



# International Journal of Sciences: Basic and Applied Research (IJSBAR)

ISSN 2307-4531  
(Print & Online)

<http://gssrr.org/index.php?journal=JournalOfBasicAndApplied>



---

## Conservation and Human Welfare: A Case Study of The Manggarai Tribe in Ruteng Mountains, Indonesia

Elisa Iswandono<sup>a\*</sup>, Ervizal A.M. Zuhud<sup>b</sup>, Agus Hikmat<sup>c</sup>, Nandi Kosmaryandi<sup>d</sup>

<sup>a</sup>Post Graduated School on Conservation of Tropical Biodiversity, Department of Conservation of Forest Resources and Ecotourism, Faculty of Forestry, Bogor Agricultural University, Dramaga Main Road, Campus IPB Dramaga, Bogor, 16680, Indonesia

<sup>b,c,d</sup>Department of Conservation of Forest Resources and Ecotourism, Faculty of Forestry, Bogor Agricultural University, Academic Ring Road, Campus IPB Dramaga, PO Box 168, Bogor, 16680, Indonesia

<sup>a</sup>Email: [iswandonoe@gmail.com](mailto:iswandonoe@gmail.com)

<sup>b</sup>Email: [ervizal\\_amzu@yahoo.com](mailto:ervizal_amzu@yahoo.com)

<sup>c</sup>Email: [ahikmat62@yahoo.com](mailto:ahikmat62@yahoo.com)

<sup>d</sup>Email: [nandi\\_k@yahoo.com](mailto:nandi_k@yahoo.com)

### Abstract

Ruteng Mountains in Flores Island, Indonesia are inhabited by people from the tribe Manggarai. There are two tropical rain forest, namely the Forest Ruteng and Todo. In the forest Todo, local community granted access to timber to build traditional house while in Ruteng Forest is closed because the status of the area as a conservation area. This study aimed to compare welfare as an indication of the impact of giving the access to local community into the forest. The study employs a qualitative research through ethnographic approach. The qualitative data in 2014 was obtained through field observation, interviews and literature. The study shows that local community in the Forest Todo that are granted access into the forest and ecotourism is more welfare than in Forest Ruteng who are not granted access because of the absence of conflict and also the fulfillment of economic need and spiritual.

---

\* Corresponding author.

Community involvement in forest management have an impact on more sustainable forest so that forest management should actively involve local communities who will play a role in the protection of forests as part of their survival in the long run.

**Keywords:** access; conservation; ecotourism; Manggarai tribe; welfare.

## **1. Introduction**

Biodiversity in a region is not only considered to belong to a particular region but is all nations so that conservation of biodiversity is an important discourse. It is actually a fundamental relationship between conservation, man and landscape as a biodiversity [1, 2, 3]. The success of conservation programs cannot be done only by pursuing the bio centric goal [4] but also the welfare of the local community so that anthropocentric approach is enough to protect biodiversity [5].

The welfare of the local communities regarding the fulfillment of several things, among others, access to fulfillment of basic material, freedom and choice, health, good social relations and security. The access to the fulfillment of basic material for a good life associated with the provision of food such as water, freedom and choice to choose and get the material needs, cultural services and ecosystem services. Health is related to the provision of ecosystem services, food, water and air as well as the recreational and spiritual benefits. Social relations are affected by changes in cultural services, which affect the quality of human experience. Security in changes in food supplies and other goods, conflicts over resources and the threat of flooding, drought, landslides, or other disasters and loss of ceremonial or spiritual attributes of ecosystems so vital social relations in society [6]. Human welfare around the forest can also be indicated into 3 category: (1) access to forest resources, (2) economic benefits and (3) forest management that recognizes the existence of local culture [7].

This article does not measure welfare of local communities but comparing indications of welfare among the people living in the Forest Ruteng and Todo. In both these areas there ecotourism activities in Ruteng Forest undertaken by the government and local communities in forest Todo. Ecotourism can bridge between conservation interests and welfare of the local community [8]. This study aimed to compare welfare as an indication of the impact of giving the access to local community into the forest. The focus of research is to attempt to trace the history of conservation in Ruteng Mountains. The history will give you an idea of how the effects of conservation practices on the welfare of local communities.

