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Creating a Category V: Conservation Perceptions and Cultural Changes in the Anjozorobe-Angavo Forest Corridor

Kate Wright
SIT Study Abroad

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Conservation perceptions and cultural changes in the Anjozorobe-Angavo forest corridor

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Project Advisor: Charlie Gardner

Academic Director: Jim Hansen

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----------INTRODUCTION ----------

Local communities have long played an integral role in the realization of conservation goals and the success of protected areas in Madagascar. Since the appearance of human civilizations approximately 2,000 years ago (Brown 1995), the physical landscape of the island has undergone processes of adaptation to the practices of Malagasy people, while Malagasy cultures have in turn molded to fit their surroundings. The coevolution of nature and culture has produced a delicate environmental situation where human practices exploit but also conserve important natural resources, a situation that has been historically misinterpreted as intentional environmental destruction on the part of local communities (Talbot 2009). Continued pressure, from international as well as domestic actors, to preserve Madagascar's well-enumerated biodiversity and unique habitat (Mittermeier et al 1998) has often resulted in the neglect of community development. In a country with as unique an ethnodiversity as its biodiversity, nature and culture have become increasingly at odds, to the detriment of both parties.

Early shifts in conservation strategies

Many Malagasy cultural practices incorporate conservationist strategies that protected habitat and biodiversity for centuries before the arrival of Western environmental ideas. The *fady* (taboos) of ethnic groups in Madagascar oftentimes prohibit harmful practices and unsustainable relationships with their environment; in Androy culture, for example, it is *fady* to hunt *sokake*, the critically endangered radiated tortoise, because it is believed to bring rain

(Revitae). In many parts of the country, sacred areas figure among the last remaining parcels of intact forest (Gardner 2009). An analysis of satellite images over a 51-year period shows remarkably little change in forest cover in the Analavelona sacred forest in southwestern Madagascar, despite evidence of anthropogenic fires for agricultural purposes in the surrounding plains – presumably the result of effective forest management by local communities (Horning 2007).

However, such traditional means of environmental protection were largely ignored during French colonialism beginning with the 1927 establishment of strict *Réserves naturelles intégrales* (*RNIs*), in which the French government banned logging by communities and forcibly relocated villages outside the reserve boundaries, then proceeded to exploit the reserves for timber, provoking widespread deforestation (Moreau 2008). Even after Madagascar gained independence from French rule in 1960, the preservationist approach to forest conservation persisted until Didier Ratsiraka, president of the Second Republic, began actively encouraging natural resource exploitation nationwide in hopes of promoting domestic economic development. Rural agriculturalists took this opportunity to expand their production, which has until recently gone virtually unchecked (Gardner 2009). Thus, while local communities can be held responsible to certain extent for Madagascar's current environmental woes, the cycles of deforestation and degradation began with French colonial oppression and miscalculated governmental policies.

Modern approaches to conservation

Today, the federal government of Madagascar and international environmental non-governmental organizations (IENGOs, NGOs) tend to

vilify rural agricultural activity as a main cause of deforestation and biodiversity loss, while at the same time transferring management of state-owned lands to local communities. Cultivators and pastoralists in rural areas have long used forest-clearing methods such as *tavy* (slash-and-burn) to create new land for their crops and pasture for their animals, and many communities also harvest timber for the manufacture of charcoal and sale of construction materials, practices that have escalated in recent decades due to population increase and a consequent rise in demand for natural resources. The increase in the number of NGOs in the 1980s corresponded with a heightened international presence in Madagascar (Duffy 2006), which resulted in pressure on the state government to end "environmentally destructive" traditional practices.

In response, Madagascar adopted the National Environmental Action Plan (NEAP) in 1991, a document that led to the creation of the *Association Nationale pour la Gestion des Aires Protégées* (ANGAP), known today as Madagascar National Parks (MNP); called for more sustainable resource management throughout the country; and "emphasized the need to integrate parks and reserves into broader development strategies" for peripheral communities (Randrianandianina, Rasolofo and Nicoll 2002). The first of these strategies, integrated conservation and development programs (ICDPs), implemented sustainable growth plans for communities near protected areas, favoring local residents for employment as conservation agents and helping "to soften the perception since the colonial era that conservation is…essentially a land grab by state officials and foreign collaborators (Sodikoff 2008). Beginning in 1996 with the adoption of *Gestion locale sécurisé* (*GeLoSe*) and soon followed by the *Gestion communautaire des forêts*

(*GCF*) program, MNP began the process of transferring state-owned lands outside the protected areas system to communities, often bribing local leaders in an attempt to unburden itself of management responsibilities (Gardner 2009).

In general, however, local environmental management is considered a viable alternative to state-run reserves, as "[p]ressure from, and expectations of, local communities that have an active involvement in land conservation is a more effective form of protection at local levels than judicial authority" (Bennett 2003). The International Union for the Conservation of Nature (IUCN), an organization "consisting of 400 NGOs, 60 states, and 130 government agencies in 120 countries," provides an option for community involvement in protected areas management that has caught on in Madagascar (McNeely 1995). Reserves deemed "Category V" under the IUCN's protected areas classification system intend to safeguard "the interaction of people and nature [that] over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity," a measure considered "vital to the protection, maintenance and evolution of such an area" (IUCN 1990). Plans are underway to establish a Category V protected area comprising the Anjozorobe-Angavo forest corridor in central Madagascar.

