songs and ceremonies (Climo & Cattell, 2002).

The collective memory of a group is shaped by their social, economic and political circumstances, values and beliefs and oppositions and resistance (McLeod, 2000). In this way social memory is not static; it is dynamic – parts maybe added, forgotten, invented or reinvented. Communities that maintain the knowledge base that builds their social

memory are typically seen to maintain a close association with their environment ensuring its sustainability (Gomez-Baggethun et al., 2013) . Gómez-Baggethun et al. (2013) have pointed out that community social memory and traditional knowledge has eroded due to a number of changes including formal schooling, loss of language, religion, changes in land use, market integration among others. Like many other Indigenous societies, these changes can be seen among the Makushi; indeed the communities of the North Rupununi have voiced their concerns about the decline of their culture.

As factors, such as formal education, religion, language loss etc., continue to influence change within Makushi culture and impact its social memory, it becomes important to understand how these changes are affecting the relationship between the Makushi and their environment. According to Gómez-Baggethun and Reyes-García (2013) the knowledge embedded in community social memory evolves as the ecological and socio-economic conditions change. This evolutionary nature of community social memory allows for the acceptance of new knowledge while relegating those elements that are no longer useful to daily life. An example of this can be seen in the adaptations made by SRM 021 that allow her to plant in the savanna successfully. This knowledge would only survive if it is being passed on and cultivated into the fabric of Makushi social memory and in this case the community of Surama's social memory.

To play the role thrust upon them as Indigenous people, the Makushi need to understand the state of their traditional knowledge and how it might be evolving. This chapter, therefore, aims to explore the state of Makushi traditional knowledge for maintaining traditional practices like shifting cultivation, to explore the methods used to transmit traditional knowledge and build social memory, examine the spaces that are used when transmitting traditional knowledge for traditional practices and explore how relevant these are in the face of changes that are occurring within communities.

7.2 What is Makushi Knowledge?

To understand the state of Makushi social memory, understanding the nature of their Indigenous knowledge is important. The types of knowledge that make up Indigenous knowledge is little discussed (Slade and Young, 2014). It is however, believed that Indigenous knowledge is made up of tacit knowledge and explicit knowledge (Tavana, 2002 in Slade and Yoong, 2014). Tacit knowledge is considered intangible, based on individual skill, observations and experiences and difficult to record (Inkpen 1996; Smith 2001; Slade and Yoong, 2014). Explicit knowledge, on the other hand, is easier to document, consisting of facts, policies, rules; anything that can be quantified without undue discussion (Smith, 2001; Wyatt, 2001; Mehta et al., 2013; Slade and Yoong, 2014).

It is believed that Indigenous knowledge is not made up of either tacit knowledge or explicit knowledge but a sliding scale of the two. Slade and Yoong (2014) however, believe that Indigenous knowledge is more tacit knowledge than explicit. Wyatt (2001) notes that over time some tacit knowledge can progress to the stage where it can be analysed and be recorded as explicit knowledge, but cautions that some believe that to convert tacit knowledge to explicit knowledge is to destroy it. This is because tacit knowledge is seen as knowledge in action.

In using the basic definitions of these two types of knowledge it could be said that what remains of Makushi knowledge has both elements of tacit and explicit knowledge. The *Makusipe Komanto Iseru: Sustaining Makushi way of Life* (Forte, 1996) documents much of Makushi explicit knowledge, from farming to fishing, to hunting to identifying medicinal plants. Project COBRA has also shown that given time some tacit knowledge can be translated to documented formats. There is some knowledge however, that remains mainly tacit and this includes the shamanic practice. While parts, such as the

identification and use of medicinal plants could be documented, building other elements of the knowledge base requires skill and experience.

Each form of knowledge dictates how it can be transmitted. For tacit knowledge much of it needs face to face exchanges and sometimes apprenticeship is required. This can certainly be seen in the shamanic arts, farming and food processing. Instructions can be given but not until that person begins to put those instructions into practice will they fully understand what is being said. It will also require considerable experimentation to achieve a level of comfort doing them. While some aspects of Makushi tacit knowledge could be recorded, Sen (2005) cautions about the scope of documentation. It is indicated that it would all depend on what purpose the information is recorded. Sen (2005) said a practitioner may only be concerned with the “how to” question; whereas the academic would want a more comprehensive view of the knowledge with all its ramifications.

No matter the form it takes, there is still controversy surrounding what name to use in reference to knowledge coming from Indigenous peoples (Mistry, 2009). There has been some contention with the use of the term ‘traditional’ (Berkes et al., 2000). Traditional it is said always denotes a sense of stagnation, primitiveness, dated, inflexible (Battiste, 2002; Berkes et al. 2000; Mistry, 2009). Traditional knowledge is far from antiquated except in its mode of acquisition and use (Barsh, 1999). Barsh (1999) further state that the social process used to acquire and share knowledge is at the heart of traditional knowledge. This knowledge is believed to be far from old, due to its dynamic nature (Mistry, 2009). Dutfield (2001) and Barsh (1999) believe there would have been some hybridization as communities come into contact with each other, and the process of accumulating knowledge entails authenticating what was told and exchanging that knowledge based on their experiences and observations. Thus, the argument for referring to Indigenous knowledge as traditional lies not in the content of the knowledge base but in its process of transmission.

The terms used to describe Makushi knowledge such as traditional, local or Indigenous would have been introduced to the region. The specific period of introduction of these terms would be hard to place. It is most likely they came with the creation of the Iwokrama Centre, unless there were other social researchers in the region exploring this topic prior to 1996. To better explore the introduction of such phraseology more research would be needed.

7.3 The State of Makushi Social Memory

The state of Makushi social memory lies with the transmission of knowledge from the elder generations to the younger generation. Knowledge is passed on from grandparents to parents to child. Each has a role to play in how the child learns. It is the grandparents who are responsible for passing certain knowledge, stories and history on while the parents teach the practical skills (ANC 001, July 2013). If the household is intact – meaning that both parents and grandparents are present – there may be a seamless transfer of knowledge. In the Makushi society of the North Rupununi this social structure is not always intact. There are many households where it was the grandparents who were solely responsible for the transmission of knowledge or in other cases where the grandparents were lost to the family.

I. Myers (1994) indicates that the Makushi suffered a number of health and weather related disasters over the course of the twentieth century. Within the decade she lived in the Rupununi, Myers spoke of the disease epidemics that hit the tribe (see section 4.3.2.3); while community members speak of the droughts that drove them from their homes in the border villages to the North Rupununi where the rainfall deficit was less pronounced. These different disasters took their toll on the Makushi population. In many cases it was the parental generation that was lost. A number of respondents indicated growing up without any parents and even grandparents. They were dependent on either

siblings or other families in the community. As noted by ANC 001 (male Elder) the generations with the knowledge died rapidly and this left a gap in the social memory fabric of the Makushi people.

“The elders passed away rapidly, they died rapidly, the people who knew the stories.” (ANC 001, July 2013)

Of those generations that would have grown up with the knowledge ANC 001 estimated that there were only small numbers in the communities. A survey of the five communities where research was done shows a combined number of only 47 pensioners¹¹⁴. It is a small pool of persons who may hold certain knowledge of the Makushi culture and history, having lived some of it. The loss of these persons without their memories being shared serves only to weaken the strength of the Makushi knowledge base.

It is not just the contemporary factors of change that have been impacting Makushi culture. Myers (1994) also noted the changes that were occurring within Makushi society as it came to its art and craft. She noted that many of the intricate designs and care that used to be taken in making certain items like bows and arrows and the farm based utensils were slowly being lost. It can be seen that only those practices and associate knowledge that have high importance in Makushi daily living have survived somewhat intact such as fishing and farming. But even these are being slowly eroded or ceded as alternative technologies become available or are influenced by other schools of thought.

An important aspect of understanding how the status of Makushi social memory was affected lay in understanding the dynamics between the people sharing the knowledge and those receiving it. In the olden days it was a duty to pass that knowledge on and build the tribe's social memory. The changing times have changed that dynamic. I, therefore, asked the respondents how each generation felt about the level of interest in receiving or giving the knowledge. The responses indicated a curious state of waiting - either to be

¹¹⁴ The qualifying age for pensioners is 60.

asked for that knowledge or for a spark of interest in passing that knowledge on in certain communities.

In some communities the elder generations are there but they do not share their experiences, their knowledge. Like SRM 006 (female Elder), in Chapter 5, they refuse to engage and their families are unsure of the reasons. One can only speculate that the reasons may lie with changing times and, like SRM 006, they see no way in which Makushi traditions can fit.

People over 40 are of the view that the younger generations are not interested in their traditional knowledge and culture. They feel that factors of change, as identified in Chapter 5, like education and access to modern communication technology, have more of an influence on what the younger generations make of themselves. ANC 001 (male Elder) believes that it is the opportunities that are now present within the communities that have a direct impact on the path the young people are taking:

“For us, you had to learn these things [practices], but there are more options in this modern day. There are more job opportunities; the children are exposed to the other world. Many don’t want to sling hammocks, everybody wants beds...”
(ANC 001, July 2013)

This speaks to the desire to obtain the material wealth that others have. As mentioned previously, many young people leave their communities looking for work. While part of that is for their upkeep, many use that money to procure material items like stereos, generators and motorcycles. When asked to express their perspectives of the younger generations’ views of their culture and practices, these comments are reflective of the thinking:

“Young people don’t want to make matapee, warishi. They don’t want to learn and is old people [who do it], but they will die out. When they die out who will make matapee and warishi and shifter. They are lazy to bake cassava bread and all. I don’t know who they expect to plant for them. They deh home.” (CW 010, female 25 – 39 yrs., Oct 2013)

*“Today, most of the young people are not thinking about farming, just a few.”
(SRM 023, female 25 – 39 yrs., Jun 2013)*

“...they going to modern technology - phones and all kinds of things, tell them they have to plant. Now this kind of things like weaving - making baskets and making bow and arrow, nowadays them young people don't want that...”(RWA 007, male 25 – 30 yrs., July 2013)

There is great concern that the younger generations are not interested in learning the craft and practices associated with their culture and that soon these would be forgotten arts. I do not feel that the older generations are resistant to the changes that are taking shape in their communities. I do feel the resistance is such that even in embracing change room must be made to remember the old ways; how else can you innovate if there is no foundation on which to build?

The listening generation, those below the age of 24, has a different perspective: sometimes a wall of silence or a desire for something different. Both parents and children see education as being the mechanism for improving their lives. To ensure this many parents sacrifice a lot to ensure that their children attend the Annai Secondary School. However, while having an education provides an opportunity to pursue other options, it has been observed that there has been a faster erosion of culture within the school age youths especially those who board at the school. It was explained that while some knowledge is passed on while children are young, most of that knowledge is passed after the children have reached the age of puberty. Unfortunately it is at this time that they begin high school. For those students who live at home and just travel to school, their lessons on their traditional practices may continue. For those who board, those lessons are not a part of their daily life. When they return home for school holidays they no longer have an interest in engaging with those traditional practices.

“When the holiday comes that is when they are learning and we teaching them how to do things. But some communities say like I guess for their children when they come home for vacation they don't want to learn those things like plant and parch farine...use to see some of the students going to high school when they come back their mothers working hard parching farine, grating cassava and they

don't want to do it they only want lay down in their hammocks, ...” (CW 021, male Elder, Oct 2013)

The formal school system introduces new ideas and certainly the potential of doing something different from what would be the norm. Many of these students will leave the community to find that alternative way of life. They spend little time engaged in their traditions. One of their peers explains her view of the situation;

“... Most of them does go out and work from here, they go out and get money and come back. Some of them don't like go fishing, some don't like go farm, they just stay home and when they ready they go work and come back and do the same thing. That is what I observe of the young ones that gone out and work. I never go and work yet.” (CW 023 female 15 - 24 yrs., Oct 2013)

For some it is not a disinterest in their culture; it is a lack of engagement with their knowledge holders or taking the situation for granted in believing they have time in which to learn. The passing of these knowledge holders seems not to be a consideration. This reluctance to engage with the elders comes from belief that their request for knowledge is either not genuine or they may not have the money to pay for that knowledge. This sentiment was expressed in Rewa while having a group discussion with some of the youths. It was felt that when they approach certain elders their request to be shown certain practices are not taken seriously as they cannot pay for that person's time and knowledge, as a researcher who is studying their culture potentially could. In the exchange this was their view of the situation

“we are interested but they are not interested. I have gone to an elder and asked, he refused me”. (RWA 016, male 15 – 24 yrs., Jul 2013)

“When you ask for old stories, they call for money” (RWA 015, male 15 – 24 yrs., Jul 2013)

It was said that the village had gotten some money to fund some lessons but after the funds were depleted the lessons did not continue and as such those who were interested did not get a chance to learn as much as they could. This issue of paying to teach the traditional practices raises two questions that I put to the respondents: 1. Was it not the

responsibility of the parents to pass the practices and knowledge onto their children? And

2. Should persons be paid to teach their culture?

RWA 015 (male 15 – 24 yrs., July 2013) felt that persons should not be paid (saying “*they did not pay their parents for the things they learned*”) and should volunteer their time, but others had a different view. It was felt that those who had the knowledge and were being asked to teach were taking time from their activities to do so and should be compensated. What should be noted is that not all researchers can afford to compensate persons for their participation in their research. However, knowledge holders are aware that they can be paid and when asked to participate use the opportunity to earn some much needed finance.

One of the factors related to the potential commercialising of their traditional knowledge lies with the fact that the knowledge is widely researched and disseminated, with little benefits coming back to the source communities (Dutfield, 2001). For many it is not a matter of ownership but obtaining benefits from possessing that knowledge. In the western world anyone producing knowledge that is utilised in making money expects some form of compensation, the same is expected here. Demanding payment for their knowledge is one way of ensuring that they receive some compensation for sharing that knowledge. Communities are also exploring other ways of ensuring that some benefits are gained like having a research fee, hiring local assistance, using local resources. The discussion of ownership of the knowledge strays into the realm of intellectual property rights, which is beyond the scope of this discussion. What should be made note of is there are concerns about this issue and how they can best protect this knowledge. One way of addressing it is by developing rule for intellectual property rights. It is particularly important when community tacit knowledge can be converted to explicit knowledge. This is something being explored in the corporate world and being transplanted into the scientific community and can work in the indigenous world.

In casual discussion with a cultural elder relating to parents being the ones to teach the culture I was told that for people to teach their culture they had to live it. It was the only way they felt parents could instill a continued love for the things that identify that person as Makushi. In between the views of the over 40 years generation and the under 24 years generation lay the 25 to 39 years generation with mixed views. They were the group that expressed some optimism that all was not lost. They believed that not everyone will be taught, but the numbers would be enough to keep the culture alive.