## **2. Methods**

This research was conducted from July to December 2014 in Ruteng Mountains region. Location of the study includes 2kampung (traditional villages) in the Forest Ruteng and 1kampung in the Forest Todo (Figure 1). These three villages were purposively selected considering their similarity in ethnicity, culture, language and ecosystems. Another consideration is the community in Todo forest are given access to forest resources while in Ruteng forest area is closed due to status as a conservation area.

Acquisition of data through interviews, document searches and literature. Interviews in the interviews with

several informants set based on the status and role in society based on the sufficiency of information by purposive and snowball. Data are in the form of historical data reveal the history of conservation in the mountains Ruteng. Acquisition of data through interviews, documents and literature and interviews with several informants based on the status and role in society based on the sufficiency of information by purposive and snowball [9].

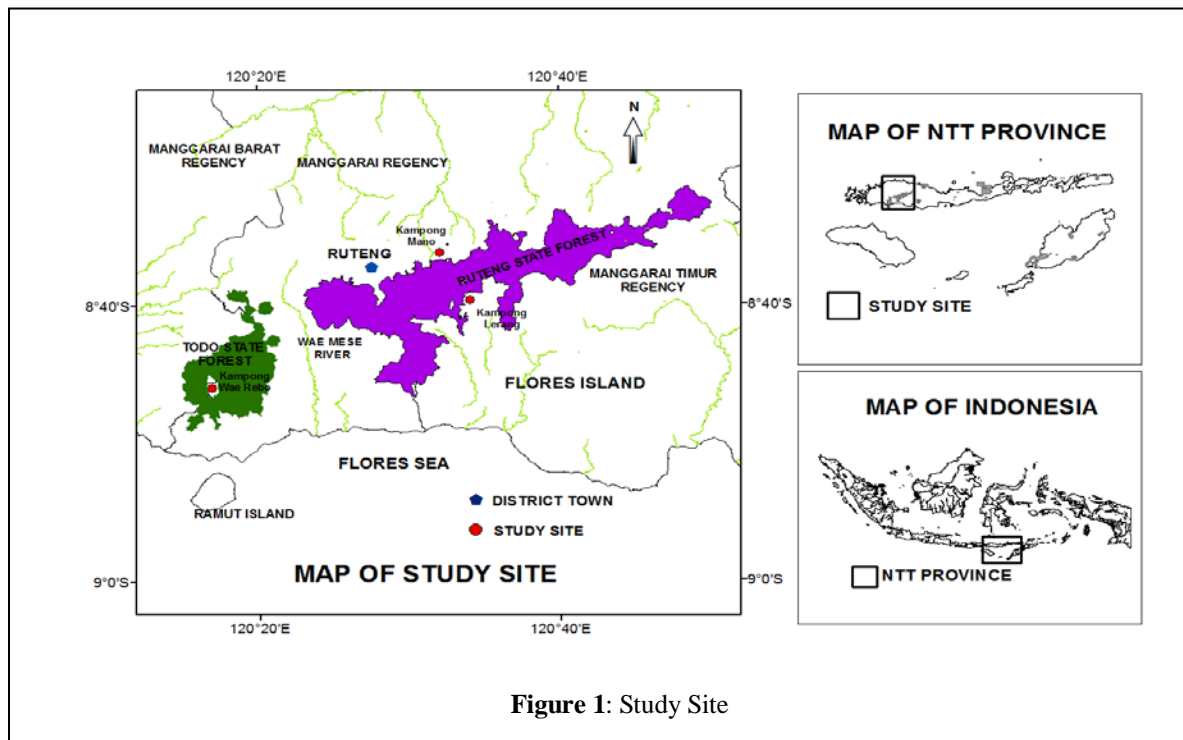


Figure 1: Study Site

Determination purposively informants based on the initial guidelines one informant who recommend other informants (i.e. snowball approach). In-depth interviews to obtain data ethnographic. Open-ended interview were conducted with 3 kampong's leader (tua golo) and 3 others people who get forest products. Informants in 3 kampong's are 5 persons, consisting of kampong's leader (tua golo), traditional leader's who divide communal land (tua teno), and people who get forest products. Interviews were conducted in an open area in theyard, garden, forest, and on the edge lake to make respondents feel free. Interviews were also conducted with the 2 leaders of local NGOs, namely Yayasan Pembangunan Tani and Sanggar Lawe Lenggong which is working in conservation and culture, and also 2 people Manggarai District local officials who understand the culture of conservation with assistance locals.