Anjozorobe

The history of the Anjozorobe region provides insight into its current levels of forest utilization and degradation. During the rule of Andrianampoinimerina, founder of the Merina state, what was previously a loose organization of pastoralist civilizations suddenly

exploded into a thriving agricultural center complete with heavily fortified towns and extensive foreign trade, increasing strain on the region's natural resources and forests (Wright and Rakotoarisoa 1997). According to Raselimanana and Goodman (2007), the forest later served as a refuge for Malagasy who opposed French colonial oppression: a classic example of the unintended environmental consequences of colonialism. Residents moved back to the forest periphery in the 1970s, but pressure from President Ratsiraka to exploit Madagascar's resources led to heightened use of the forest and continued urban expansion. Today, several highly exploited forest areas are regenerating, notably near the villages of Antsahabe, Amboasary, and Andasin'i Tovo (Raselimanana and Goodman 2007).

The town of Anjozorobe is located just north of Antananarivo, the capital of Madagascar, along Route Nationale 3. The area boasts a landscape typical of the central Malagasy highlands, hilly and lacking in dense forest cover, traversed by the Mananara River and the Angavo escarpment (Fanamby 2008b). The climate is generally hot and humid with frigid nights during the cold season and approximately six to eight months of rain. The people of the region, the Merina to the west and the Bezanozano, Betsimisaraka, and Sihanaka to the east, rely heavily on the fertile soils for farming: agriculture is the principal occupations of 91.4% of households (Fanamby 2008b). Eucalyptus cultivation is another common occupation, as evidenced by the extensive plantations along the Route Nationale, producing charcoal and firewood to meet the energy demands of the growing Antananarivo population.

The Anjozorobe-Angavo forest corridor is considered one of the last remnants of mid-altitude rainforest in the central highlands and

touted for its biological and ecological importance. The zone is home to 9 lemur species, 81 bird species, 91 species of reptiles and amphibians, and approximately 550 plant species; local communities also rely on the forest for food, lumber, medicinal plants, and water (Fanamby 2008b). In the May 2001 *Plan de Gestion du Réseau National des Aires Protégées de Madagascar* (*PLANGRAP*), the corridor was pegged as a "priority zone" for conservation and a potential protected area.

Fanamby

The Malagasy NGO Fanamby first came on the scene in Anjozorobe in 1999. The Antananarivo-based organization is a member of the IUCN that seeks to integrate natural resource preservation with community development and sustainable management of the environment by local actors (Fanamby 2008a). Fanamby works with international NGOs, like the Worldwide Fund for Nature (WWF) and the Missouri Botanical Garden (MBG), as well as government agencies such as the Ministry of Water and Forests and MNP, to implement conservation and development strategies in three areas: Daraina, Menabe-Central, and Anjozorobe.

Fanamby's work in the corridor took off in 2004 after the Minister of Water and Forests charged the organization with management of the "protected area in creation," a 92,000 hectare region comprising natural rainforest and adjacent terrain. According to its June 2008 progress report, Fanamby has identified several strains upon the environment due to local activity. A compilation of satellite images showed a loss of 20,000 hectares of forest within the corridor between 1999 and 2004; another study claimed that 6,800 hectares of rainforest were lost to illegal timber harvesting from 1994 to 1999. The images and data were unavailable at the time of this study.

Fanamby attributes deforestation primarily to clearing for agricultural purposes, a situation worst on the eastern side of the corridor where communities practice *tavy* to clear land for rice cultivation. Poverty, lack of finances for sustainable development, and minimal land security are also blamed for natural resource exploitation in the Anjozorobe-Angavo project intervention zone (Fanamby 2008b).

In order to promote sustainable development and minimize impacts on the remaining rainforest habitat, Fanamby has initiated several projects designed to decrease or replace traditional reliance on the forest for natural resources: namely, ecotourism, intensified agriculture, and alternative fuel and wood plantations. Fanamby established the Saha Forest Camp on the edge of the rainforest, near the village of Andreba, to generate income and employment opportunities for locals. Communities also participate in the cultivation of bio-equitable red rice, ginger, vanilla, coffee, *ravintsara* (a tree whose leaves are used to make essential oils), *pimente* (a spice), and small-scale gardens as revenue-generating alternatives to forest exploitation. Some villagers tend to eucalyptus plantations, producing charcoal and timber for sale in place of traditionally used rainforest hardwood. Fanamby also promotes local conservation of the forest by co-managing the protected area with communities at three levels: committees at the regional, commune, and *fokontany* (the smallest administrative unit in Madagascar) levels work with Fanamby representatives to establish regulations and collaborate on solutions to problems with the reserve (Fanamby 2008b).