“You can do it in your household for your kids because you can’t go out and tell other peoples’ kids what to do. For me it’s hard because I don’t practice it so I don’t go out in the village and do so because I would be ashamed to tell anyone anything because I’m not practicing it. I could tell my kids yes.” (CW 006, male 25 – 39 yrs., Oct 2013)

“...but I am trying to get my children back into that, they have to do that, that is our traditions and if they lose it I don’t know what will happen. It is very important, to me then, to keep that...” (RWA 007, male 25 – 39, July 2013)

For those who try, it is believed that not only would some of their children hold on to the knowledge that is passed on but they will also teach their friends as it is instinctual to pass on something new that you have learned. The scenario was described to me by CW 007 on how it could happen:

“If a kid wants to learn to make arrow he will go by his friend's house and learn to make it or he would come over and show what he learnt. It’s all over that is how kids does learn. They go in the bush and learn to make it from those who know better.”(CW 007, male over 40, Oct 2013)

CW 007 was sure that this would work as we discussed how the space of heritage celebrations, to be discussed later, could be used for teaching the culture and practices. He thought for every child who does not have family or who is not being taught in the home there is a child who is getting that knowledge that they can share. Despite the polarity in opinions on the interest in learning the culture or in teaching, action is being taken by some to bring the groups together to reverse those opinions and encourage the sharing of that knowledge, of those memories.

7.4 Sacred Spaces to Modern Places

As the vehicle for the transmission of their culture it was important to understand how the Makushi build their social memory and transmit their knowledge. It is important to understand the methods used in passing that knowledge on, and how this process is evolving. This is important because, as previously mentioned (section 7.3); Indigenous knowledge systems are not static and evolve as the circumstances of the tribes change both culturally and environmentally. When asked, it was said that every moment was an opportunity to teach, to learn.

Teaching began at home, early in the morning or in the evening as everyone relaxed from a day of work. If you were not at home then teaching was done at the farm, which was like a second home. These two spaces were identified as the most important in the telling of stories. A few persons mentioned matruman or self-help activities as another space where stories were told; this was more for entertainment but still provided a space for reinforcing the social memory of the community and the tribe as a whole. Because much of the traditional knowledge that has to be transmitted is tacit knowledge these spaces for transmission are important. This is mainly as to receive and understand what is being passed on will take time and patience and persons would need to spend time with teacher.

7.4.1 Home and hearth

“In the early morning like 3 o’clock my grandmother, I never liked that, she be spinning cotton, she would say come grandchildren, come hear this story. But my grandfather now he used to tell us stories in the afternoon. She would tell us in the morning especially when we were at the farm...” (AN001, male Elder, July 2013)

Makushi are early risers, starting their day at about 3 or 4 o’clock in the morning at the first crow of the cockerel (Hall, 1980). At this time the parents would rise, stir the fire into life and begin their day by working on their craft, the father weaving some needed utensil and the mother spinning cotton for hammock making. A little later they would wake their children and the daughters would spin cotton with the mother while the sons

would learn to weave the essential household items by their father's side. During these activities, stories would be told covering a vast array of areas from history to cultural stories about the twin brother Inishkeran and Aneke and other fables. As the day clears the family prepares for the day ahead (Hall, 1980). Most days the mother and younger children would go to the farm, the father and elder sons may go to fish or hunt or accompany the mother to the farm for protection. This depends on how far the farm is from the village. If the farm was far away, when school closed for school-aged children, they would pack their essentials and move to the farm. As indicated by ANC 001, in previous years July – August were not the best months in which to visit communities for any meeting as most members would be away;

“When school close, when you walk through the village no one would be there, everyone would be at the farm.” (ANC 001, July 2013)

Families would remain at the farm until it was time for school to reopen. This is no longer the case; people have adjusted their schedules to accommodate work and school. Families do not necessarily go to farm everyday but on weekends when school is out and parents no longer wake their children up early to spin cotton or weave because they have to go to school. A consequence of this is that these practices have lost their place especially if afternoon chores include participating in the more essential preparation of cassava. These practices are also suffering because of the time it takes to do them. There seems to be little patience among some young people to do the craft and the fact that they see they have an alternative of buying these items from others.

7.4.2 Farming Camps

“What my grandfather use to tell me you cannot be speaking in your hammock all the time. If you want your grandchildren to learn something you have to wake up at 3'oclock in the morning and catch fire and tell them to come down from their hammocks, get your cotton and then spin till morning.” (YUP 004, female 15 – 24 yrs., Sept 2013)

The camp site at the farm is an extension of the home in the village; it is looked at as the second home. Some people have at times moved to the farm to live until their children have reached school going age. There is no differentiation between the stories and life principles told at home in front of the fire or those told at the farm; it was whatever strikes the fancy of the story teller at the time of telling or whatever event of the day may lead into this time. In the telling of the story, the story teller may fall asleep but would wake and go back to telling the story if anyone was still awake¹¹⁵. All of it was aimed at making the children more knowledgeable, especially those who have reached puberty, to instil the values of the tribe about how to live, the attitude you should have about working, their role as a husband or wife, their role in the community, how family and neighbour were treated, the traditional practices of farming, hunting fishing, collecting forest resources, identifying good sites for farming etc. These are the lessons that the children would be taught and in the future pass on to the next generation. RWA 029¹¹⁶ gives an account of the conversations she used to have with the elder that brought her up:

“... I use to spin. I use to wake up early morning like 4 o'clock, old lady wake me up, and I use to want sleep still but have to spin cotton, my eye deh (showing it closing) but I learning. Cassava the same. Don't do this; don't do that, that is wrong. If you do this, that is not good. Old lady use to warn me and I take that in. I couldn't eye pass her. I could have, say that isn't my mother and go away but I take what the old lady say ... don't really depend on your husband. If you get a husband, talk to your husband to cut down farm. Don't watch at your husband just like that. That is what she uses to warn me. ... I don't really watch at my husband working, lapping down farm, planting, I help him myself... weed your cassava. She uses to tell me like that. The weeds will kill your cassava...I does weed and I does make anything I want farine, cassava bread, parakari whatever...that is how the old lady warn me not to punish.” (RWA 029, female 25 – 39 yrs., July 2013)

These lessons were taught both in the village and at the farm, but at the farm, more practical skills and knowledge were also passed on. In going to farm with their parents, children learn to weed cassava banks, how to pull the cassava, treatments that might be

¹¹⁵ RWA 029 indicated that she would fall asleep and awake to her father-in-law telling stories. An account of storytelling by the Makushi can also be found in the accounts of (Everard Ferdinand Im Thurn, 1883)

¹¹⁶ RWA 029 indicated that she had no family in the village where she grew up, they had all died.

used for pests, how to plant etc. These are lessons that will be reinforced over the years, each practice being added to the other as they get older.

7.4.3 Matriman

A space for sharing stories little discussed is the matruman. Matriman or self-help is practiced either at an individual level - people will invite relatives, neighbours and friends to help complete a task (farming, weeding, planting, preparing lands, completing homes) - or communally for community developmental projects. During these activities, food and drinks are provided either by the person calling the matruman or the Village Council. In the past when the work was completed, everyone would sit to eat and drink but in the midst of all of that people would be telling stories and so there was a reinforcing of social memory of the tribe as these stories were told over and over again. When there was matruman everyone used to be present, from young to old.

While matruman is still on-going within communities, it is no longer the way it used to be as most children are at school and many young adults are either at work or not interested in attending the activity. It is only the older people that mostly attend these activities and so the social memory that is built and reinforced is done only among a certain generation. Even when it's a village based activity people will come, do the work and then return home to deal with their household chores. Not all gatherings are to socialise, some are to deal with the management of the community. This was the case when I returned to Surama in November 2013 to conduct the focus group meetings. It was mentioned that people had been out doing community work and had gathered to discuss some community business before dispersing.

7.4.4 Heritage celebrations

The Annual Amerindian Heritage celebrations are a newly created space for the sharing of Amerindian culture. The Heritage celebration, as claimed by some, was started in

Annai during the early 1990's as a bid to have national recognition for Indigenous cultures and their contribution to Guyana. The Amerindian people were, in fact, looking to have a national holiday declared on the 10 September in recognition of the first peoples of Guyana. This day is particularly significant as it was the day Stephen Campbell, the first Amerindian Parliamentarian, was elected to office. President Cheddi Jagan in 1995, however, declared the month of September as dedicated to the celebration of Amerindian cultures (Guyana Chronicle, 2016). Each year the tribes celebrate under a theme designated by the Ministry of Indigenous Peoples Affairs and the National Toshias Council. During my fieldwork the theme was "Honouring our Culture: Advancing our Future". The Government, through the Ministry of Indigenous Peoples Affairs, supports activities from national to local levels. At the start of September the Ministry has a formal launch of festivities in Georgetown. Representatives of all the tribes attend to showcase their cultures – food, art, craft, song, dance, poetry.

The celebrations are mainly driven by the Indigenous peoples but as the festival is becoming better known, there is more interest from outsiders to attend. This is encouraged to expose the wider Guyanese population to the diverse Indigenous cultures. Some Administrative Regions are now seeing this as an opportunity to showcase what they have to offer. In my research location, Surama is already exploring the idea of cultural tourism, where a person can live with a family and experience how they live. They are also using the culture group (discussed later) to entertain guests. Using cultural exhibitions to showcase the heritage of the Indigenous peoples is a growing idea that seems to be more a strategy with the Ministry than coming from the people. There is however, an awareness of the need to maintain cultural traditions and this is being driven by the people as discussed in section 7.4.1. How much of it is linked to the politics of indigeneity is uncertain and would need to be explored further.

What can be noted is that once a part of the group, members is expected to participate in the various activities that would lead to the production of show piece. It might be costume making or prop design. In costume making you have to learn to spin and weave cotton. If you are designing props you learn about the different plants and their uses. Because cultural items are done in Makushi, I was told it forces you to practice the language or learn to speak it. Being a part of the group allows members to reconnect with various elements of the culture helping them reassert their Makushi identity.

Each year almost every Indigenous community plans a number of traditional based activities. There are competitions in those traditional practices that are important to everyday living such as: archery, basket weaving, catching fire, cotton spinning, and quick processing of cassava. This is all done to display the skills of the competitors. There is always a free flow of Indigenous food and drinks and the day culminates with a cultural presentation, showcasing tribal songs, dances, poems, stories, skits enacting some story or part of the culture belief.

I have always enjoyed attending these activities, either at the village level or when the communities come together. I have also always felt that more could be done in terms of the promotion of the culture. These feelings had to do with a number of factors: firstly, the concern expressed by communities about the decline of their culture and I thought what better opportunity than to use this event as a vehicle for teaching; secondly, more and more Guyanese who have the opportunity to interact with their Amerindian brothers and sisters want to learn more about their culture and these heritage celebrations provide an opportunity to raise awareness about the tribes and the issues their communities face; and thirdly, the history of Amerindians as taught in the formal curricula is general and generic - Caribbean-centred. Heritage celebration provides an opportunity to teach the history of the Guyana Amerindians beyond the books. These, however, were my feelings.

I decided that I should attend a heritage celebration and observe with a more critical eye

and neutral frame of mind to what was occurring within that space of celebration and to ask others their opinions on my thoughts.

Though a national holiday was not declared, every year on the 10th September Heritage Day is celebrated in a different community; showcasing that community and the tribe's culture. As part of my observations I attended Heritage Day in Karasabai, South Pakaraimas, village celebration in Yupukari and district celebration for the North Rupununi in Surama Village.

These were Makushi dominated. Having never attended a Heritage Village event I was uncertain as to what to expect. The organisation and project¹¹⁷ I was associated with was invited to showcase the work being done by the project and the organisation. I was, therefore, there as both observer and participant. Other organisations and projects had been invited so there were a number of booths set up for sharing information and displaying cultural items and food.

There was a formal program to start the day's activity. This was attended by the President of Guyana and the Minister of Indigenous Peoples Affairs. As the presentation commenced my team members were taking note of the differences in the way the Makushi language was being spoken – the way in which they would pronounce certain words or that some words had a completely different meaning for them in the North verses the South. It was interesting as in previous discussions community members told me that there was a difference between how Makushi was spoken in the North and South, in what they would term “deep Makushi¹¹⁸”.

However, while we enjoyed these discussions about the language differences and the cultural items, the government presentations quickly descended into political rhetoric that

¹¹⁷ North Rupununi District Development Board and COBRA Project

¹¹⁸ This is certainly noted as interesting in light of Myers (1994) belief that there were a number of branches in the Makushi tribe and what happened to them in later years.

provided few constructive views on how Amerindians should be “Honouring their Culture: Advancing their Future.” What I have noticed during such addresses is that the speaker tends to reference what the previous government, The Peoples National Congress, did during their 28 years in power. This is despite the fact that this government, The Peoples Progressive Party, has been in power for 21 years at this point. A few persons in conversation later voiced the need for political figures to refrain from turning every event attended into a campaign opportunity. Little else that was traditional occurred after the formal program ended. The village had organised a football match between themselves and the Brazilian community of Normandy. In the evening there was a cultural presentation consisting of stories, dances, and skits from both Brazilians and Guyanese alike. The Brazilians had a short carnival display for the attendees. The cultural presentation was followed by a dance.

The heritage celebration of Yupukari, hosted in the satellite community of Quatata, was a more intimate affair. Everyone knew each other and the gathering in my mind served to bring the communities closer. I had attended heritage celebrations in Annai in previous years and this celebration was different in that there was less commercial interference in the activities as was seen with Annai. During the Annai celebrations there are many who set up stalls to sell goods and food¹¹⁹ both traditional and non-traditional. This heritage celebration presented an opportunity to recreate in a sense the atmosphere of past matruman as it was described to me. The event presented a combination of teaching the arts/practices of the culture and sharing of the stories. It was attended by young and old. An idea of having some formality within the space for the sharing of traditions was still at the back of my mind but I came to the conclusion that the whole experience was a teaching one in and of itself. At each event people were paying keen attention to how someone was demonstrating a technique and you can hear people discussing how they

¹¹⁹ Items sold in the stalls include clothes; craft – clay pots, arrow and bow, matapee, shifter, fans; food items include cooked food, cassava products, pepper, traditional drinks, soda and beers.

would do the same thing. As I observed the different activities people would stop by to discuss what was happening and who happens to be the best among the set taking part in the competition and if there is any relationship to extoll their expertise. The competitions acted as a reminder who the experts were and who can be approached if you needed information or help.

It is hard to describe the sense of community I felt when people meet as a group to enjoy the skills demonstrated by their fellow villagers. Even in the midst of “serious” competition, there is clowning as someone participates simply to be the comic relief and the teasing that ensues that helps to build community cohesion as the “ribbing” is taken in good fun. But as the adults compete to show their skills the little ones were sitting under the table with the extra material trying their hand at weaving and besides them sitting quietly is an elder showing his skill off in silence as he plaits a fan to display the final product from the cassava grating and baking competition.