### 3. Results and Discussion

#### 3.1. Ruteng Mountains and Conservation Value

Ruteng Mountain located in the western part of the island of Flores, Nusa Tenggara Timur Province, Indonesia. Mountains Ruteng consists of 2 forests, namely: Ruteng forest and forest Todo separated by Wae Mese River which is the moistest montane forests and the largest in Nusa Tenggara Timur Province and serves as a refuge for wildlife, especially birds. Todo mountain has a summit elevation of about 2000 m [10] and Forests Ruteng is a mountain chain that consists of seven peaks, namely Golo Ranamese (1,790 m), Poco Nembu (2,030 m),

PocoMandosawu (2,350 m), PocoRanaka (2,140 m), Golo Leda (1,990 m), Ponte Nao (1,920 m) and GoloCuruNumbeng (1,800 m) [11]. Ruteng Forest and Todo are tropical rain forests and hot spot of biodiversity. Average rainfall of over 3,500 mm/yrs. at an altitude of 1,100 m above sea level and 6,000 mm/yr in the higher peaks [10]. Ruteng Mountains is a high priority for entry into protected area [12].

The main habitat types of Forest Ruteng is a mixture of sub-tropical forest with an altitude between 500-2350 m above sea level that are divided into 4 groups. Those are the secondary forest of reforestation plants, i.e. Eucalyptus urophylla and Calliandra calothyrsus, natural lowland forest dominated by Artocarpus sp, natural forest of sub mountainous dominated by Eugenia, Prunus and Elaeocarpus, and natural forest mountains dominated by Podocarpus imbricatus and Prunus arborea [13]. Survey in 1997 recorded as many as 145 tree species in 50 families and 82 species in 31 families, fauna as many as 65 species of birds, 7 mammals and 15 reptiles [14]. Endemic mammal species in the mountainous region of Ruteng was a big rat, namely betu (*Papagomys armandvillei*) which is the biggest rat in the world, poco ranaka rat (*Rattus hainaldi*), and bats flores (*Cynopterus nusatenggara*) [15]. FAO/UNDP in 1982 proposed Ruteng Forest area as a nature reserve for the protection of animals and plants but does not propose Todo.

### ***3.2. The History of Tourism Management in Ruteng Forest***

The first status of Ruteng forest is "protected forest" which the area of 17857.60 ha and 14 388 ha of limited production forest area in the administration of Manggarai district. The potential richness of species, especially birds, hydrological function and natural attractions of mountainous tropical rainforest attractive, as well as easily accessible to tourists, became the basis for setting forest area covering an area of 32,248.60 ha to "Ruteng Recreation Park" by Decree of the Minister of Forestry Number: 456/KPTS-II/1993, August 24, 1994.

Management of Ruteng Forest since 1993 by the central government through the project of the Integrated Protected Areas System (IPAS) which is one of two parts of the project that is the Ruteng Recreation Park and Siberut National Park. The project is a soft loan from the Asian Development Bank (ADB) amounting to 40 million US dollars, but the project was halted after six years running in 1999 on the design of the program for 20 years [10, 16]. IPAS project is part of a scheme of Integrated Conservation and Development Project that is implemented worldwide. The project is to align the interests of nature conservation with the interests of local communities that exist in and around forest areas, especially for the economic development of local communities [17]. In 1999, forest management Ruteng is taken over Unit of Natural Resources Conservation Center (Unit KSDA NTT) under the Ministry of Forestry. Management organization structure changed as much as several times, until now managed by a unit management, namely Kesatuan Pengelolaan Hutan Konservasi (KPHK) Ruteng.

### ***3.3. The History of Tourism Management in Todo Forest***

Todo forest is a protected forest area of 10089.2 hectares according to the decision of the Minister of Forestry number: 239/KPTS-II/1987, August 6, 1987 for the purpose of protection of hydrology. Ecotourism activities are local community initiatives Wae Rebo villages inside the enclave Forest Todo. Wae Rebo is a traditional

village in the middle Manggarai Todo Forest at an altitude of 1,100 m above sea level, administratively included in Satar Lenda Village, sub district Satar Mese, district of West Manggarai. This region is an enclave of 200 hectares which has seven cone-shaped houses. The main house called mbaru Tembong can accommodate eight families and six other houses called mbaru niang can accommodate seven families.