The Anjozorobe-Angavo corridor is currently awaiting approval by the state government as an official Category V Protected Area within the national system of reserves.

Introduction to study

This study was conducted in seven villages from two of the 14 communes and four of the 40 *fokontany* near or in the forest corridor, including one *fokontany* located within a previously established private reserve whose manager agreed to incorporate into the Anjozorobe-Angavo protected area. The goal of this study is to analyze the impact of the protected area on local communities in terms of their perceptions of the park and changes in use of the forest, and, more broadly, to evaluate how Category V protected areas work to conserve both biodiversity and cultural diversity. My study will question whether the Anjozorobe-Angavo protected area truly merits designation as a Category V reserve. I seek to illustrate that, while local communities may be receptive of environmental protection, the lifestyle changes entailed by the reserve are often more than residents bargain for, and even contrary to the principles of community-based conservation. Conservation strategies in the Anjozorobe-Angavo region have thus far resulted in a significant shift in local resource use with inadequate recompense, focusing on biological preservation at the expense of cultural integrity. I intend to show that greater attention must be paid to community needs and traditional practices if the Anjozorobe-Angavo forest corridor is to succeed as a Category V protected area.

----------METHODOLOGY----------

Table 2

FOKONTANY	VILLAGE	DISTANCE FROM ANJOZOROBE (km)	DISTANCE FROM PA (km)
Antananbao	Antelomita	7	0
	Antananbao	3.5	3.5
	AVERAGE	5.25	1.75
Antanifotsy	Antanifotsy	30	3
	AVERAGE	30	3
Amboasary An'Ala	Mangarivotra	11	0.8
	Amboasary	11.5	0.02
	AVERAGE	11.25	0.41
Antsahabe	Antsahabe	4	5
	Ambodipaeso	5	4
	AVERAGE	4.5	4.5

Table 1

Interviews were conducted during the week of November 9–14. Seven villages were surveyed within the *fokontany* of Antananbao, Antanifotsy, Amboasary An'Ala, and Antsahabe in the Analamanga region (Table 1). Villages were surveyed with the goal of interviewing 10% of survey population per *fokontany* (Table 2). This figure was estimated based on the size of the village, either by counting the number of houses in smaller villages or by asking the chef of the *fokontany* for an approximation in larger villages. Distances to each village from Anjozorobe were estimated along major roads accessible by automobile.

FOKONTANY	# HOUSES	# INTERVIEWS	PERCENT
Antananbao	39	4	10.3%
Antanifotsy	50	5	10.0%
Amboasary An'Ala	85	9	10.6%
Antsahabe	123	12	9.8%
TOTAL	297	30	10.1%

In total, 30 interviews were conducted during the course of the week. Each interviewee was asked 12 primary questions (Appendix 2) as well as supplementary questions that varied case by case. Interviews were conducted primarily in Malagasy with the aid of a translator except

when the interviewee spoke French fluently, in which event the conversation took place in French. Two Fanamby personnel from the Anjozorobe office were also questioned in French on the same topics, plus inquiries pertaining to the structure and management of the protected area. Additional information about conservation issues in the area was gathered via unstructured interviews with community members and participant observation.

Due to time constraints, fieldwork took place during the day, when a majority of rural villagers work in their fields. Thus, it would have proven difficult to use a rigid methodology for selecting participants; instead, villagers who appeared less occupied with work were approached at random and asked to contribute to the study. If the chef of the *fokontany* lived in the village, he was asked for permission to work in the village and also questioned. Most interviews took place in the villages, either in interviewees' homes or outside; some interviews were conducted in rice fields, and one at a tree clearing site. Interviewees generally paused to answer questions and those who seemed reluctant to put off their work were not interviewed.

Elders, and especially men, were much more willing to answer questions and share their views, whereas women and younger community members did not volunteer as much information. We were sometimes directed to speak first with the *olobe*, or village elders, by the women and youth of the community; this response was taken as a refusal and we did not return to the original villager after interviewing older community members. This trend was most noticeable in rural Antanifotsy, where female villagers were highly reluctant to participate in the study and where the youngest respondent was 45 years old. Therefore, the results obtained do not reflect the age and

gender distributions of the communities surveyed. Additionally, people from all villages were hesitant about voicing their opinions of conservation and Fanamby unreservedly, most likely because they associated their *vazaha* (a stranger, generally white or from a Western country) interviewer with the state government, with foreigners interested in exploiting the area's natural resources, or with Fanamby itself.

Communities in the region of Analamanga are impacted by and benefit from the protected area to varying degrees, especially in terms of tourism. To account for this potential bias, an equal number of interviews were conducted in high-tourism villages as in low-tourism villages (Table 3). The towns of Antsahabe and Amboasary are both frequented by tourists visiting the protected area, as each is situated along a tourism circuit; the remaining villages see a relatively low number of foreigners, and Antanifotsy had never been visited by a *vazaha* before this study was conducted, according to the village *olobe*.