Plate 0-1: Yupukari Heritage Celebration – craft weaving competition (Source: Author)



Plate 0-2: Yupukari Heritage celebration – purse weaving competition (Source: Author)



Plate 0-3: Yupukari Heritage Celebration – children mimicking craft techniques (Source: Author)



Plate 0-4: Yupukari Heritage Celebrations – craft expert plaiting a fan from its leaves to display cassava bread (Source: Author)

If not as a formal teaching space Heritage celebrations create a space for encouraging the younger generation to become involved but the momentum generated from this activity needs to be continued into their everyday lives. SRM 031 in our discussion said Heritage has to be every day and not just one month a year.

“Heritage is a good activity to me but it should not be just in September and the kind of activities they have like, to me it’s one thing over and over and there is no improvement, to me, that is my observation. The preparation and the activities themselves should be there always, monthly, all the time. Not just wait until that time and make those special preparations and then pretend this and pretend that. It should be happening within the community and not just those moments when you thinking and gathering, it must be there always.” (SRM 031, female 25 – 39 yrs., July 2013)

This comes back to the discussion I had about culture with the elder, SRM 024, that in order to ensure the survival of the Makushi culture it has to be lived, not just the things that are done to ensure daily survival but all parts of it. That brought me back to the questions of transmitting the culture in the home and using the spaces that are now available for its transmission.

Within the five communities that I had contact with only two actively participate in or organise heritage activities. I was told for Rewa that religion played a role in the making of the decision not to attend the first heritage. It was said that the community leadership at that time felt that people would be getting naked and behaving in ways not becoming of Christians, despite the assurance this was not the case. Crash Water used to attend the District activities but people no longer go. An old leader said that it may have to do with doing the same things again and again;

I usually was interested when I was leader for the community. I used to sing some, up to what I know. Everybody telling us the heritage is good for us to learn from our neighbours and when they come back they could practice but they don’t want to sing the same thing but different things. (CW 021, Oct 2013)

Religion also plays a role in the participation of Kwatamang. Despite these decisions, individuals from these communities would usually attend the events to witness the

festivities, sell their produce and socialise, meeting with friends and family to exchange news.

“I use to love heritage but this go round I do not. Use to participate in it. Love to go to heritage because I will get my market there and I get to be with my friends for a time.” (CW 003, Oct 2013)

Given that these communities regularly did not participate in the heritage they had no opinions on whether there should be “formal” teaching sessions, though it was acknowledged that there are things that they could be reminded of that they no longer practice. Annai and Surama have cultural groups that participate in the Heritage cultural activities and so some look to these groups to provide leadership in this area within the communities.

The heritage celebrations show cases the traditions, culture and customs of the Amerindians. It gives community members a chance to demonstrate their skills, tell stories and dance. There is however, no formal element to the program that allows teaching or for participants to engage Elders to discuss cultural issues or tribal history. I have asked participants if there should be a more formal element to the program when knowledgeable persons can instruct or demonstrate an important skill. Some felt that it should be done but some recognise it as a celebration and teaching should not be considered just for this period. Teaching of culture should be an ongoing process. At these events some people take the opportunity to ply their art and craft and that adds a commercial element to the events. Some have been advocating for that formal element to be set into the program and they are hoping the Ministry of Indigenous Peoples Affairs would take the lead in helping to formulate a program that will balance out the celebration and teaching session.

7.5 Methods of learning

Four methods of how oral culture is transmitted have been identified. These include habits or rituals, oral communication, institutions of knowledge and physical/spiritual forms and artefacts (Mistry et al., 2013). During my fieldwork I set out to understand which of these methods were used within the Makushi culture to transmit their knowledge. It was said that teaching started at an early age. At a young age children employed the method of ritual and habit to learn. When in the farm they would imitate the activities of their mother or father either pulling weed or planting cassava. As they get older oral communication becomes more evident with parents providing information on how or why they do things in a certain manner. Storytelling is also an integral part of the learning process. Stories are told from an early age and will continue until the child is an adult.

As the child grows they practice the activities they see. They practice the simplest of the tasks involved in their traditional practice such as sowing seeds, pulling weeds. As they reach puberty they become more involved in these activities. The boys will practice making and shooting bow and arrows, targeting small birds and lizards or they would go fishing in the waters near the community. For the girls it is helping with the processing of cassava, either scraping the root for grating, learning to grate or matapeeing (squeezing juice from grated cassava), or making the cassava meal. As youngster there is no division of tasks, so children may participate in any of the activities being carried out. But as they get older boys may go hunting with their fathers or on fishing trips to learn about these fishing locations for their own use as adults. The girls will begin parching farine or baking cassava bread on their own with their mothers providing correction in techniques. During these years of growing up the parent will constantly teach about the values and rules of the community.

I have asked and many of the respondents have said that these methods of learning are tried and true. They work and they do not see the need for new methods. However, this cycle has been broken. CW 021 said that the age at which the teachings of these traditions really take off (as the boys and girls reach puberty) is the age at which their children are going off to high school. For these communities there is no choice but to have their children board at the high school instead of traveling every day. This means that the knowledge built started from looking at the parents to beginning to imitate them is cut short.

In attending secondary school the attitudes of the children change. When they return home for holidays they no longer want to participate in these activities. As they graduate from high school they look to live a different way of life. In Crash Water for example many of the young people leave the village for Brazil:

“When they reach 12 years they gone. [To school?] (laughing) [school?] No, to Brazil, take wife.” (CW006, male 25 – 39 yrs., Oct 2013)

“I’m just saying that because when they meet 15-16 years they gone. So how they gon learn something from their parents they can’t learn nothing. They gone and learn something else. They gone and learn stylings, and when they come back they can’t do it.” (CW 013, male 25 – 39yrs, Oct, 2013)

In Rewa and Surama, the young people may not be leaving the community, but they are not engaging in learning these practices either.

“Right now from what I observing like it’s become difficult to get these young people, even though the elders might be willing to share that knowledge, the young people are not interested in such knowledge anymore. I think it’s because of the level of schooling now. Especially like now. I would say for Surama, we have got 90-95% of the youngsters having secondary education. So they are not even interested in things like the wildlife club...like the education taking them away from their own beliefs, way of life. They are getting more exposure to certain things.” (SRM 005, female 25 – 39yrs, June 2013)

SRM 005 went on further, saying that the traditional practices were things that had to be learnt. They said when it is that the youths should be looking within their community for the knowledge of how to survive, they are looking outwards first.

“It is like something you had to know but because the younger people are now seeing, we now seeing that there are different ways out there that we can survive, we just put ours like one side. So we’re not seeing that [knowledge] as first and that outside [knowledge] as second. We are seeing it the opposite way then.” (SRM 005, female 25 – 39 yrs., June 2013)

SRM 005 was pointing to the necessity of learning traditional ways of doing things especially in light of all the news related to climate change. The question of valuing traditional knowledge has to do with balancing access. Yes, there is an interest in scientific knowledge for example as it helps to explain a phenomenon the communities are currently experiencing. Iwokrama and such organisations would help provide access to that information but communities need to place the same weight on traditional knowledge as they would scientific knowledge. So the same way efforts would be made to facilitate out research to learn about specific scientific issues the same should be done to show case elements of traditional knowledge and organisations such as Iwokrama can help add that value by linking elements of science and traditional knowledge and presenting them together.

Those few who ventured to voice an opinion on how this trend could be turned around look to an institutional approach in doing it. They believe having a school that teaches these practices may be the way to help ensure the knowledge is kept. I asked about more modern means of teaching. Some of the youths thought making use of CDs and DVDs may have some merits as young people like to watch television. They also thought that more use should be made of the community radio that broadcast to all the communities.

“They could devise programs that would help with the language and talk about the different aspects of Makushi culture” (RWA 017, female 15 – 25 yrs., Jul 2013).

The use of such media like DVD and radio has merit. During the COBRA project communities liked engaging in the making of the videos and even watching the development of the product. It fascinated many community members when they saw such products from their community researchers. They were proud that the knowledge was theirs. It was important that the materials being presented were above reproach that the videos were correct in its content before being distributed. More young people are listening to the only community radio station in the area. Developing tasteful programming that touches on important parts of Makushi culture would be a good way to connect.

For some communities the formation of a cultural group provides an avenue for those who are interested to come and learn. The Surama Culture Group and the Yupukari Rupununi Learners are two such groups that exist that give community members an opportunity to learn what they were not taught.

7.5.1 Cultural Groups

The social or cultural groups within communities were born out of the need to fill the gap of teaching certain aspects of Makushi culture like songs and dances. Story telling is part of the group activities but they are done mostly in skit format when the groups perform. The culture groups found within my study area include those in the communities of Annai, Rupertee, Surama and Wowetta culture groups. These groups usually perform cultural items during heritage celebrations, at village event and to entertain visitors, but they also give members of these communities a chance to learn or teach about their culture.

7.5.1.1 Surama Culture Group

This group is led by Jean Allicock and her husband Glendon. Jean said she started on her own telling stories or singing songs at different events within her village. She said a lot of

people commented that what she was doing was a good thing and as the interest built she used it as a way of drawing other like-minded persons together. Each person within the group who has a skill to share is encouraged to do so. It is the leaders that motivate the group to do different activities. The group try to keep the songs and dances alive but acknowledge that a lot of what they do is not old songs or dances. It is pieces of those old traditions that they have woven together to create something new in their language. The group's aim is to promote Makushi culture, and they have toured in and out of Guyana showcasing what they do.

Jean believes that this is one way of keeping the culture alive but also believes that a cultural centre should be created to teach local knowledge and tradition to the youths and others who are willing to learn. The cultural centre should be a place where the elders can pass on knowledge in detail to be preserved. She also thinks the information should be recorded in digital format. The information from the elders should be recorded as there is now access to such resources and that way there will always be access to the information stored in the future for teaching purposes and the benefit of the people and children to come.

7.5.1.2 The Rupununi Learners

The Rupununi Learners¹²⁰ has its foundation in a PhD black caiman research project that was conducted by Peter Taylor accompanied by his wife Alice. The couple wanted to do more than just live in the community of Yupukari for the duration of Peter's research and as such worked with the community to develop a program that they could use as a vehicle to promote science and traditional knowledge. To finance the program the community with the help of the Taylors converted the small field station that had been built for the Taylors into an eco-tourism lodge. Rupununi Learners Incorporated was registered in

¹²⁰ More information on what the Rupununi Learners do can be found on their Facebook page <https://www.facebook.com/pages/Rupununi-Learners/101835906568719>

Guyana in 2007¹²¹. They also set about trying to attract other researchers to bring their research dollars to the community. One of the first programs the group worked on was supporting the community school by setting up a literacy program. They built a public library and sourced books to stock it. They are currently working to establish libraries in other communities.

The next project was to get computers into the library and introduce villagers to this technology and how to use it. But as they made these advancements it was realised that they needed to tackle something closer to home and so the group started to organise ways in which their Makushi and Wapishana¹²² culture could be shared with the younger generations. They have recruited some of the community elders to come in once a week to teach the youths various traditions from craft making, to pottery, to making arrows and even cooking certain traditional food. In 2013, the group initiated a new idea of hosting a campfire every month to allow the activity of storytelling to be revived. The idea was born out of the tradition of sitting in front of the fire place to tell stories. But it took the young kids to bring the idea to the fore. As told by YUP 005:

“We had a few kids here and we asked them to draw what they imagine the idea could be done. We asked them to close their eyes and imagine how they see this Indigenous knowledge taking place or what they thought it was...there was fire with in the middle with the story teller with a group of people sitting around listening. That is how it came about with the campfire...” (YUP 005, female 15 – 24 yrs., April 2013)

They try to give everyone the opportunity to participate including the young people doing forro¹²³ dancing. Another part of their cultural revival initiative is to document the stories being told. At each campfire they would record the stories and then transcribe them. They also indicated that they encourage those who do not want to speak in front of a group to stop by the field station or village library and tell their stories and they will record it for

¹²¹ An earlier fund raising effort the Rupununi Learners Foundation was registered in the United States in 2001. <http://rupununilearners.org/>

¹²² The main tribes found in Yupukari are Makushi and Wapishana

¹²³ Forro is a type of Brazilian music and dance that is very popular in the Rupununi

prosperity. It was said the only issue they face is the number of people who have stories to tell to keep the activity going. To overcome this challenge they invite people from other communities to visit and share their stories as well. They think the next step would be to establish a cultural group like Surama to revive other aspects of their culture like making traditional Makushi instruments.

7.6 Building future social memory

Some they don't want to be Amerindian, they want to leave the culture, they want to be like the white people. They are not interested just like in school. A child is not interested in school. But we grow up with a different mind. (CWI 002, Oct 2013)

How would Makushi people identify as Makushi? This was a question asked of participants in the acknowledgement that many of the changes occurring in the communities are driving their culture further into decline. It was a question many could not answer. It was also a discussion I have had with the Project COBRA team while looking at solutions for cultural revival. As one team member put it *"they don't understand, the loss of language and knowledge means we have no identity."* (Field notes, Apr 2013).

For the culture to be passed on to the next generation they have to be willing to learn. As mentioned previously, there seems to be a curious sense of waiting between each generation to ask the other to teach or to learn but if given the chance some would take the challenge up to learn. When asked how you would get the young people interested in learning about their culture everyone said talk to them. Tell them why it is important to learn these things.

"You talk to them, that is all. Get them to pay attention to what you say." (CWI 015, female over 40 yrs., Oct 2013)

"If you teach them they will learn." (CWI 019, female 15 – 25 yrs., Oct 2013)

There is an optimism that given the opportunity the younger generation would take up the mantle to learn their traditions. But if not using the traditional manners of learning then

more modern means of building social memory will have to be explored. Without social memory any group would be unable to distinguish themselves (Climo & Cattell, 2002).

In exploring the methods and spaces for transmission of knowledge and ultimately building social memory, participants highlighted a few places and methods that could be used to transmit knowledge. The first was the Annual Heritage Celebration. Perhaps it is difficult for people to now live their traditions day to day but for one month they can engage with the practices through competitions, the cultural events and speak with knowledgeable persons. Within the events there can be more formal sessions where persons can engage with an elder. They can learn in newly created spaces.

A few suggestions were that both the teaching and space could be something more formal. Like formal government schools they would like to see a formal school teaching traditional knowledge and practice. One such enterprise would be the Bina Hill Youth Learning Centre. This is an alternative education institute that aims to introduce the young to subject areas that would allow them to work more effectively within their communities. Alongside learning about forestry and natural resource management they are being taught traditional skills like weaving. Done correctly the teachers have an opportunity to use this space to begin building social memory for the next generation.