The ancestors were nomadic, the ancestor namely Empo Maro decided to build seven houses in Wae Rebo approximately in the eleventh century with the consideration of a flat region on the mountain and the springs. In the 1900, missionaries came to Wae Rebo provide education and Catholic religion. Since that time the population was converted although everyday behavior reflects traditional beliefs. Around 1980, people left the village Wae Rebo as isolated and moved to the coast so that in 1990 lived only three houses. In the 2004 to 2006 NGO Burung Indonesian attracted by the many important bird species in this region doing community development activities so that people remain in the region and to love and preserve the environment. This unique village of foreign tourists, especially from the Netherlands since 2005 and getting donors to reconstruct four traditional house from 2008 to 2010. The village became UNESCO world heritage in 2012.

### ***3.4. Conservation and Welfare issues***

Conservation is sustainable use that should not separate people from the sustainable use of forest resources by reason of the preservation of biodiversity resources. Some research suggests that the presence of local people with local knowledge plays a role in the utilization of forest sustainability [18, 19, 20, 21, 22]. Traditional communities around Forest Todo more prosperous than the Forest Ruteng (Table 1). Conservation initiated by the government in Ruteng Forests seeks to preservation by separating the management of community interaction on forests. This is understandable because the legislation is not yet possible utilization of biodiversity resources in the region except for nature tourism, research and resources to support the cultivation of germplasm.

The data of land cover in 1993 and 2014 showed a decline in the quality especially in Ruteng forest. In 1993 the Ruteng primary forest cover was 16,272.36 ha and become 8,272,26 ha in 2014 or decrease 52,41%. The decline as a result of the expansion of gardens, dry agricultural land and settlements. Primary forest cover in Todo forest was 3,841.92 ha and become 3,739.43 in 2014 or increase 2.67% (Iswandono 2015). A decrease in the quality of forest cover in the mountains Ruteng is because of the low level of social welfare [23] and Ruteng Forest marker was done only by the management and not involved local people or not participatory in its implementation [24].

Conservation at the beginning of the establishment of conservation forest in Ruteng is preservation by banning various forms of activities in the area. Boards plugged ban on entering the region in many places in the boundary area, under penalty of up to five years in prison. The difference of forest boundary markers between the Dutch (when the Dutch occupied Indonesia) and Indonesian boundary markers caused a lot of community agricultural lands located inside of the state forest. The community protests by unplugging and moving the boundary markers as they wish. This became the beginning of the community antipathy towards conservation. Community still working on the garden at the boundary with the slogan "harat kope", in the local language, its means wages keeping area boundaries. Local people would be arrested by forest police if caught working on

garden inside the forest and given a warning letter. When it is more than 3 times, will be prosecuted legally that can result in local people in prison.

Community in Forest Ruteng when asked about who was responsible for the preservation of Ruteng forest, they will answer, "Ruteng forest is officer's responsible, Sir". Different answers will be found in the community in Forest Todo who feel they have benefit from forest conservation. Conservation programs relating to the community such as education, news releases conservation and nature lovers group formation and social gatherings directed to the prohibition of the public entrance to the forest preservation reasons.

**Table 1:** Welfare Indicator in Ruteng Mountains

Welfare Indicator	Ruteng Forest	Todo Forest	Description
Access to forest	-	V	The presence of timber utilization permits for traditional house resources
The economic benefits of forest	V	V	Economic benefits in the Forest Ruteng is illegal and risky, while in Todo Forest, local people get economic benefits from ecotourism
Recognition of traditional culture	-	V	Traditional community of Todo can perform activities related to ceremonial use of wood in the forest area
Conflict	V	-	Conflicts only in Forest Ruteng

Majority recruitment of civil servants of the management from outside Manggarai district and less from locals is also a reason of community antipathy towards conservation. Traditional society just feel the restrictions on access to forest and spoken frequently during program activities "Excuse me sir, do you love birds and trees more than human?" Differences perspective between Ruteng forest managers and traditional community led to the failure of conservation. Forest Ruteng managers considers the forest as an asset that must be maintained from various utilization which is considered damaging as a savings for the life of a sustainable future. However, traditional community considers the forest as a place of life of various species of plants and animals for subsistence and ceremonial purposes. Forest Ruteng managers regard traditional community does not understand the problems of conservation and utilize of forest resources is wrong and damaging.