Table 2

TOURISM IMPACT	High	Low
VILLAGES	Antsahabe, Amboasary	Antelomita, Antananbao, Antanifotsy, Magarivotra, Ambodipaeso
# HOUSES	150	147
# INTERVIEWS	15	15

----------RESULTS----------

Fanamby responses

According to Fanamby personnel, the Anjozorobe-Angavo forest corridor is presently under temporary protection as a "protected area in creation" and has been classified as such since December 27, 2007. The land is owned by the Malagasy state government, but the reserve and its regulations were established via collaboration between Fanamby and the community, and the protected area is currently co-managed by the NGO and local committees at three levels. Both Fanamby members interviewed gave the same response as to why the organization decided to take on the Anjozorobe-Angavo project: primarily because "no one else was there," but also because the area is "the last forested corridor in the central highlands" of Madagascar with significant ecological importance in terms of water and endemic biodiversity.

Of the 40 *fokontany* located within the protected area, 34 chose to participate in the development programs organized by Fanamby, and 30 currently have projects up and running. No comprehensive list of regulations existed at the time of this study due to the temporary status of the protected area, but in general, restricted activities include clearing for agricultural purposes, brushfires, and the commercial sale of forest products. Community members may still cut trees for construction and other personal uses, but wood harvesting is limited and requires authorization at the *fokontany* level. The collection of medicinal plants is also permitted. When asked how they believed local communities perceived conservation, one Fanamby employee asserted that all villagers had been "convinced" of the importance of conservation; the other replied that those communities who agreed to take part in the development projects feel positively about the protected area, while the six *fokontany* who chose not to participate and those communities situated closest to the forest tend

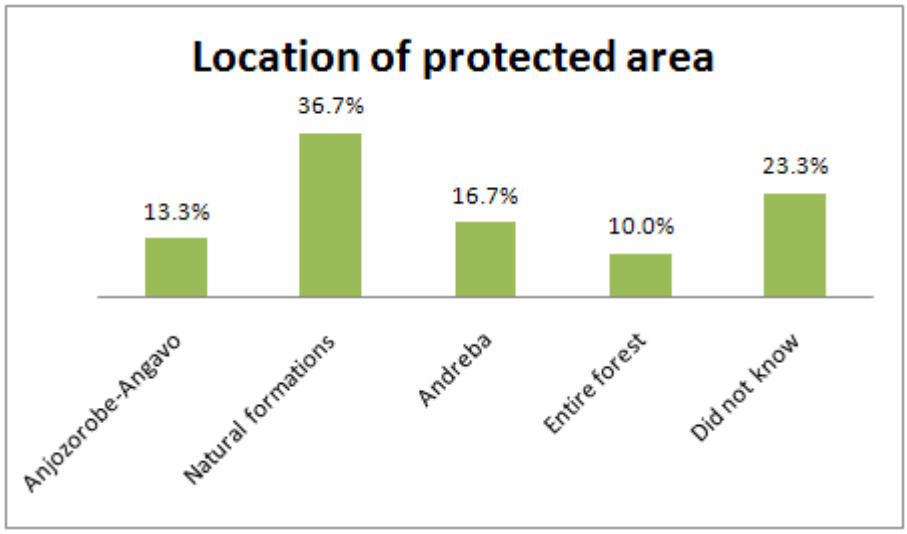
to have a negative outlook on the conservation program. A list of participating *fokontany* was not obtainable at the time of this study.

Both Fanamby employees interviewed expressed negative views of previous utilization of the land currently within the protected area. Before the establishment of the reserve, the land was owned by the state government under the status of « terrain domanial », meaning that local residents had free access to the forest and the surrounding territory. According to Fanamby, no community laws existed prior to the reserve, and villagers cleared the forest unrestrictedly for agricultural use. Nor was this trend unique to a particular region; one Fanamby respondent referenced the aforementioned compilation of satellite images showing widespread deforestation as proof that all nearby villages exploited the forest. In addition, villagers sold lumber and orchids from the forest, and also collected honey, fruit, plants, and wood for their personal use. Both Fanamby members used the word “pressure” to describe the traditional relationship between local communities and their environment.

The goal of Fanamby’s work in this area is to increase local independence on agricultural projects initiated by the NGO; Fanamby will still continue to manage the ecotourism site and distribute income to communities once communities achieve self-sufficiency. Although the definition of a Category V Protected Area calls for protection of culture in order to protect nature, the Fanamby representatives did not consider a link to exist between local communities and the Anjozorobe-Angavo forest; instead, they chose the appellation of Category V to avoid the removal of communities located within the forest to the exterior of the reserve.

Community information

Among the villagers surveyed, the mean age was 49.27 years old and a majority (83.3%) worked as cultivators, primarily of rice and small-scale subsistence crops like manioc, sweet potatoes, beans, and corn. Every person questioned about the *fady* associated with the forest mentioned the taboo against bringing onions or pork into the forest. Several villagers were familiar with sacred areas within the forest, including hills where once stood royal palaces, sites of tombs and rituals, and a sacred waterfall known as Ambohimanga. Additionally, all respondents mentioned that it is *fady* to work on Saturdays. Antanifotsy had the highest number of *fady* associated with the forest, such as the taboo against washing with soap in the Mananta River, whose source is located in the high forested hills, and the restriction against bringing « petits amis » into the forest – only couples that are married are allowed to enter the forest together.