The same can be done for the community radio, Radio Paiwomak. At the start, the radio programming used to feature items such as learning Makushi and what's out in your environment. These programs discontinued as the announcers moved on. But such programs can be revitalised and others centred on Makushi culture can be developed.

Project COBRA introduced the idea of utilising video to disseminate information. Some participants thought that this was also an alternative way in which information could be passed along. Like the radio how this activity could be executed would take time and dedication.

7.7 Conclusion

As the communities become more entrenched in the market economy, more changes are taking place, and the more steeped in modernity the communities become. The young people can relate more to new technologies than they can relate to their traditional practices. For some older folks they look at the progress being made and make the decision that perhaps their knowledge is no longer essential and do not hold a place in the process of development and the path for youth going forward. Such notions should not be encouraged, as it may be that such knowledge can be the key to finding solutions for future challenges (Project COBRA, 2015). What also needs to be kept in mind is that traditional knowledge is not old. It is not traditional because it is ancient knowledge, it is traditional because the process of creating that knowledge is the same – observing, testing, and absorbing what is workable.

It was found that the two main spaces for teaching were the farm and home. It is felt that they still represent important places for learning and the methods used are essential. But these spaces and techniques for teaching are only now relevant to a certain stage of a child's development because once they reach age 12, as students they head off to secondary school and the cycle of transmission is broken. Community members would have to explore ways in which to bring the lessons that would have been taught over the course of those school years to the students within that formal environment. Some of these alternatives have been discussed.

As the younger generations become more adapted to modern things the less intact is their social memory. In many ways as people engage in more monetary based work the less time they have to engage in the activities to build community social memory. This is particularly true if the older and younger generations are not interacting. This means there will be a gap in the skills and knowledge that is being passed on (Takako, 2004). Even if

new methods such as radio and DVDs are used to capture elements of the culture as mentioned in section 7.2 much of traditional knowledge is tacit and requires face to face interaction to pass that knowledge on. This is because the experiences and know how differ from person to person and to pass that nuanced difference along there needs to be interaction.

The survival of Makushi practices and knowledge will be dependent on people being able to maintain the spaces and culture of meeting and interacting especially around the most essential practices. It is the best way to pass knowledge of techniques and to share experiences. There is something lost in translation when traditional knowledge is documented and it will be important for the knowledge to be tabled about in order for it to stay alive.

Chapter 8 – Conclusion

8.1 Introduction

The COP 20 meeting in Lima, Peru ended in December 2014 with some optimism that a new climate change agreement can be reached at in Paris December 2015. As indicated by the quote in Chapter 7, by the Peruvian Environmental Minister, Indigenous peoples hold the knowledge by which we can adapt to the changes occurring in our environment. It has been reported that a number of recent studies show strong evidence to the conservation benefits gained from Indigenous peoples having rights to their territories. The knowledge Indigenous peoples hold is specific and place based (Dewulf et al 2005). As such, any incorporation of that knowledge into adaptive strategies may have to be localized to similar environments. In addition, Indigenous knowledge is not static but dynamic evolving as their situations change. How the situation changes can have a profound impact on the knowledge base and its transmission. This is certainly the case for the Makushi people of the North Rupununi.

The life of the Makushi has changed progressively since contact. That rate of change was dependent on access to the Rupununi and frequency of contact. Contact meant a slow degradation of Makushi culture as noted by Myers (1994) during her decade long stay in the region during the 1930's to 1940's. While change was inevitable, the rapidity of that change accelerated with the opening of the road linking Lethem to Linden and onwards to Georgetown. The establishment of the Iwokrama Forest, the mandate of the Iwokrama International Centre to engage the local communities and the influx of other organisations through Iwokrama, also changed the way the Makushi engaged with their environment and culture.

The aim of this thesis was to explore the implications of the changes occurring within Makushi traditions and practices on forest conservation within the Guyana context. This

was in light of the Guyana Government's move to implement a low carbon development strategy and the impression given to the role the Indigenous population would play in helping to achieve this goal of to maintain Guyana's forest cover. In addition, recent projects (CMRV and COBRA) within the Makushi territory seek to assess the roles Indigenous communities could play in monitoring land use changes for REDD+ and identifying local solutions to environmental challenges are all ways of assessing the knowledge base of Indigenous communities to contribute to this process.

8.2 Research Findings

The main research question - implications of changing Makushi practices for forest conservation - was explored by examining three themes: Makushi people as conservationists, implications of changes in a specific traditional practice directly related to the forest and the transmission of traditional knowledge to the younger generations.

Question 1: Can Makushi people be identified as Conservationists?

This thesis defines conservation as the active management of an issue to achieve a positive goal. Historical and contemporary literature indicates that Makushi used their resources and only had their traditional beliefs and customs to put any form of restriction in place. These traditional institutions resulted in conservation like effect keeping the resources in a healthy state. However, the changes that the Makushi society experienced over the course of the last two hundred years have led to the decline in these institutions. The continued use of the resources at status quo without these institutions has resulted in the reduction of the conservation effect, and communities witnessing a noticeable decline in certain resources such as some fish species. This has resulted in the tribe's call for the development of management plans to reverse this trend. It appears that without the care afforded by these traditional institutions Makushi over extract their resources.

Question 2: Do Makushi shifting cultivation practices act as a conservation method and what are the implications of changing these practices for forest conservation?

Makushi traditional farming has always been done in a way that the end result is the enhancing of the forest biodiversity and processes. Keeping in mind the conservation definition being used Makushi traditional farming does not connote the active management to solve an issue. The end result of the practice is the enhancement of forest biodiversity in the farm site and an addition to forest ecosystem services. Over the last two decades the practice has however, been undergoing change. These include change in technology, high market demand for products, increase of population in farm areas and changes in land use management. All these factors if not managed right could lead to negative impacts on the forest such as forest loss and increase degradation and soil exhaustion. It would therefore, be necessary for the practice and these changes to be monitored judiciously to ensure that forest impacts are minimal.

Question 3: What role does social memory play in maintaining Makushi traditional knowledge?

The transmission of traditional knowledge and practice starts from an early age with children mimicking their parents to adulthood with teaching. These teachings are mostly done in a social setting as it provides an opportunity to add something new to that knowledge or be reminded of something that may be missing. The tacit nature of traditional knowledge dictated that knowledge transmission be face to face as it allows the teacher to pass on added details based on experiences and insight. Using alternative medium like DVDs allows the knowledge to be stored something gets lost in the translation as the attempt is to translate tacit knowledge to explicit knowledge which is very exact. Social memory therefore is essential in the building and remembering of traditional knowledge as it adds richness of details to the knowledge being passed on.

8.3 Implications of Research Findings

Indigenous people as conservationists: Historical review of Makushi resource use indicates that along with low population, limited technology, and low demand for resource, Makushi traditional institutions reduced the possibility for overharvesting their resources and hence negated the need to develop resource use measures. The decline of these traditional institutions means there are no limitations placed on the amount and species that can be harvested. Paired with improved technology, increased population and higher resource demand the result is increased harvesting pressure on the resource and decline in those resources. This change in resource use pattern means that the Makushi will have to actively start managing their resources of loss them. They will have to explore new measures of control and consequence and they will have to enforce these new actions if they are to continue using these resources sustainable.

Traditional Knowledge: Indigenous customary rules work in achieving some level of care of resources but as seen, these institutions are vulnerable to change and lose their value as perspectives change (Singh & Ross, 2010). There is a shift in value system as it relates to indigenous knowledge when it appears more emphasis is being placed on other kinds of knowledge and practice. While the process of creating traditional knowledge include absorbing new knowledge to test and match against what is known, it is important for that knowledge to be transmitted for these to be something to compare. It is therefore, imperative that value and importance is placed on traditional knowledge for it to be seen as valuable by the younger generations.

Forest Conservation: traditional practices and knowledge do play a role in maintaining forests when those systems are intact. However, when those systems start to change or decline the care of the forest is jeopardised. The transmission of Makushi traditional knowledge is breaking down as the family dynamics change. This knowledge is being

replaced by western scientific knowledge which utilised a different style of practice for application. A system of integration would have to be devised to be able to get young people to interact with both the new and old knowledge and make it useful for solving future problems.

The aim of this thesis was to explore the implications of change in Makushi traditional knowledge and practice for forest conservation. The research was run in parallel to the COBRA Project which explored identifying community owned solutions for environmental challenges. The two research projects complimented each other as in order to identify community owned solutions, community traditional knowledge has to be intact. This thesis helped to determine that some elements of community traditional knowledge has declined but that decline stems from changes that are occurring within the communities that could potentially be reversed. The critical age for knowledge transmission is when children are heading off to high school. A more westernised mode of teaching is employed and the youngsters are no longer exposed to their traditional knowledge. It is therefore important that more effort is made into introduce traditional activities into the main stream school curriculum. These activities can be done during or after school hours. It will serve to enforce the importance of traditional to the younger generation.

8.4 Policy Implications

The findings from this thesis present an opportunity for the local communities to examine critically the changes that are occurring within their communities and evaluate the pros and cons of these changes. Communities need the opportunity to evaluate information as it comes to them and how it should be used. Free, prior and informed consent would be an important process to follow as it would allow this evaluation to occur without pressure of immediate response.

The Indigenous cultures of Guyana are a valued part of its heritage. Maintaining these cultures is important not only for heritage sake but for the knowledge they do hold. While the adage “change will come” maybe true how that change comes and its influence should be a choice made by the communities.

The Government Low Carbon Development Strategy indicates a role for Indigenous peoples of Guyana to participate in this process. If their knowledge is to be used and every effort should be made to help the tribes maintain that knowledge. The education system within Indigenous communities needs to be adjusted to facilitate the learning of cultural practices and traditions. If students are to be in school during the period that they are taught these things then provisions should be made for time and space to be created for local knowledge transmission. Assistance should also be provided to help communities develop materials that would allow access to certain aspects of the tribes’ customs. Acknowledgement of Indigenous languages and use within communities is an important part of holding on to their culture.

Access to usable, clear and easily understood information is necessary for communities to make decisions. Communities need the infrastructure to be able to access information and to access people who could explain and make things clear that they do not understand. The implementation of activities needs to move beyond the politics and be about community advancement and protection of the environment. There should be every effort made to continue bridging the gap between traditional knowledge and scientific knowledge. It should not be just about using traditional knowledge to identify or gather information and scientific methods to solve the problems. As the COBRA Project has shown communities have local solutions that are viable and can be scaled up for use at a wider landscape.

8.5 Suggestions for Further Research

The findings of this thesis suggest a number of interesting areas that could be further explored. My findings of how changes can impact traditional practices indicate that more research should be conducted to explore of the impact of changes occurring within other Indigenous traditional practices and how new knowledge is being incorporated into or discarded from their knowledge system. Evaluation of these changes should be considered to assess their effectiveness of sustainably managing or utilising resources. Another aspect in the knowledge transmission would be to research the scope of knowledge being transmitted to the younger generations.

This thesis started out with an idea of helping to document the stories of the Makushi people as they were told during the course of field research. Documenting these stories and other static knowledge is still important, in light of my findings. This is especially essential as the elders pass away. This suggestion is by no means new and there has been a recent effort to start the process with the Pantani Blog¹²⁴. There is certainly a need to explore ways of getting the younger generations more involved in this process. Historical research of the Makushi heritage, even other tribes of Guyana, may also help to uncover lost knowledge about the group as I've discovered in my exploration of the historical records.

In exploring the impact of changes on Makushi farm practices I asserted that certain decisions made by village councils to shift farming sites was based on insufficient data and access to information. This was confirmed by villagers. There is little data published on carbon storage both in forest and savanna ecosystems of the Rupununi¹²⁵. More research is needed to investigate carbon sequestration and emission from the savanna

¹²⁴ <http://www.pantaniblog.org/>

¹²⁵ Most recent publication on carbon assessment in the Rupununi: Butt, N., Epps, K., Overman, H., Iwamura, T., & Fragoso, J. M. (2015). Assessing carbon stocks using Indigenous peoples' field measurements in Amazonian Guyana. *Forest Ecology and Management*, 338, 191-199.

system in light of the interest of both the Government and communities in developing savanna farming.

Whatever areas research that is developed from thesis it has to be done within a participatory framework with the communities. As experienced from collecting my own field data (see chapter 4) community members are saturated from researchers coming to conduct research and hardly ever seeing the results or benefits. The research should be done in a manner that may allow the quick internalisation of the data within the communities for their utilisation beyond the academic benefits to the researcher.

During the course of this thesis the transmission of traditions was a reoccurring theme. There is still much that needs to be known about how knowledge is transmitted especially what is shared and what is held back. It is also necessary to start assessing how much of the knowledge is being lost and what can be done to continue its conservation

8.6 Dissemination of Research Findings

It is intended that this research returns back to the communities. Printed copies of the thesis will be presented to the NRDDDB and research communities. But it is usual practice that such official documents do not get read. The pertinent findings of this thesis would, therefore, be condensed into a simple report along with recommendations. It would also be the hope of the researcher to return to the research communities to have interactive sessions with them to discuss the findings especially as it relates to their communities and perhaps work with them to point pin actions that can be taken to address issues identified in the thesis or how to enhance strategies that are working.