The Forest Ruteng managers give to community the program of community empowerment in forest buffer zones by providing livestock, trees and cash up to 15 million rupiah per group of 30 people. Program is aimed at separating the population from the forest as the only way to save the future. On the contrary, the traditional community wants to cut down the wood especially for the needs of the construction of traditional houses. The closure of the forest for traditional communities lead to the absence of a traditional community responsibility to preserve the forest.

The conflict between the government and traditional people increased until 2004 when the Manggarai District

Government run the program to cutting down all the coffee plant in the area that is the government claiming as state forest area. On March 10, 2004, hundreds of people came to the police station for freeing 7 people who were arrested because of cultivation of coffee which, according to the government in Forest Ruteng neighborhood. This activities cause 5 people dead and 26 others seriously injured [25].

The Ruteng forest management (Balai Besar KSDA NTT) initiate to the agreement between the local government, Balai Besar KSDA NTT, the Church and traditional communities regarding forest management Ruteng on May 30, 2013. The results of the collective agreement, among others, is to conduct a review of indigenous territories in the region Ruteng forest, institutional strengthening of indigenous technical, adopting and implementing the values of cultural and traditional wisdom that already exist in everyday life.

In addition to the conflict, ecotourism that do not involve the community and unmet demand for timber from the forest as a prerequisite for the construction of traditional house, cause to lack of interest attitude of community towards forest Ruteng. The community does not feel the benefits of forest conservation activities in Ruteng in addition to the restrictions of activities in the forest as well as the takeover of the garden into the forest area. This has led to Forest Todo cover conditions is better than the Forest Ruteng as a result of community awareness to keep the forest sustainability.

Community certainly does not reject the existence of conservation for the benefit from community development programs such as livestock, sengon (*Albizia falcataria*) seedlings and suren (*Toona sureni*) for timber tree, cash money and so on. The success of the conservation in Ruteng Mountains can be seen from the number of trees results of planting and assistance of saplings twenty years ago due to yard and gardens of the community around a natural forest which is built as agroforestry protect the soil from erosion. Hundreds of hectares of Ruteng forest successfully rehabilitated through land rehabilitation programs. But it does not answer the needs of the local economy because the harvest and the price cannot cover the daily need so that people enter in the forest for selling firewood and timber for commercial. Conservation programs should still involve the traditional communities in ecotourism activities as well as providing access to the forest to meet the basic needs and culture. Forest protection program should only be focused on the utilization of timber and firewood for commercial.

#### **4. Conclusion**

Local communities around the forest that are granted access into the forest and ecotourism is more welfare than who are not granted access because of the absence of conflict and also the fulfillment of economic need and spiritual. Forest management should actively involve local communities who will play a role in the protection of forests as part of their survival in the long term.

#### **Acknowledgements**

The author extends deeply acknowledgment to the Centre for Forestry Education and Training, Ministry of Environment and Forestry of Republics of Indonesia for scholarship and support in budgeting and accomplishing this research.