Knowledge of the protected area

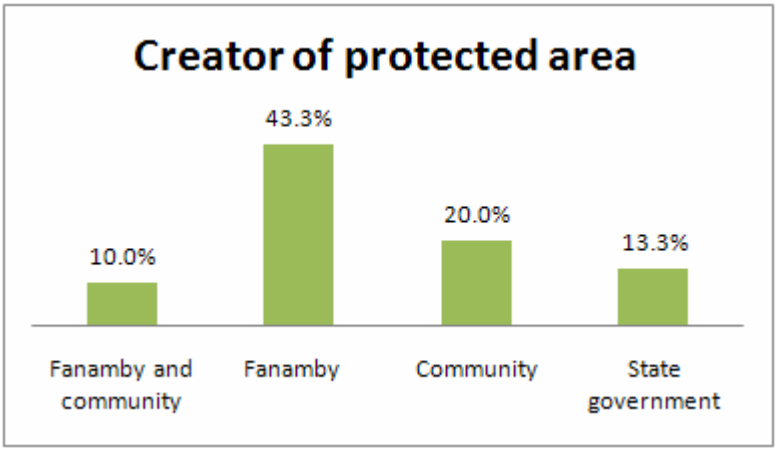
Knowledge of the protected area and the specifics regarding its creation varied among interviewees (Figure 1). When questioned about

Figure 1

Figure 2

the location of the protected area, only four respondents (13.3%) mentioned either Anjozorobe or Angavo. Interviewees also cited natural formations and cultural sites found within the protected area, such as the sacred hills, ceremonial places, and waterfalls, or Saha Forest Camp, a Fanamby-run tourist lodge near the village of Andreba. Some said the protected area comprised the entire forest, and others either gave a vague description ("to the east") or did not know. Only 10% of respondents knew that the protected area was established through the joint effort of Fanamby and the local communities, the rest naming their community, Fanamby, or the state government as the sole creator (Figure 2). Interestingly, no one said that Fanamby owned the forest today, whereas a majority of respondents (30%) said that it was

managed by the community. Of those who named Fanamby as creator, six said the community now controlled the protected area. Reasons for the establishment of the protected area ranged from environmental conservation to community development (Figure 3). All five interviewees who gave tourism as the reason for the creation of the park were from either Amboasary or Antsahabe, the two villages that see the highest tourist traffic. The communities surveyed exhibited a lack of familiarity with the bodies involved in regulating activity within the protected area (Figure 4). Both respondents who correctly answered that Fanamby worked with communities to regulate forest use were from Antsahabe, which has close ties with and easy access to Anjozorobe. Four of the five villagers interviewed in Antanifotsy, the furthest village from Anjozorobe,



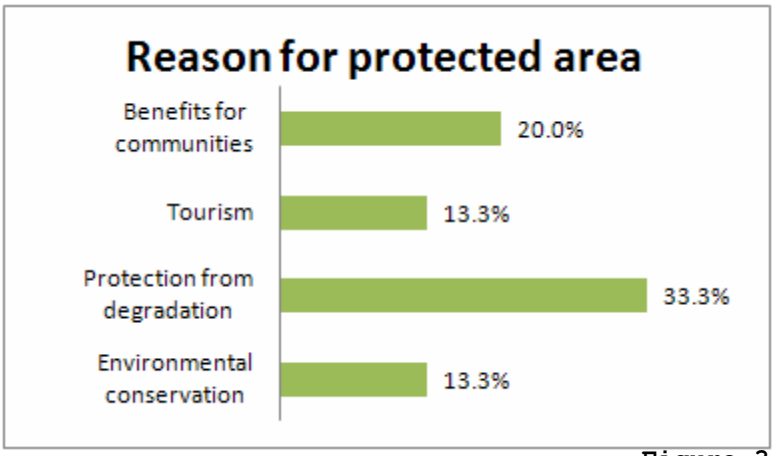
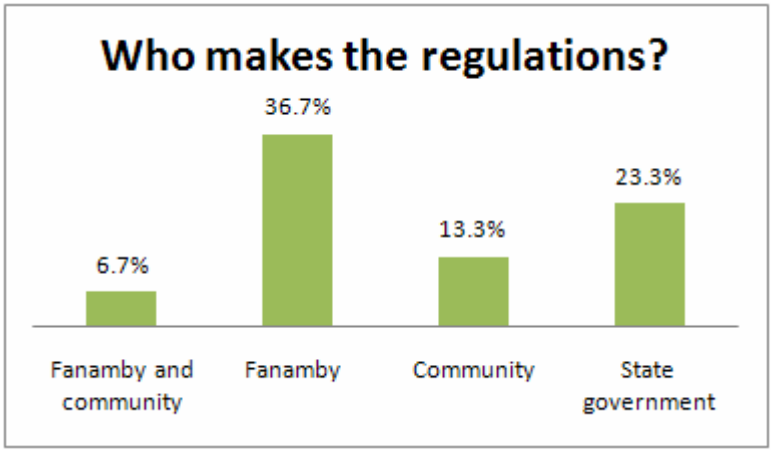


Figure 3



said the state created the rules. In every *fokontany* visited, two or more villagers stated that Fanamby alone makes laws.