Bibliography

- Aird, C. (1980). Amerindian Myths, Legends and Folktales. In W. Edwards (Ed.), *Focus on Amerindians*. University of Guyana, Georgetown Amerindian Languages Project
- Alcorn, J. B. (1993). Indigenous Peoples and Conservation. *Conservation Biology*, 7(2), 424-426. doi: 10.2307/2386442
- Alcorn, J. B. (2005). Dances around the fire: conservation organizations and community-based natural resource management. In J. P. T. Brosius, A. L.; Zerner, C. (Ed.), *Communities and conservation: Histories and politics of community-based natural resource management* (pp. 37-68). Walnut Creek: Altamira Press.
- Alcorn, J. B., & Royo, A. G. (2015). Best REDD Scenario. In M. Cairns (Ed.), *Shifting Cultivation and Environmental Change: Indigenous People, Agriculture and Forest Conservation* (pp. 289). Milton Park: EarthScan by Routledge.
- Alfred, T., & Corntassel, J. (2005). Being Indigenous: Resurgences against contemporary colonialism. *Government and Opposition*, 40(4), 597-614.
- Allcock, P. (2013, 17 June, 2013). [Makushi History, Agriculture, Culture and Practices].
- Altieri, M. A., & Merrick, L. (1987). In situ conservation of crop genetic resources through maintenance of traditional farming systems. *Economic Botany*, 41(1), 86-96.
- Alvard, M. (1995). Intraspecific Prey Choice by Amazonian Hunters. *Current Anthropology*, 36(5), 789-818.
- Alvard, M. (1995). Shotguns and sustainable hunting in the Neotropics. *Oryx*, 29(1), 58-66. doi: 10.1017/s0030605300020883
- Alvard, M., Alcorn, J. B., Bodmer, R. E., Hames, R., Hill, K., Hudson, J., . . . Stearman, A. M. (1995). Intraspecific Prey Choice by Amazonian Hunters [and Comments and Reply]. *Current Anthropology*, 36(5), 789-818.
- Alvard, M. S. (1993). Testing the "Ecologically Noble Savage" Hypothesis: Interspecific Prey Choice by Piro Hunters of Amazonian Peru. *Human Ecology*, 21(4), 355-387. doi: 10.2307/4603101
- Alvard, M. S. (1994). Conservation by native peoples. *Human Nature*, 5(2), 127-154.
- Amerindian Act (2006).
- Angelsen, A. (1995). Shifting cultivation and "deforestation": A study from Indonesia. *World Development*, 23(10), 1713-1729. doi: [http://dx.doi.org/10.1016/0305-750X\(95\)00070-S](http://dx.doi.org/10.1016/0305-750X(95)00070-S)
- Angelucci, D., & Marchetti, S. (2014). Modernity. *deleuze Studies* 8(3), 342-353.
- Atkinson, P., & Hammersley, M. (1994). Ethnography and participant observation. *Handbook of qualitative research*, 1, 248-261.
- Aukland, L., Costa, P. M., & Brown, S. (2003). A conceptual framework and its application for addressing leakage: the case of avoided deforestation. *Climate Policy*, 3(2), 123-136.
- Baker, S. E., & Edwards, R. (2012). How many qualitative interviews is enough? Expert voices and early career reflections on sampling and cases in qualitative research. *National Centre for Research Methods Review Paper*.
- Baldwin, R. (1946). *The Rupununi record*. Barbados: Barbados Advocate Company.
- Balkaran, L. (2007). *Encyclopaedia of the Guyanese Amerindians: including other South American Native terms, issues and events*. Scarborough: LBA Publications.
- Barbosa, R. I., & Fearnside, P. M. (2005). Above-ground biomass and the fate of carbon after burning in the savannas of Roraima, Brazilian Amazonia. *Forest Ecology and Management*, 216(1), 295-316.

- Barre, R. Y., Grant, M., & Draper, D. (2009). The role of taboos in conservation of sacred groves in Ghana's Tallensi-Nabdam district. *Social & Cultural Geography*, 10(1), 25-39.
- Becker, H. S. (1958). Problems of inference and proof in participant observation. *American Sociological Review*, 23(6), 652-660.
- Berkes, F. (1999). *Sacred ecology: traditional ecological knowledge and management systems*: Taylor & Francis, Philadelphia.
- Berkes, F. (2004). Rethinking community-based conservation. *Conservation Biology*, 18(3), 621-630.
- Berkes, F. (2007). Community-based conservation in a globalized world. *Proceedings of the National Academy of Sciences*, 104(39), 15188-15193.
- Berkes, F. (2009). Indigenous ways of knowing and the study of environmental change. *Journal of the Royal Society of New Zealand*, 39(4), 4.
- Berkes, F. (2012). *Sacred ecology* (3rd ed.). New York: Routledge.
- Berkes, F., Colding, J., & Folke, C. (2000). Rediscovery of traditional ecological knowledge as adaptive management. *Ecological applications*, 10(5), 1251-1262.
- Berkes, F., & Turner, N. J. (2006). Knowledge, learning and the evolution of conservation practice for social-ecological system resilience. *Human Ecology*, 34(4), 479-494.
- Berman, R. C., & Tyyskä, V. (2011). A critical reflection on the use of translators/interpreters in a qualitative cross-language research project. *International journal of qualitative methods*, 10(2), 178-190.
- Bernau, J. H. (1847). *Missionary Labours in British Guiana: with Remarks on the Manners, Customs, and Superstitious Rites of the Aborigenes*.-London, John Farquhar 1847: John Farquhar.
- Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative research journal*, 9(2), 27-40.
- Brett, W. H. (1851). *Indian missions in Guiana*: G. Bell.
- Brown, C. B. (1876). *Canoe and camp life in British Guiana*: E. Stanford.
- Brown, S., & Lugo, A. E. (1990). Tropical secondary forests. *Journal of tropical ecology*, 6(1), 1-32.
- Bruun, T. B., Neergaard, A. d., Lawrence, D., & Ziegler, A. D. (2009). Environmental Consequences of the Demise in Swidden Cultivation in Southeast Asia: Carbon Storage and Soil Quality. *Human Ecology*, 37(3), 375-388. doi: 10.2307/40343978
- Bryman, A. (2012). *Social research methods*: OUP Oxford.
- Butler, R. (2012). Indigenous People's Role in Conservation Retrieved 6 March 2015, 2015, from <http://rainforests.mongabay.com/1025.htm>
- 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(2), 187-218.
- Cajete, G. (1994). *Look to the mountain: An ecology of indigenous education*: ERIC.
- Callicott, J. B. (1990). Whither conservation ethics? *Conservation Biology*, 4(1), 15-20.
- CCMIN-AIPP. (2010). *Briefing Paper on Shifting Cultivation And Climate Change*. Paper presented at the UNFCCC Intercessional Meeting Bangkok.
- CDO. (2012). *Community Statistics for Community development Officer*. Ministry of Amerindian Affairs.
- CDO. (2013). *Community Statistics for Community development Officer*. Ministry of Amerindian Affairs.
- Cedergren, J. (2009). Measurement and Reporting of Forest Carbon in Carbon in Guyana: Preparing for REDD Implementation Implementation. Georgetown, Guyana Guyana Forestry Commission.

- Chidumayo, E. N. (1987). A shifting cultivation land use system under population pressure in Zambia. *Agroforestry Systems*, 5(1), 15-25.
- Chronicle, G. (2016). Amerindian Heritage Month, *Guyana Chronicle*. Retrieved from <http://guyanachronicle.com/2016/09/01/amerindian-heritage-month-2>
- Chung Tiam Fook, T. (2011). *Sustaining Indigenous Lifeways Through Collaboration and Community-led Wildlife Conservation in the North Rupununi, Guyana*. PhD, York University.
- Clark, T. (2008). 'We're Over-Researched Here!': Exploring Accounts of Research Fatigue within Qualitative Research Engagements. *Sociology*, 42(5), 953-970. doi: 10.1177/0038038508094573
- Climo, J., & Cattell, M. G. (2002). *Social memory and history: Anthropological perspectives*: Rowman Altamira.
- CMRV Project - CREWs, M. Farming in Makushi Territory, North Rupununi (NORAD, Trans.). Not published.
- Colding, J., & Folke, C. (2001). Social taboos: "invisible" systems of local resource management and biological conservation. *Ecological applications*, 11(2), 584-600.
- Collings, N. (2009). Environment. In U. N. D. o. E. a. S. Affairs (Ed.), *State of the World's Indigenous People Report* New York: United Nations
- Conklin, H. C. (1961). The Study of Shifting Cultivation. *Current Anthropology*, 2(1), 27-61. doi: 10.2307/2739597
- Cottrell, M., Preston, J. P., & Pearce, J. (2012). The Intersection of Modernity, Globalization, Indigeneity, and Postcolonialism: Theorizing Contemporary Saskatchewan Schools. *Diaspora, Indigenous, and Minority Education*, 6(4), 242-257. doi: 10.1080/15595692.2012.715103
- Coulon, J., Graziani, L., Allaine, D., Bel, M., & Poudroux, S. (1995). Infanticide In the Alpine Marmot (Marmota-Marmota). *Ethology Ecology & Evolution*, 0007(2), 191-194.
- Cultral-Survival. (2014). Who are Indigenous Peoples? Retrieved 27 Mar 2015, 2015
- Da Cunha, M. C., & De Almeida, M. W. (2000). Indigenous people, traditional people, and conservation in the Amazon. *Daedalus*, 315-338.
- Dagon, R. R. (1967). Current Agricultural Practices Among the WaiWai: DTIC Document.
- Dalle, S. P., Pulido, M. T., & Blois, S. d. (2011). Balancing shifting cultivation and forest conservation: lessons from a "sustainable landscape" in southeastern Mexico. *Ecological applications*, 21(5), 1557-1572.
- Daniels, R. J. R., Joshi, N. V., & Gadgil, M. (1992). On the relationship between bird and woody plant species diversity in the Uttara Kannada district of south India. *Proceedings of the National Academy of Sciences*, 89, 5311-5315.
- Danns, G. K. (2014). The Impact of Identity, Ethnicity and Class on Guyana's Strategic Culture. *American International Journal of Contemporary Research*, 4(11).
- Dasgupta, S., Laplante, B., Meisner, C. M., Wheeler, D., & Jianping Yan, D. (2007). The impact of sea level rise on developing countries: a comparative analysis. *World Bank policy research working paper*(4136).
- De Groot, R. S., Wilson, M. A., & Boumans, R. M. (2002). A typology for the classification, description and valuation of ecosystem functions, goods and services. *Ecological Economics*, 41(3), 393-408.
- Dewulf, A., Craps, M., Bouwen, R., Abril, F., & Zhingri, M. (2005). How indigenous farmers and university engineers create actionable knowledge for sustainable irrigation. *Action research*, 3(2), 175-192.

- Dummett, M. (1968). Notes on Amerindian Agriculture In R. F. Salisbury, M. Dummett, T. Hills & D. Cook (Eds.), *ETHNOGRAPHIC NOTES ON AMERINDIAN AGRICULTURE*: DTIC Document.
- Dutfield, G. (2001). TRIPS-related aspects of traditional knowledge. *Case W. Res. J. Int'l L.*, 33, 233.
- Eede, J. (2011). The key to conservation lies with indigenous peoples, according to the World Bank *National Geographic Blog* (Vol. 2015). voices.nationalgeographic.com: National Geographic Society
- ENS. (2009). Guyana and Norway Sign \$250 Million Forest-Climate Pact, *Environment News Service*.
- Ewel, J. J. (1986). Designing agricultural ecosystems for the humid tropics. *Annual Review of Ecology and Systematics*, 245-271.
- Farabee, W. (1924). The Central Caribs. Vol 10. Philadelphia: The University Museum (University of Pennsylvania). Anthropological Publications.
- Farabee, W. C. (1918). The Central Arawaks. University of Pennsylvania, The University Museum. *Anthrop. Publ*, 9.
- Farabee, W. C. (1967). *The Central Caribs* (Vol. 10): Anthropological publications.
- Fearnside, P. M. (2000). Global Warming and Tropical Land-Use Change: Greenhouse Gas Emissions from Biomass Burning, Decomposition and Soils in Forest Conversion, Shifting Cultivation and Secondary Vegetation. *Climatic Change*, 46(1), 115-158. doi: 10.1023/a:1005569915357
- Flekens, L., & Jorritsma, F. (2010). A Behavioral Change Perspective of Maroon Soil Fertility Management in Traditional Shifting Cultivation in Suriname. *Human Ecology*, 38(2), 217-236. doi: 10.1007/s10745-010-9307-5
- Foale, S., Cohen, P., Januchowski-Hartley, S., Wenger, A., & Macintyre, M. (2011). Tenure and taboos: origins and implications for fisheries in the Pacific. *Fish and Fisheries*, 12(4), 357-369.
- Fontana, A., & Frey, J. (1994). Interviewing: The art of science. In N. K. a. L. Denzin, Y. S. (Ed.), *The handbook of qualitative research* (pp. 361-376). Thousand Oaks, CA: Sage.
- Forget, P.-M., Hammond, D. S., Milleron, T., & Thomas, R. (2002). Seasonality of Fruiting and Food Hoarding by Rodents in Neotropical Forests: Consequences for Seed Dispersal and Seedling Recruitment. In D. J. S. Levey, W. R.; Galetti, M. (Ed.), *Seed Dispersal and Frugivory: Ecology, Evolution and Conservation* (pp. 241-256): CAB International.
- Forte, J. (Ed.). (1996). *Makusipe Komanto Iseru: Sustaining Makushi Way of Life* (1st ed.). Georgetown, Guyana: North Rupununi District Development Board.
- Fox, J., Truong, D. M., Rambo, A. T., Tuyen, N. P., Cuc, L. T., & Leisz, S. (2000). Shifting Cultivation: A New Old Paradigm for Managing Tropical Forests. *BioScience*, 50(6), 521-528. doi: 10.1641/0006-3568(2000)050[0521:scanop]2.0.co;2
- Gadgil, M., Berkes, F., & Folke, C. (1993). Indigenous knowledge for biodiversity conservation. *Ambio*, 22(2/3), 151-156.
- GoG. (2000). *Guyana National Development Strategy 2001 - 2010*. Online Ministry of Finance - Government of Guyana Retrieved from www.devnet.org.gy/sdnp/nds.
- Gómez-Baggethun, E., Corbera, E., & Reyes-García, V. (2013). Traditional ecological knowledge and global environmental change: research findings and policy implications. *Ecology and Society*, 18(4), 72.
- Gómez-Baggethun, E., Mingorria, S., Reyes-García, V., Calvet, L., & Montes, C. (2010). Traditional ecological knowledge trends in the transition to a market economy: empirical study in the Doñana natural areas. *Conservation Biology*, 24(3), 721-729.