## References

- [1] M. Karanth KU, "Avoiding Paper Tigers and Saving Real Tigers: response.," *Conservation Biology*, vol. 11, no. 3, pp. 818-820, 1997.
- [2] N. D. M. A. Schwartzman S, "Arguing Tropical Forest Conservation: People versus Parks," *Conservation Biology*, vol. 14, no. 5, pp. 1370-1374, 2000.
- [3] R. T. Madhusudan MD, "Conservation as if Biological Diversity Matters: Preservation versus Sustainable Use in India," *Conservation Society*, vol. 1, no. 1, pp. 49-59, 2003.
- [4] T. Kwiatkowska, "Environmental Discourse and Policy Alternative," *Revista Venezolana de Ciencias Sociales*, vol. 10, no. 1, pp. 55-68, 2006.
- [5] C. R. Knight AT, "Embracing Opportunism in the Selection of Priority Conservation Areas," *Conservation Biology*, vol. 21, no. 4, pp. 1124-1126, 2007 .
- [6] Z. A. Watson RT, *Ecosystem and Human Wellbeing: a Framework for assessment*, Washington DC: Island Press, 2003.
- [7] C. C. M. C. Salim A, *Scoring and Analysis Guide for Assessing Human Well-Being*, Bogor: CIFOR, 1999.
- [8] B. E. D. W. Zambrano AMA, "Social and Environmental Effect of Ecotourism in the Osa Peninsula of Costa Rica: the Lapa Rios Case," *Journal of Ecotourism*, vol. 9, no. 1, pp. 62-83, 2010.
- [9] Sugiyono, *Metode Penelitian Administrasi*, Bandung : CV Alfabeta, 2010.
- [10] L. D. Trainor C, *Gunung Berapi, Burung-burung Khas, Tikus Raksasa dan Tenun Ikat yang Menawan*, Bogor: BirdLife International, 2000.
- [11] H. Simbolon, "Structure and Species Composition of the Forest in Ruteng Nature Recreation Park, Flores Island (pp. 18-35)," dalam *The Natural Resources of Flores Island*, Bogor , LIPI, 1998, pp. 18-37.
- [12] B. T. D. C. D. G. D. G. L. C. S. H. Butchart SHM, *The Conservation Status of Forest Birds on Flores and Sumbawa, Indonesia*, London: Cambridge University Press, 1996.
- [13] Wiriadinata, "Floristic Distribution of Ruteng Nature Recreation Park," dalam *The Natural Resources of Flores Island*, Bogor, LIPI, 1998, pp. 1-17.
- [14] D. E. H. D. H. A. Setiadi D, "Penelitian Sumberdaya Hayati Studi Ekologi Flora Fauna yang Berkaitan dengan Pengembangan Taman Wisata Alam Ruteng," *Proyek PKAT dan Lembaga Penelitian IPB*, Jakarta, 1999.
- [15] A. Suyanto, *Mammals of Flores Island*, Bogor: LIPI, 1998.
- [16] Darmanto, "Konservasi Global. Taman Nasional dan Praktek Lokal di Pulau Siberut, Sumatera Barat," *Jurnal Ilmu Kehutanan*, vol. 5, no. 1, pp. 51-56, 2011.
- [17] B. K. H. L. Wells M, *People and Park: Linking Protected Areas Management with Local Community*, Washington DC: World Bank/WWf/USAID, 1992.
- [18] D. P. Baird I G, "Biodiversity Conservation and Resource Tenure Regime: a case study from northeast Cambodia," *Environment Management*, vol. 32, no. 5, pp. 541-550, 2003.
- [19] C. Negi, "Traditional Culture and Biodiversity Conservation: Examples from Uttarakhand, Central



- Himalaya,” *Mountain Research and Development*, vol. 30, no. 3, pp. 259-265, 2010.
- [20] L. L. M. P. P. A. D. A. S. L. P. M. Turner NJ, “Edible and Tended Wild Plants, Traditional Ecological Knowledge and Agroecology,” *Critical Reviews in Plants Sciences*, vol. 30, no. 1, pp. 198-225, 2011.
- [21] Z. G. H. H. Pei SJ, “Application of Traditional Knowledge in Forest Management: Ethnobotanical Indicator of Sustainable Forest Use,” *Forest Ecology and Management*, vol. 257, no. 1, pp. 2017-2021, 2009.
- [22] S. Pei, “Ethnobotany and Sustainable Use of Biodiversity,” *Plant and Diversity Resources*, vol. 35, no. 4, pp. 401-406, 2013.
- [23] L. S. K. F. N. M. W. S. P. Sinu I, “Pengkajian Dampak Sosial Ekonomi dan Budaya sebagai Pendukung Pengelolaan Taman Wisata Alam Ruteng, Nusa Tenggara Timur,” PKAT dan Fakultas Pertanian UNDANA , Ruteng, 1999.
- [24] S. Tukan, “Partisipasi Masyarakat dalam Pelaksanaan Kebijakan Publik bidang Kehutanan untuk Mewujudkan Pemerintahan yang Baik di Kabupaten Manggarai [tesis],” Universitas Gadjah Mada, Yogyakarta, 2006.
- [25] IWGIA, *Indigenous World 2005*, IWGIA [International Work Group for Indigenous Affairs], Copenhagen: [www.transactionpub.com](http://www.transactionpub.com), 2005.