Perceptions of the protected area

To gauge how people view the protected area and its regulations, villagers were asked to provide their personal definition of the term "conservation" (Figure 5). Twenty-three of the 30 interviewees, or 76.7%, defined conservation in terms of what one "cannot do," examples of prohibited activities being setting brushfires, cutting trees, killing animals, taking products from the forest, and destroying the environment. Many respondents saw conservation as the active protection of the environment by their own community or as their village's efforts at reforestation. Others referred to the benefits of a healthy forest to their village, including rain, wood, food, clean air, and water for drinking and for their rice fields. Given the high reliance on rice cultivation in the area, fewer respondents than expected named rainwater as a benefit of the forest; however, it should be noted that in the regional dialect, *orana* means both "rain" and "crayfish" and was translated as the latter in several interviews.

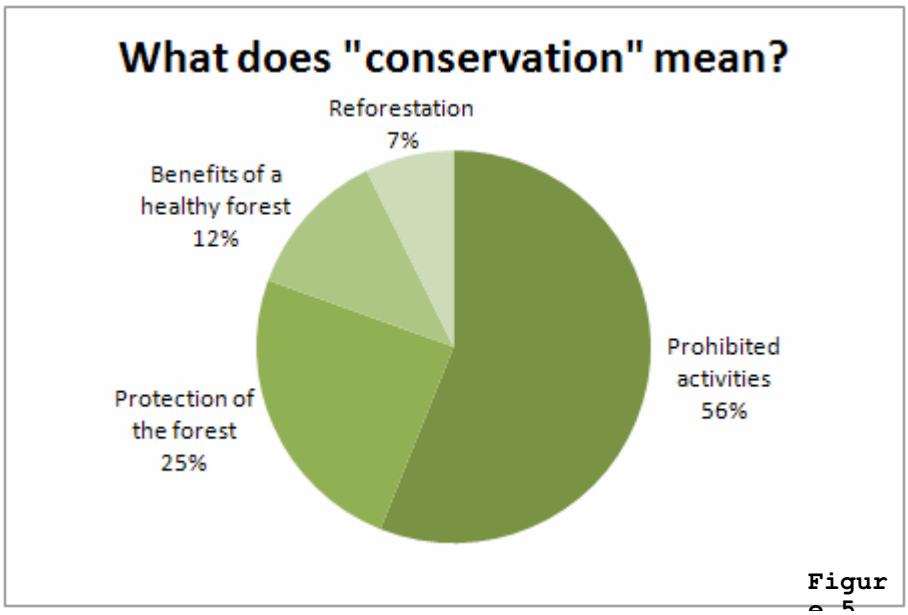
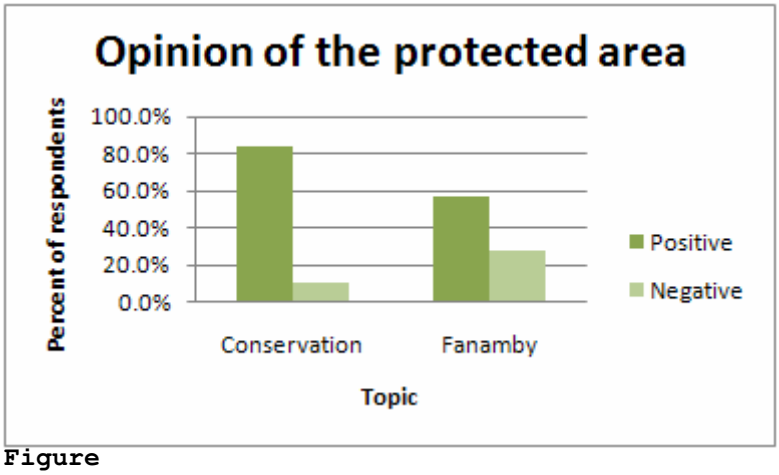


Figure 4

Twenty-five interviewees (83.3%) viewed conservation in general positively, although several mentioned that the laws concerning



Figure

conservation in this area are too strict or are not universally respected. Only three people (10%) expressed an overtly negative view of conservation, again finding fault with conservation laws that are too limiting or too difficult to enforce. When asked their opinion of Fanamby, 17 interviewees (56.7%) gave a positive opinion of the organization, 16 of which resided in the high-tourism villages of Amboasary and Antsahabe (Figure 6). Of the eight people (26.7%) who were openly critical of Fanamby, four lived in Antanifotsy, the furthest village from Anjozorobe. A majority (60%) of those respondents who viewed conservation positively also expressed a positive opinion of Fanamby and its work in the region, while 20% were decidedly critical in their opinions of the organization. Interestingly, two of the three respondents who felt negatively about conservation praised Fanamby for its assistance to communities. While most respondents supportive of conservation also believe the protected area has helped their communities (26.7%), a considerable minority (13.3%) look positively upon conservation but negatively upon the changes to their communities' relations with the forest wrought by the regulations of the new protected area.