- Gómez-Baggethun, E., & Reyes-García, V. (2013). Reinterpreting change in traditional ecological knowledge. *Human ecology: an interdisciplinary journal*, 41(4).
- Grace, J., José, J. S., Meir, P., Miranda, H. S., & Montes, R. A. (2006). Productivity and carbon fluxes of tropical savannas. *Journal of Biogeography*, 33(3), 387-400.
- Granger, D. (2009, 18 Jan 2009). The Rupununi Rebellion, 1969, Feature, *Stabroek News*. Retrieved from <http://www.stabroeknews.com/2009/features/01/18/therupununirebellion1969/print/>
- Guenther, M., Kenrick, J., Kuper, A., Plaice, E., Thuen, T., Wolfe, P., & Zips, W. (2006). The concept of indigeneity. *SOCIAL ANTHROPOLOGY-CAMBRIDGE-*, 14(1), 17.
- Hall, J. (1980). A Typical Day in the Life of a Makushi Family. In W. Edwards (Ed.), *Focus on Amerindians* (pp. 25-27). Georgetown Amerindian Language Project, University of Guyana
- Hames, R. (2007). The ecologically noble savage debate. *Annu. Rev. Anthropol.*, 36, 177-190.
- Harris, C. A., & De Villiers, J. A. J. (1967). *Storm Van's Gravesande; the Rise of British Guiana Volume 1* (Vol. 2): Kraus Reprint.
- Henfrey, C. (1964). *The gentle people: a journey among the Indian tribes of Guiana*: Hutchinson.
- Hiebert, M., & Secretariat, C. (2013). *Education for Sustainable Development in Small Island Developing States*: Commonwealth Secretariat.
- Hilhouse, W. (1825). *Indian Notices*: British Guiana] Printed for the author.
- Houghton, R., Skole, D., Nobre, C. A., Hackler, J., Lawrence, K., & Chomentowski, W. H. (2000). Annual fluxes of carbon from deforestation and regrowth in the Brazilian Amazon. *Nature*, 403(6767), 301-304.
- Houghton, R. A. (2012). Carbon emissions and the drivers of deforestation and forest degradation in the tropics. *Current Opinion in Environmental Sustainability*, 4(6), 597-603. doi: 10.1016/j.cosust.2012.06.006
- Howard. (2011). Indigenous People Sound the Alarm on Climate Changes Retrieved 14 Dec 2012, from <http://newswatch.nationalgeographic.com/2011/10/11/indigenous-people-climate-change>
- Howard, B. C. (2015). Learning from Indigenous Peoples on Climate Change
- Howden, D. (2009, 19 November 2009). Norway and Guyana sign rainforest deal, Online article, *The Independent*. Retrieved from <http://www.independent.co.uk/environment/climate-change/norway-and...>
- Hunter, J. (2005). The role of information technologies in indigenous knowledge management. *Australian Academic & Research Libraries*, 36(2), 109-124.
- Huntington, H. P. (2000). Using traditional ecological knowledge in science: methods and applications. *Ecological applications*, 10(5), 1270-1274.
- Ickowitz, A. (2006). Shifting Cultivation and Deforestation in Tropical Africa: Critical Reflections. [Article]. *Development & Change*, 37(3), 599-626. doi: 10.1111/j.0012-155X.2006.00492.x
- Ickowitz, A. (2011). Shifting cultivation and forest pressure in Cameroon. *Agricultural Economics*, 42(2), 207-220.
- Im Thurn, E. F. (1879a). *notes on the Indians of Guiana: Indian Antiquities*. Georgetown: Demarara ?
- Im Thurn, E. F. (1879b). *Notes on the Indians of Guiana: Paiwari Feasts*. Georgetown: Demarara ?
- im Thurn, E. F. (1880). A Journey in the Interior of British Guiana. *Proceedings of the Royal Geographical Society and Monthly Record of Geography*, 2(8), 465-489. doi: 10.2307/1800576

- Im Thurn, E. F. (1883). *Among the Indians of Guiana: being sketches chiefly anthropologic from the interior of British Guiana*: K. Paul, Trench & Company.
- Im Thurn, E. F. (1885). The First Ascent of Roraima. *Timehri*, IV, 1-48.
- Im Thurn, E. F. (1886). Redmen: Some of their thoughts. *Timehri*, V.
- Im Thurn, E. F. (1892). A tramp with Redskins. *Timehri*.
- Inglis, J. T. (Ed.). (1993). *Traditional Ecological Knowledge: Concepts and Cases* Ottawa: IDRC.
- Ingwall-King, L. (2014). *The Implications of Spatial and Temporal Scale on the supply, distribution and value of ecosystem services in Guyana* PhD, Royal Holloway-University of London Unpublished.
- Inkpen, A. C. (1996). Creating knowledge through collaboration. *California Management Review*, 39(1), 123-140.
- Iwokrama International Centre for Rain Forest Conservation and Development Act (1996).
- Jacobs, C. (2013). [Makushi resource manage and CMRV practice in Surama].
- Jafferally, D., Mistry, J., Glastra, R., & Bovolo, I. (2012). North Rupununi in 2030: Alternative future scenarios for the development of the North Rupununi. Online: COBRA Project
- Jafferally, D. M. (2010). *Ecological Monitoring of the Iwokrama Forest: A Review*. Major Paper. Faculty of Environmental Studies. York University
- Johannes, R. (2002). Did indigenous conservation ethics exist. *Traditional Marine Resource Management and Knowledge Information Bulletin*, 14(3), 7.
- Johannes, R. E. (1978). Traditional marine conservation methods in Oceania and their demise. *Ann Rev Ecol Syst*, 9. doi: 10.1146/annurev.es.09.110178.002025
- Jones, J. P. G., Andriamarovololona, M. M., & Hockley, N. (2008). The Importance of Taboos and Social Norms to Conservation in Madagascar
- La Importancia de los Tabús y las Normas Sociales para la Conservación en Madagascar. *Conservation Biology*, 22(4), 976-986. doi: 10.1111/j.1523-1739.2008.00970.x
- Kato, M. S. A., Kato, O. R., Denich, M., & Vlek, P. L. G. (1999). Fire-free alternatives to slash-and-burn for shifting cultivation in the eastern Amazon region: the role of fertilizers. *Field Crops Research*, 62(2-3), 225-237. doi: [http://dx.doi.org/10.1016/S0378-4290\(99\)00021-0](http://dx.doi.org/10.1016/S0378-4290(99)00021-0)
- Kempenaers B; Verheyen Gr; Dhondt, A. A. (1995). Mate Guarding and Copulation Behavior In Monogamous and Polygynous Blue Tits: Do Males Follow a Best-Of-a-Bad-Job Strategy. *Behavioral Ecology And Sociobiology*, 0036(1), 33-42.
- Kipuri, N. (2009). Culture. In U. N. D. o. E. a. S. Affairs (Ed.), *State of the World's Indigenous Peoples Report*. New York: United Nations
- Lea, D. A. M. (1968). A Socio-Demographic Analysis of St. Ignatius - Kumu, Rupununi District (D. o. Geography, Trans.) *mcGill University Savanna Research Series* (pp. 38). Montreal: McGill University.
- Lee, D. A. (1968). A SOCIO-DEMOGRAPHIC ANALYSIS OF ST IGNATIUS-KUMU, RUPUNUNI DISTRICT: DTIC Document.
- Li, J. (2008). Ethical challenges in participant observation: A reflection on ethnographic fieldwork. *The Qualitative Report*, 13(1), 100-115.
- Liang, Y. B. (1985). The Traditional Worldviews of the Indigenous Peoples of Sabah In M. T. Osman (Ed.), *Malaysian World-View* (pp. 76 - 130). Pasir Panjang: Southeast Asian Studies Program, Institute of Southeast Asian Studies.
- Low, B. S. (1996). Behavioral ecology of conservation in traditional societies. *Human Nature*, 7(4), 353-379.
- MacDonald, K. (2014). Impacts of the Cattle Industry and Road Development in the Rupununi, Guyana. *Journal of Latin American Geography*, 13(3), 159-182.

- Martin, K., & Mirraboopa, B. (2003). Ways of knowing, being and doing: A theoretical framework and methods for indigenous and indigenist re-research. *Journal of Australian Studies*, 27(76), 203-214.
- McLeod, N. (2000). *Cree narrative memory*. Paper presented at the Oral History Forum d'histoire orale.
- Mehta, J. N., & Heinen, J. T. (2001). Does community-based conservation shape favorable attitudes among locals? An empirical study from Nepal. *Environmental Management*, 28(2), 165-177.
- Mehta, K., Alter, T. R., Semali, L. M., & Marezki, A. (2013). AcademIK connections: Bringing indigenous knowledge and perspectives into the classroom. *Journal of Community Engagement and Scholarship*, 6(2), 83.
- Menezes, M. N. (1977). *British policy towards the Amerindians in British Guiana, 1803-1873*: Clarendon Press.
- Menezes, M. N. (1979). *The Amerindians in Guyana, 1803-73: a documentary history*: Taylor & Francis.
- Merlan, F. (2009). Indigeneity: Global and Local. *Current Anthropology*, 50(3), 303-333. doi: 10.1086/597667
- Merriam-Webster. (2016). "Conservation." Retrieved 14 Sept. 2016., from Merriam-Webster
- Mertz, O., & Christensen, H. (1997). Land use and crop diversity in two Iban communities, Sarawak, Malaysia. *Geografisk Tidsskrift-Danish Journal of Geography*, 97(1), 98-110.
- Mertz, O., Padoch, C., Fox, J., Cramb, R. A., Leisz, S. J., Lam, N. T., & Vien, T. D. (2009). Swidden change in Southeast Asia: understanding causes and consequences. *Human Ecology*, 37(3), 259-264.
- Mertz, O., Wadley, R. L., Nielsen, U., Bruun, T. B., Colfer, C. J. P., de Neergaard, A., . . . Magid, J. (2008). A fresh look at shifting cultivation: Fallow length an uncertain indicator of productivity. *Agricultural Systems*, 96(1-3), 75-84. doi: <http://dx.doi.org/10.1016/j.agsy.2007.06.002>
- Misir, V., Arya, D., & Murumkar, A. (2013). Impact of ENSO on river flows in Guyana. *Water resources management*, 27(13), 4611-4621.
- Mistry, J. (2009). Indigenous Knowledge In N. Thrift, N. J. Thrift, R. Kitchin & Elsevier (Eds.), *International Encyclopedia of Human Geography* (pp. 371-376). London: Elsevier.
- Mistry, J., & Berardi, A. (2012). The challenges and opportunities of participatory video in geographical research: exploring collaboration with indigenous communities in the North Rupununi, Guyana. *Area*, 44(1), 110-116.
- Mistry, J., Berardi, A., Haynes, L., Davis, D., Xavier, R., & Andries, J. (2013). The role of social memory in natural resource management: insights from the North Rupununi, Guyana. *Transactions of the Institute of British Geographers*, (In Press).
- Mistry, J., Berardi, A., & McGregor, D. (2009). Natural Resource Management and Development Discourses in the Caribbean: reflections on the Guyanese and Jamaican experience. *Third World Quarterly*, 30(5), 969-989.
- Mistry, J., Berardi, A., & Simpson, M. (2008). Birds as indicators of wetland status and change in the North Rupununi, Guyana. *Biodiversity and conservation*, 17(10), 2383-2409.
- Mistry, J., Tschirhart, C., Verwer, C., Glastra, R., Davis, O., Jafferally, D., . . . Xavier, R. (2014). Our common future? Cross-scalar scenario analysis for social-ecological sustainability of the Guiana Shield, South America. *Environmental Science & Policy*, 44, 126-148.

- Morgan, D. L. (1996). Focus Groups. *Annual Review of Sociology*, 22(ArticleType: research-article / Full publication date: 1996 / Copyright © 1996 Annual Reviews), 129-152. doi: 10.2307/2083427
- Murcia, C. (1995). Edge effects in fragmented forests: implications for conservation. *Trends in ecology & evolution*, 10(2), 58-62.
- Myers, I. (1994). *The Makushi of the Guiana-Brazilian frontier in 1994: a study of culture contact*: Fundación La Salle.
- Myers, N. (1993). Tropical forests: the main deforestation fronts. *Environmental conservation*, 20(01), 9-16.
- Nadasdy, P. (2005). Transcending the debate over the ecologically noble Indian: Indigenous peoples and environmentalism. *Ethnohistory*, 52(2), 291-331.
- Nath, D. (1970). *A history of Indians in Guyana*: D. Nath.
- Nazarea, V. D. (2006). Local knowledge and memory in biodiversity conservation. *Annu. Rev. Anthropol.*, 35, 317-335.
- NRDDB. (2011). communities: Annai, 2014
- O'Neill, M. (2013). *The NVIVO Toolkit*. <http://contentz.mkt5276.com/lp/46188/261238/The-NVivo-Toolkit-Final.pdf>: SR.
- Odum, H. (1970). *A Tropical Rain Forest*. Oak Ridge: Atomic Energy Commission.
- Olick, J. K. (2008). Collective Memory. In W. A. Darity (Ed.), *International encyclopedia of the social sciences* (Second Edition ed.). Detroit: Macmillan Reference USA.
- Parr, C. L., Lehmann, C. E., Bond, W. J., Hoffmann, W. A., & Andersen, A. N. (2014). Tropical grassy biomes: misunderstood, neglected, and under threat. *Trends in ecology & evolution*, 29(4), 205-213.
- Peroni, N., & Hanazaki, N. (2002). Current and lost diversity of cultivated varieties, especially cassava, under swidden cultivation systems in the Brazilian Atlantic Forest. *Agriculture, Ecosystems & Environment*, 92(2-3), 171-183. doi: [http://dx.doi.org/10.1016/S0167-8809\(01\)00298-5](http://dx.doi.org/10.1016/S0167-8809(01)00298-5)
- Peters, C. M., Alexiades, M., & Laird, S. A. (2012). Indigenous communities: Train local experts to help conserve forests. *Nature*, 481(7382), 443-443.
- Pierotti, R., & Wildcat, D. (2000). Traditional ecological knowledge: the third alternative (commentary). *Ecological applications*, 10(5), 1333-1340.
- Plew, M. G. (2005). The Archaeology of Iwokrama and the North Rupununi. *Proceedings of the National Academy of Sciences*, 154, 7-28.
- Radcliffe, S. A., & Laurie, N. (2006). Culture and development: taking culture seriously in development for Andean indigenous people. *Environment and Planning D*, 24(2), 231.
- Redford, K. H. (1991). The ecologically noble savage. *Cultural Survival Quarterly*, 15(1), 46-48.
- Rival, L. (1997). Modernity and the Politics of Identity in an Amazonian Society. *Bulletin of Latin American Research*, 16(2), 137-151.
- Rodway, J. (1895). *In the Guiana forest*: TF Unwin.
- Rodway, J. (1896). Indian Policy of the Dutch *Timehri*, X (New Series), 13.
- Rodway, J., & Watt, T. (1888). *Chronological History of the Discovery and Settlement of Guiana*: " Royal Gazette" Office.
- Rosenqvist, G., & Berglund, A. (1992). Is female sexual behaviour a neglected topic? *Trends in Ecology and Evolution*, 7(6), 174-176.
- Roth, V. (1948). Report of a survey on Amerindian affairs in the remote interior: with additional notes on coastland population groups of Amerindian origin. Georgetown: Colonial Development and Welfare.
- Roth, W. E. (1915). Animism and Folk-Lore of the Guiana Indians. *30th Annual Report of the Bureau of American Ethnology 1908-1909*, 143-144.