Changes in forest use

Data gathered on utilization of the forest prior to the establishment of the protected area depended to a large degree on how

recently interviewees believed the park was created. Responses as to the year the protected area was established were evenly divided among those who said 1990 or earlier and those who said 2000 or later (14 each) while the remaining two interviewees did not know. Four respondents did not know how their community used the forest pre-protected area because they had replied that the reserve was established long ago. Twenty-two villagers (73.3%) said that their community derived some benefit from the forest in the past, whether it was food, wood for construction or « petits besoins » like zebu cart repairs, or employment by *vazaha* who came to harvest lumber. Only three respondents mentioned exploitation of the forest in the past, and two of these instances were the result of *vazaha* activity.

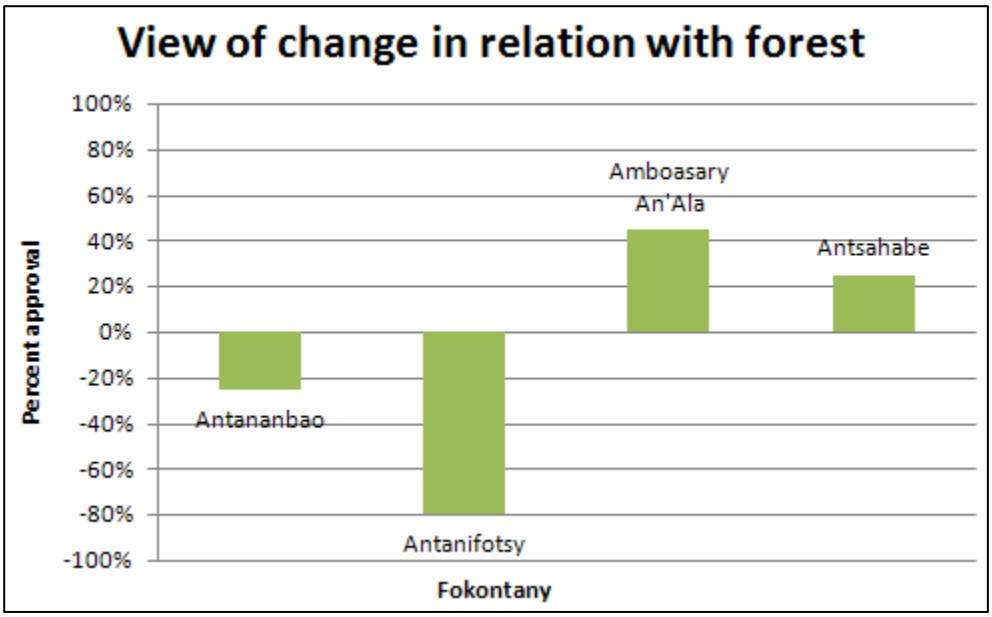
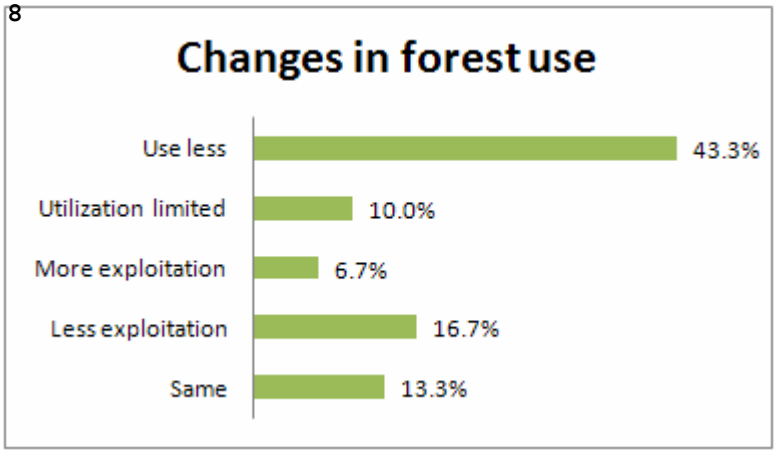


Figure 7

Of the 16 interviewees who expressed a strong opinion of current utilization of the forest, nine conveyed positive views and seven conveyed negative views of its use. The *fokontany* Antanifotsy showed the most negative overall opinion of forest use change, while Amboasary An'Ala residents felt most positively about current resource utilization (Figure 7). In total, 13 people believe the forest to be used less than before the establishment of the protective area (Figure