- Roth, W. E. (1924). *An introductory study of the arts, crafts, and customs of the Guiana Indians*: Johnson Reprint Corporation.
- Roth, W. E. (1929). *Additional Studies of the Arts, Crafts, and Customs of the Guiana Indians with Special Reference to Those of Southern British Guiana*. <https://repository.si.edu/bitstream/handle/10088/15558/bulletin911929smit.pdf>: Bulletin of the Bureau of American Ethnology.
- Rutherford, K., & Hills, T. L. (1979). *Soils of the Rupununi Savanna/Forest Ecotone, Southern Guyana*: Department of Geography, McGill University.
- Sanchez, P. A., Palm, C. A., Vosti, S. A., Tomich, T. P., & Kasyoki, J. (2005). Alternatives to Slash and Burn: Challenges and Approaches of an International Consortium In C. A. Palm, S. A. Vosti, P. A. Sanchez & P. J. Ericksen (Eds.), *Slash-and-burn agriculture: the search for alternatives*: Columbia University Press.
- Schomburgk, R. (1848). On the Natives of Guiana. *Journal of the Ethnological Society of London (1848-1856)*, 1(ArticleType: research-article / Full publication date: 1848 /), 253-276. doi: 10.2307/3014089
- Schomburgk, R. (1848). Travels in British Guiana during the years 1840-1842. *Vol. I—II*, ed. WE Roth (1922).
- Schomburgk, R. H. (1840). A description of British Guiana. *Geographical and Statistical (Hall)*.
- Selvaradjou, S.-K., L. Montanarella, O. Spaargaren and D. Dent. (2005). European Digital Archive of Soil Maps (EuDASM) - Soil Maps of Latin America and Caribbean Islands (DVD-Rom version). from Office of the Official Publications of the European Communities
- Silver, W. L., Ostertag, R., & Lugo, A. E. (2000). The Potential for Carbon Sequestration Through Reforestation of Abandoned Tropical Agricultural and Pasture Lands. *Restoration Ecology*, 8(4), 394-407. doi: 10.1046/j.1526-100x.2000.80054.x
- Singh, S. K. K., & Ross, W. (2010). Fear or Altruism? Exploring the Environmental Ethic and Loss of Traditional Knowledge of the Forest Dependent Jakun. *Journal article published in the Journal of Population and Social Studies*, 18(2).
- Slade, J., & Yoong, P. (2014). *The Types of Indigenous Knowledge to be Retained for Young New Zealand Based Samoans: a Samoan grandparents' Perspective*. Paper presented at the PACIS.
- Smith, E. A. (2001). The role of tacit and explicit knowledge in the workplace. *Journal of knowledge Management*, 5(4), 311-321.
- Smith, E. A., & Wishnie, M. (2000). Conservation and subsistence in small-scale societies. *Annual Review of Anthropology*, 493-524.
- Smith, J., van de Kop, P., Reategui, K., Lombardi, I., Sabogal, C., & Diaz, A. (1999). Dynamics of secondary forests in slash-and-burn farming: interactions among land use types in the Peruvian Amazon. *Agriculture, Ecosystems & Environment*, 76(2), 85-98.
- Smith, N. (2001). Are indigenous people conservationists? Preliminary results from the Machiguenga of the Peruvian Amazon. *Rationality and society*, 13(4), 429-461.
- Society, G. J. (2011). Catholics in the Interior Retrieved 30/11/2016, 2016, from <http://www.guyanajesuits.org/mission/Kurukabaru%20and%20Lethem/interior/interior.php>
- Squires, A. (2009). Methodological challenges in cross-language qualitative research: A research review. *International journal of nursing studies*, 46(2), 277-287.
- Stevens, S. (1997). *Conservation through cultural survival: Indigenous peoples and protected areas*: Island Press.
- Strauss, A., & Corbin, J. (1990). *Basics of qualitative research* (Vol. 15): Newbury Park, CA: Sage.

- Styger, E., Rakotondramasy, H. M., Pfeffer, M. J., Fernandes, E. C., & Bates, D. M. (2007). Influence of slash-and-burn farming practices on fallow succession and land degradation in the rainforest region of Madagascar. *Agriculture, Ecosystems & Environment*, 119(3), 257-269.
- Sukarieh, M., & Tannock, S. (2013). On the Problem of Over-researched Communities: The Case of the Shatila Palestinian Refugee Camp in Lebanon. *Sociology*, 47(3), 494-508. doi: 10.1177/0038038512448567
- Takako, H. (2004). Nature of Traditional Ecological Knowledge Loss: A Quantitative Approach. *政策科学*, 11(2).
- Tanyanyiwa, V. I., & Chikwanha, M. (2011). The role of indigenous knowledge systems in the management of forest resources in Mugabe area, Masvingo, Zimbabwe. *J Sustainable Dev Afr*, 13(3).
- Tavana, N. G. (2002). *Traditional knowledge is the key to sustainable development in Samoa: Examples of ecological, botanical and taxonomical knowledge*. Paper presented at the Proceedings of the 2001 National Environmental Forum.
- Tedlock, B. (2005). The observation of participation and the emergence of public ethnography. *The Sage handbook of qualitative research*, 467-481.
- Thompson, A. O. (1987). *Colonialism and underdevelopment in Guyana, 1580-1803*: Carib Research & Publications.
- Tongco, M. D. C. (2007). Purposive sampling as a tool for informant selection.
- Uhl, C. (1998). Perspectives on Wildfire in the Humid Tropics. *Conservation Biology*, 12(5), 942-943.
- UN. (2010). Development Policies Impact on Indigenous Cultures, Identity Focus at UNPF Meeting at Head Quarters 19 - 30 April, 2010. www.un.org/press/en/2010/hr5011.doc.htm
- UNPFII. (2009). Indigenous Peoples, Indigenous Voices Factsheet #5 - Who are indigenous peoples? In U. N. P. F. o. I. Issues (Ed.), *Who are Indigenous peoples?* . www.un.org/esa/socdev/unpfii/documents/5session_factsheet1.pdf: United Nations.
- van Teijlingen, E., & Hundley, V. (2001). The importance of pilot studies. *Social research update*(35), 1-4.
- Veness, W. T. (1869). *Ten Years of Mission Life in British Guiana; Being a Memoir of the Rev Thomas Youd*: General Books LLC.
- Waterton, C. (1828). *Wanderings in South America and the Antilles*;(1900) London: T. Nelson & Sons.
- Waterton, C. (1879). *Wanderings in South America, the North-west of the United States and the Antilles: in the years 1812, 1816, 1820, & 1824*: Macmillan.
- Watkins, G. (2010). North Rupununi, Guyana Retrieved 23 Dec 2015, 2015, from rupununi.org/people/
- Watkins, G. O., Pete; Bish, Renee. (2010). *Rupununi: rediscovering a lost world*: Earth in Focus.
- Wellborn, G. A. (1995). Determinants Of Reproductive Success In Fresh-Water Amphipod Species That Experience Different Mortality Regimes. *Animal Behaviour*, 0050, 2.
- Welsh, E. (2002). *Dealing with data: Using NVivo in the qualitative data analysis process*. Paper presented at the Forum Qualitative Sozialforschung/Forum: Qualitative Social Research.
- West, P., Igoe, J., & Brockington, D. (2006). Parks and peoples: the social impact of protected areas. *Annu. Rev. Anthropol.*, 35, 251-277.
- Wetlands Partnership, D. I. (2006). The North Rupununi Adaptive Management Plan (NRAMP): Darwin Initiative.

- Whittlesey, D. (1937). Shifting Cultivation. *Economic Geography*, 13(1), 35-52. doi: 10.2307/140173
- Wihak, C. (2009). Indigenous Education for Cultural Survival: The Makushi Amerindians of Guyana. *Canadian and International Education/Education canadienne et internationale*, 38(1), 17-28.
- Williams, J. (1932). *Grammar, Notes and Vocabulary of the Language of the Makuchi Indians of Guiana* (Vol. 8): Anthropos.
- Williams, J. (1936). The Aborigines of British Guiana and Their Land. *Anthropos*, 31(3/4), 417-432.
- Willis, K. (2006). Interviewing. In R. B. Potter & V. Desai (Eds.), *Doing development research* (pp. 144-152). London: SAGE.
- Wilson, W., Milner, J., Bulkan, J., & Ehlers, P. (2006). Weaning practices of the Makushi of Guyana and their relationship to infant and child mortality: A preliminary assessment of international recommendations. *American Journal of Human Biology*, 18(3), 312-324.
- Wootton, J. T., Parker, M. S., & Power, M. E. (1996). Effects of Disturbance on River Food Webs. *Science*, 273(5281), 1558-1561.
- Wyatt, J. C. (2001). Management of explicit and tacit knowledge. *Journal of the Royal Society of Medicine*, 94(1), 6.
- Yin, R. (1994). *Case study research: Design and methods*. Beverly Hills: CA: Sage publishing.
- Zahavi, A. (1977). The cost of honesty. *Journal of Theoretical Biology*, 1977(67), 603-605.

Appendix A – Table of Ethics

Issues	Actions
Consent and participant information arrangements	Participants will be asked for informed consent before beginning the interview. Participants will be provided with information on the research (verbally) and their rights giving them ample opportunity to ask questions before and during interview. Any participant 15 years of younger will be interviewed with the participant's and parental consent.
Participant's rights	Participants will be informed of their right to discontinue the interview without consequence and not have the data used. Potential participants will be approached to partake in the research. The research will be presented to them both verbally and in written format including the role they are to play. They will be informed that their participation is entirely voluntary and they have the freedom to decline/discontinue participation without fear. It will be indicated to participants that they are not obliged to answer any questions during an interview they are not comfortable with. It will be explained to the potential participant that their data will be protected by anonymity (using codes and a pseudonym) unless they specifically indicate that it is okay to reference their identity. There will be a community collaborator to assist with translating ideas into the Makushi language to help clarify ideas if there are uncertainties. These community collaborators are also the community's Makushi Researcher who understands the need to keep the confidence of data given. They will be reminded of the need to keep the information gathered confidential.
6. Nature of data to be collected (including a description of any sensitive data)	The data to be collected is community based. It relates to their history, traditions and farming practices. It is uncertain at this point if sensitive data will be collected from participants. Participants will be asked if they are supplying data to give context but which they feel should not be published. The researcher will respect the requests of the participants in this respect.

<p>7. Possible benefits to subjects/participants of taking part in this research</p>	<p>The benefits of participation in this study include: the opportunity to dialogue with the researcher, express their own views, and to gain shared understanding on the environmental issue under investigation. Further this may promote and strengthen the transmission of traditional knowledge and practices in the community.</p>
<p>8. Description of procedure for obtaining parental consent for research involving participants aged under 16 (or 18, if relevant). An opt-out only method will require a strong justification (see attached guidance).</p>	<p>All participants under the age of 16 will be approached in the presence of their parents or guardian to take part in the study. They will be presented with the information sheet and given time to read. The content will be discussed with the participant, allowing for the answering of questions should they have any. The interview can be conducted in the presence of the parents or guardian if the underage participant so desire. A local collaborator will always be present to provide guidance.</p>
<p>9. Data security and destruction and data protection procedures.</p>	<p>Data collected from participants will be coded to protect their identities. The data will be stored on a password protected computer to which only the researcher will have access. Backup copies will be stored in a password protected online storage space and a password protected external hard drive. Only the researcher, Makushi Researchers, her supervisor and advisor will have access to the data during analysis.</p> <p>It is not the intent of the researcher to destroy the data. On completion of the project blind copies of the data will be archived with the community based organisation (North Rupununi District Development Board) that is comprised of the leaders of the communities involved for their use, the EPA and each community participating in the research. Should the researcher wish to use the data for other purposes permission will be sought from the communities to do so. If there are to be direct quotes from the material anonymity will remain, unless permission is granted from the participant to do otherwise.</p>

Appendix B – Informed Consent Form

Date: April 2013 to January 2014

Study Name: Changing Makushi worldview as demonstrated through farming and its implications for forest conservation.

Principle Researcher:

This field study is being carried out principally by Ms. Deirdre Jafferally (a Doctoral Candidate in the Geography Department at the Royal Holloway - University of London) with official permission from: Village Leaders, North Rupununi District Development Board, Ministry of Amerindian Affairs and the Environmental Protection Agency of Guyana. I can be contacted by email at djafferally@iwokrama.org and Bina Hill Institute call sign Bravo India at 5300.

Purpose of the Research:

This research study examines the changes in Makushi worldview and how they treat the environment, if these changes in values can be shown in the way they farm and what these changes would mean for forest conservation.

Research Objectives:

1. To establish what Makushi worldview (rules/values) are
2. To determine how these rules/values governed how the Makushi live with the land
3. To determine how the changes in these rules/values are shown in farm practices
4. To determine the places and ways of transmitting traditional knowledge

What You Will Be Asked to Do in the Research:

Participants will be requested to collaborate with the principal researcher in terms of planning, design, data collection and interpretation, and feedback/evaluation. Participants will be requested to engage in one or more of the following research activities:

- 1) Community meetings
- 2) In-depth interviews
- 3) Oral history narratives
- 4) Participant observation. Participants will be consulted beforehand to discuss the time frame of the activity and when is most convenient for both participants and researcher.

Risks and Discomforts:

The researcher does not foresee any risks or discomfort from your participation in the research. You have the right to not answer any questions. Concern for the individual rights, safety and well-being of the participants supersede all concerns for the research study.

Voluntary Participation:

Your participation in this study is completely voluntary.

Withdrawal from the Study:

You can stop participating in the study at any time, for any reason. Your decision to not participate or to withdraw from the study will not influence the nature of your relationship with the researcher now or in the future. Should you withdraw from the study; all data you have provided associated with the project will immediately be destroyed where possible

Benefits of the Research and Benefits to You:

The benefits of participation in this study include: the opportunity to dialogue with the researcher, express your own views, and to gain shared understanding on the environmental issue under investigation. Further you may promote and strengthen the transmission of traditional knowledge and practices in your community.

Confidentiality:

Confidentiality and anonymity of research participants will be respected throughout the research process to the fullest extent possible. All information supplied by you the participant during the research will be held in confidence and unless you specifically indicate your consent, your name will not appear in any report or publication of the research. However, if you do not want to remain anonymous (unknown), you must sign the consent form and indicate that you want to reveal your true identity. All field notes and transcripts will:

- Use an interview number as opposed to a name for classification purposes
- Use a pseudonym (a false name) to protect your identity
- Alter any additional information that might reveal your identity

Research data will be collected in the form of digital voice recordings, video, field notes, and interview transcripts. While in the field, all data collected will be kept in a safe place that is only accessible to the principle researcher. Primary data will be archived (stored) with NRDDDB at the Bina Hill Institute. Video recordings maybe used to create a video to return information back to the communities. Since the video will display verbal or graphic personal identifiers, I will only include your voice or image recording if you indicate your consent. All other records will be destroyed after my research is completed.

Compensation for Participation:

Participants do not stand to gain direct financial compensation, royalties, capital equipment etc. from this research as it is strictly intended for academic purposes and not for commercial purposes or gain. However, for key research collaborators will receive a stipend and travel, meals and accommodation will be provided for participants who may travel far from their villages to take part in research activities.

Questions about the Research

If you have any questions about the research project and/or research activity/ies in which you are asked to participate, please do not hesitate to ask the principle researcher, Ms. Deirdre Jafferally. The ethics for this research has been reviewed and approved by Dr. Jay Mistry and Dr. Katie Wills within the Geography Department. If you have any questions about this process or about your rights as a participant in the study, please contact: ethics@rhul.ac.uk

Legal Rights and Signatures:

Name of study: Changing Makushi worldview as demonstrated through farming and its implications for forest conservation.

Researcher: Deirdre Jafferally

Please indicate:

I have read/was read the information sheet about this study YES [] NO []

I have had the opportunity to ask questions YES [] NO []

I have received satisfactory answers to any questions YES [] NO []

I understand that I am free to withdraw from the study at any time, without giving a reason YES [] NO []

I understand that I may refuse to answer any question without giving a reason.
YES [] NO []

I understand that my participation in this study will be recorded using video and digital voice recorder YES [] NO []

I would like my identity to remain hidden YES [] NO []

I agree to participate in this study YES [] NO []

Signed:

Name:

Date:

NB: This Consent form will be stored separately from the responses you provide.

Appendix C - Research Matrix

Main Research Question	Sub Research Questions	Methods	Participants	Sampling technique	sample size
1. What factors affect how the Makushi identify themselves and their relationship with the environment? How did these factors guide their traditional farming practices?	1.1. What is the Makushis' worldview about the land and how it should be treated? Has it changed?	semi-formal interviews	Elders (over 60) (including shamens) and key cultural resource persons within the communities - Makushi Researchers, cultural leaders for village culture activities	purposive, Snow-ball sampling	50 - 60 persons
		document and content analysis			Historical and contemporary books, papers and reports mentioning Makushi traditions: Schomburg, Im Thurn, Henfrey, Attenborough, Cary-Elwes, Waterton, Myers, MRUs, Watkins, Forte, Roth
	1.2. What were the land and farming-related Makushi traditions passed on to younger generations?	semi-formal interviews	elders (including shamens) and key cultural resource persons within the communities - Makushi Researchers, cultural leaders for village culture groups	purposive	
			(15 - 24), young (25-39) adult and 40 and above		
2. What are the circumstances under which traditional shifting cultivation might remain relevant in the future or would an influx of new ideas and technology make shifting cultivation irrelevant for the Makushi?	2.1. Are communities exploring other forms of farming as opposed to forest based shifting cultivation?			random sampling	80 persons An average of fifty households per community, 24 focus groups
	2.2. Are new technologies being introduced to traditional shifting cultivation? What are the impacts?	informal interviews, participant observation - visiting farms with some participants to walk through the process, focus group for participatory system viability analysis of farming	village leaders, Community Resource Environmental Workers, Makushi Research Unit, farmers and non-farmers with in the age range (15 - 24), young (25-39) adult and 40 and above	random sampling	
	2.3. Would the changes in farming practices identified affect the status of shifting cultivation? How?			random sampling	
	2.4. What are some of the changes that can be readily identified in how Makushi now think about the land that can be demonstrated in their farming?				random sampling

<p>3. Can the factors identified by community members in question 1 play a role in transmitting important concepts for traditional farming practice?</p>	<p>3.1. Do young people still identify with farming as part of the Makushi identity?</p>	<p>semi-formal interviews and focus groups</p>	<p>young people between the ages of 15 - 25</p>	<p>random sampling</p>	<p>80 persons An average of fifty households per community, 24 focus groups</p>
	<p>3.2. Are Makushi still using traditional ways of transmitting traditional farm knowledge (stories, show by example) to the younger generation?</p>		<p>young people; young adults, culture group leaders, elders</p>	<p>purposive sampling</p>	
	<p>3.3. Are these forms of transmitting knowledge still relevant or are new means of transmitting knowledge needed or practiced?</p>		<p>young people between the ages of 15 - 25</p>	<p>purposive sampling</p>	
	<p>3.4. Are the spaces for transmission of traditional knowledge still available for the transmission of that knowledge?</p>		<p>young people, culture group leaders, elders</p>	<p>purposive sampling</p>	

Appendix D – Interview checklist

Interview Checklist

1. What factors affect how the Makushi identify themselves and their relationship with the environment? How did these factors guide their traditional farming practices?

- 1.1. What is the Makushi worldview about the land and how it should be treated? Has it changed?

Old Questions	Revised Questions
<p>Is there a story about how the world/Guyana/Rupununi was made in Makushi culture?</p> <p>What is the story about the origins of the Makushi?</p> <p>Were there any instructions about how the Makushi should live (in harmony) with nature?</p> <p>What were you taught about how you should treat the environment from your parents/grandparents?</p> <p>What are the main beliefs of the Makushi about the environment?</p> <p>Are there any customs/practices that should be carried out to honour nature?</p>	<p>Is there any story about how the earth was made in Makushi culture?</p> <p>Do you know any story about how the Makushi was made?</p> <p>Do you know of any beliefs the Makushi people have about mother earth?</p> <p>Do you know if the old people pass on any guidelines about how you should live and show respect to mother earth?</p> <p>What were you taught about how you should treat the environment from your parents/grandparents?</p> <p>Were there any ceremonies/practices that were carried out to celebrate mother earth?</p>

- 1.2. What were the land and farming-related Makushi traditions passed on to younger generations?

Old Questions	Revised Questions
<p>What were you taught about farming?</p> <p>Were there any guidelines/beliefs that you needed to know about the land before you could farm?</p> <p>Were there any beliefs/rules about farms that you needed to know before you started farming?</p> <p>How did you learn about farming?</p> <p>What are the stories about where farm produce came from - cassava, bina etc?</p> <p>Were there any guidelines about how these should be cared for?</p>	<p>Who taught you about farming?</p> <p>How did you learn about farming?</p> <p>Were there any guidelines/beliefs that you needed to know about the land before you could farm?</p> <p>Were there any beliefs/rules about farms that you needed to know before you started farming?</p> <p>What are the stories about where farm produce came from - cassava, bina etc.?</p> <p>Were there any guidelines about how these should be cared for?</p>

- 3.2 Are Makushi still using traditional ways of transmitting traditional farm knowledge (stories, show by example) to the younger generation?

Old Questions	Revised Questions
<p>What were the ways in which traditional knowledge especially for farming was passed on?</p> <p>How/when were these different ways used?</p> <p>Was all the knowledge passed to everyone or was there certain things that were only taught to certain persons?</p> <p>How did someone get chosen to be a knowledge holder?</p> <p>What about now; how is knowledge being passed on?</p> <p>Is that selection process still in place or is it just interested people who now hold the knowledge?</p>	<p>What were the methods used to teach you traditional activities?</p> <p>How/when were these different methods used?</p> <p>Was all the knowledge passed to everyone or was there certain things that could only taught to certain persons?</p> <p>How did someone get chosen to be a knowledge holder?</p> <p>What about now; how is knowledge being passed on?</p> <p>Is that selection process still in place to choose a knowledge holder or is it just interested people who now hold the knowledge?</p>

2. What are the circumstances under which traditional shifting cultivation might remain relevant in the future or would an influx of new ideas and technology make shifting cultivation irrelevant for the Makushi?

- 2.1. Are communities exploring other forms of farming as opposed to forest based shifting cultivation?

- What are the areas where people farm?

- What are the tools used to farm in these locations?
- What is the average size of farms cut in these locations?
- What types of crops are planted in these locations?
- Does the farm produce enough for a family?
- How long would the produce last?
- Do you get more food items from the farm or the shop?

- How much time is spent farming?
- Do you have to spend a lot of money to keep the farm productive?
- Do you have the knowledge needed to plant in different locations?

1.1. Are new technologies being introduced to traditional shifting cultivation? What are the impacts?

- What things have changed about the way people farm?
- Why did these things change?
- What was the effect on your farming?
- Was there anything that was tried before and is no longer done?

1.2. Would the changes in farm practices identified affect the status of shifting cultivation? How?

- What are some of the things that could affect farm production?
- How do you deal with them?
- How long would it take for the farm to recover from these disturbances?

- Which farming areas are more productive?
- What would have to be done to make the less productive area more productive?
- What would you do if the farm is not productive?

1.3. What are some of the changes that can be readily identified in how Makushi now think about the land that can be demonstrated in their farming?

- Do the different ways of farming affect the environment? How?
- Would these effects impact other activities in the community? (What are these activities?)
- If negative – what could be done to reduce the impact of farming on these other activities?
- If positive – what makes the impact positive?

2. Can the factors identified by community members in question 1 play a role in transmitting important concepts for traditional farming practice?

2.1. Do young people still identify with farming as part of the Makushi identity?

Old Questions	Revised Questions
Do you think farming is an important part of Makushi culture? Yes - Why?, No - Why not? Should it be considered an important part of your culture? Yes - Why?, No - Why not? Does it teach you anything important about the environment? Would it be important to learn about farming if it teaches you about the environment, even if you do not farm? Yes - Why? No - Why not? Do you think by learning about the Makushi traditional way of farming you would be holding on to your Makushi culture? Would that be important?	Do you think farming is an important part of Makushi culture? Yes - Why? No - Why not? Should it be considered an important part of your culture? Yes - Why? No - Why not? Do you like farming? Yes – Why? No – Why? If yes – did you feel any connection to the land/nature while doing it? Do you think farming teaches you anything important about the environment? Would it be important to learn about farming if it

<p>Do you think farming is an important part of Makushi culture? Yes - Why?, No - Why not?</p> <p>Should it be considered an important part of your culture? Yes - Why?, No - Why not?</p> <p>Does it teach you anything important about the environment?</p> <p>Would it be important to learn about farming if it teaches you about the environment, even if you do not farm? Yes - Why? No - Why not?</p> <p>Do you think by learning about the Makushi traditional way of farming you would be holding on to your Makushi culture? Would that be important? Why?</p>	<p>Do you think farming is an important part of Makushi culture? Yes - Why? No - Why not?</p> <p>Should it be considered an important part of your culture? Yes - Why? No - Why not?</p> <p>Do you like farming? Yes - Why? No - Why?</p> <p>If yes - did you feel any connection to the land/nature while doing it?</p> <p>Do you think farming teaches you anything important about the environment?</p> <p>Would it be important to learn about farming if it teaches you about the environment, even if you do not farm? Yes - Why? No - Why not?</p> <p>Do you think by learning about the Makushi traditional way of farming teaches you about the land?</p> <p>Do you think by learning about the Makushi traditional way of farming you would be holding on to your Makushi culture? Would that be important? Why?</p>
--	--

3.2 Are these forms of transmitting knowledge still relevant or are new means of transmitting knowledge needed or practiced?

Old Questions	Revised Questions
<p>Do you think the way traditional practices/knowledge is being passed on is still effective?</p> <p>Is there anything that is used to attach relevance of this knowledge for the present generations?</p> <p>Which methods of passing knowledge on are proving to be more effective?</p> <p>Should more emphasis be placed on these methods or should new ways be considered?</p> <p>What would these new methods entail? How would they be developed and implemented?</p>	<p>Do you think the way traditional practices/knowledge is important for today's lifestyle?</p> <p>Do you think the way traditional practices/knowledge is being passed on is still effective?</p> <p>Is there anything - tools etc. that is used to attach relevance for this knowledge?</p> <p>Is the relevance of traditional knowledge being explained to the younger generation?</p> <p>Which methods of passing knowledge on are proving to be more effective?</p> <p>Should more emphasis be placed on these methods or should new ways be considered?</p> <p>What would these new methods entail? How would they be developed and implemented?</p>

3.3 Are the spaces for transmission of traditional knowledge still available for the transmission of that knowledge?

Old Questions	Revised Questions
<p>Where did people general pass their knowledge on to the younger generation? Are these places still in use?</p> <p>What ways of passing knowledge on were used in these places?</p> <p>How often was there an opportunity to pass knowledge on in these places? Are these opportunities still there?</p>	<p>Where do people generally pass their knowledge to their children?</p> <p>In the old days were there special places the old people used? Are these places still in use?</p> <p>What ways of passing knowledge on were used in these places?</p> <p>How often was there an opportunity to pass</p>

Appendix E – Matrix of Interview

Community	Date	Focus Group/ Interviews (FG/I)	Number of persons	
Annai	19 Apr 2013	I	3	
	21 Apr 2013	I	2	
	24 Apr 2013	I	4	
	25 Apr 2013	I	2	
	26 Apr 2013	I	1	
	14 Jul 2013	I	1	
	14 Aug 2013	FG (mixed)	15	
	29 Apr 2013	I	6	
Kwatamang	30 Apr 2013	I	4	
	31 Jul 2013	FG 1 (16 – 24)	5	
	1 Aug 2013	FG 2 (Over 40)	3	
	2 Aug 2013	FG 3 (24 – 39)	4	
	Surama	18 Jun 2013	I	1
		19 Jun 2013	I	2
20 Jun 2013		I	3	
21 Jun 2013		I	4	
24 Jun 2013		I	5	
25 Jun 2013		I	4	
26 Jun 2013		I	6	
27 Jun 2013		I	1	
1 Jul 2013		I	4	
2 Jul 2013		I	4	
13 Nov 2013		FG 1 (mixed)	7	
14 Nov 2013		FG 1 (mixed)	6	
Rewa		9 Jul 2013	I	4
		10 Jul 2013	I	3
	11 Jul 2013	I	5	
	15 Jul 2013	I	7	
	16 Jul 2013	I	2	
	22 Jul 2013	I	2	
	23 Jul 2013	I	1	
	24 Jul 2013	I	7	
	19 No 2013	FG (16 – 24)	5	
	Crash Water	10 Oct 2013	I	4
11 Oct 2013		I	5	
12 Oct 2013		I	1	

	13 Oct 2013	I	7
	14 Oct 2013	I	4
	15 Oct 2013	I	3
	26 Nov 2013	FG (mixed)	9
Yupukari	16 Sep 2013	Group	3
	17 Sep 2013	I	1

Appendix F – categories and codes for Data Analysis

Categories	Codes				
Conservation	Rules	Rituals	Celebrations		
	Stories	Prayers	Fishing		
	Beliefs	Population size	Religion		
	Resource Use	Education		Hunting	Farming
	Social Changes		Mobility	Technology	
					Landscape knowledge
Farming	Knowledge	Transmission	Location	Techniques	Crop diversity
		Rituals	Forest		
		Shops	Savanna		
	Beliefs	Deforestation	Rules	Stories	
	Alternatives				
	Environmental Impact				
Traditional Knowledge	Teaching spaces				
	Teachers	Parents	Grandparents	Elders	
	Methods of transmission	Learn by doing	Instructions	Teaching objects	Stories