Figure 8

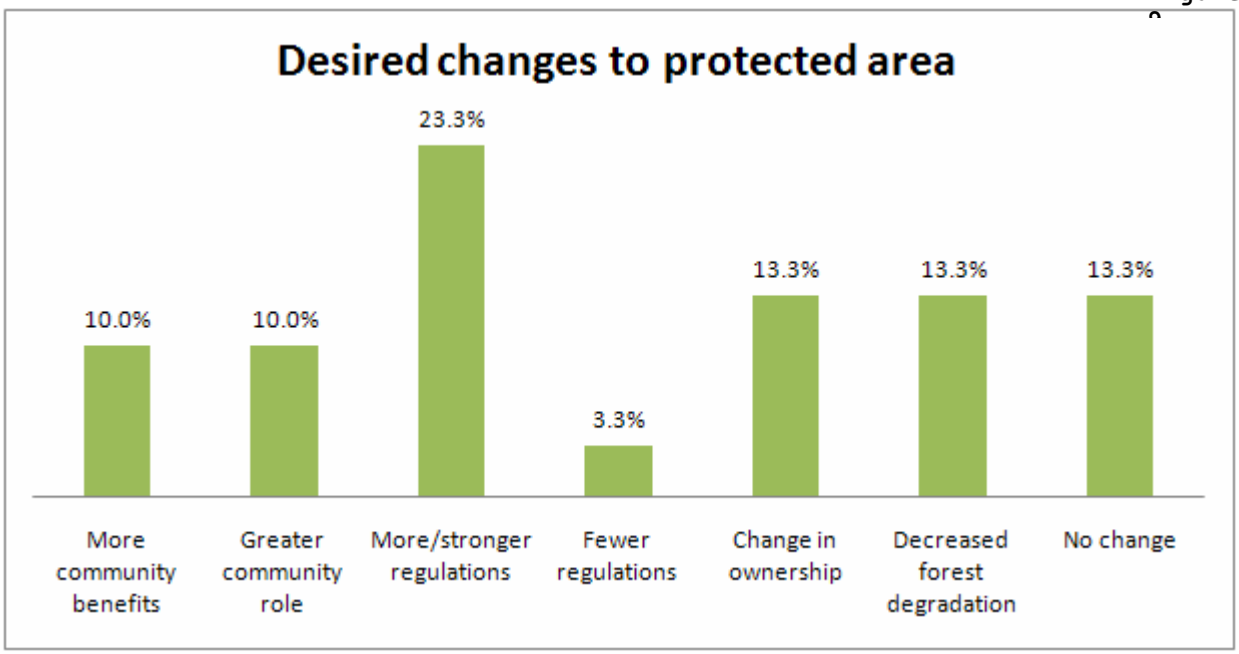


8). All nine villagers who felt positively towards current community relations with the forest noticed a decline in its utilization. Four of these respondents, from the villages of Amboasary and Antsahabe, mentioned the replacement of resource harvesting with tourism as a positive change in forest use. The remaining five said that not only is the forest used less now, it is also less exploited, and conservation of the forest benefits their communities because it ensures a continued supply of products like honey, crayfish, medicinal plants, and fresh water. Four respondents who said that the forest is utilized less by their communities expressed the negative viewpoint that the forest no longer helps their village. Two villagers in Antanifotsy felt that exploitation of the forest had increased since the reserve was established. All respondents who were openly negative towards current forest use lived in the *fokontany* of Antananbao and Antanifotsy, save one Amboasary villager who made no efforts to conceal his wish to exploit the forest for lumber. No one said their community relied more on the forest now than in the past.

Future conservation goals

Interviewees were asked what they would change about the conservation agenda in their area in order to determine what community members felt was lacking in the management of the reserve (Figure 9). The most frequent response (23.3%) was a desire for more regulations or the fortification of existing rules. One villager wanted to see an increase in the surface area of the protected area, extending to include "less dense" forests and surrounding land. Another wanted the same regulations to exist in the eastern region of the reserve as the western, having witnessed first-hand a remarkable degree of degradation on the opposite side of the forest. Respondents also hoped that their communities would take the initiative to better protect the forest or benefit more from the reserve in the future. Those who called for a change in "ownership" of the forest either wanted the forest to be managed by their community alone or through the joint efforts of their community and the state government, although one interviewee hoped that the state would take control of all of its forests back from the NGOs. Four were content with the current

Figure 9



conservation agenda and did not want drastic change. Only one villager hoped for fewer conservation regulations.

For the final interview question, respondents were given a translation of the IUCN definition of a Category V protected area, as noted in the interview guide in Appendix 2. They were then asked to give their idea of the relationship between community and forest that should be protected by the new reserve (Figure 10). Although Fanamby personnel stated that the designation of Category V was chosen to allow communities located within the protected area to continue living there, not to protect traditional human-nature interactions, most villagers expressed the sense of a bond between their communities and the forest. Many villagers had already mentioned the importance of the water flowing from the forest for their agriculture and their families; accordingly, 20% said that the relationship with the land revolved around water, and the forest needed to be conserved in order to safeguard their lifestyles. Other interviewees also mentioned ways in which the forest benefits their communities, such as traditional forest resources like wood and food; three people from Antsahabe felt that the connection with the forest now centered on the benefits of tourism, in terms of employment for villagers and aid to their communities. Another definition of the bond between the people and the forest was one of active protection by communities of the

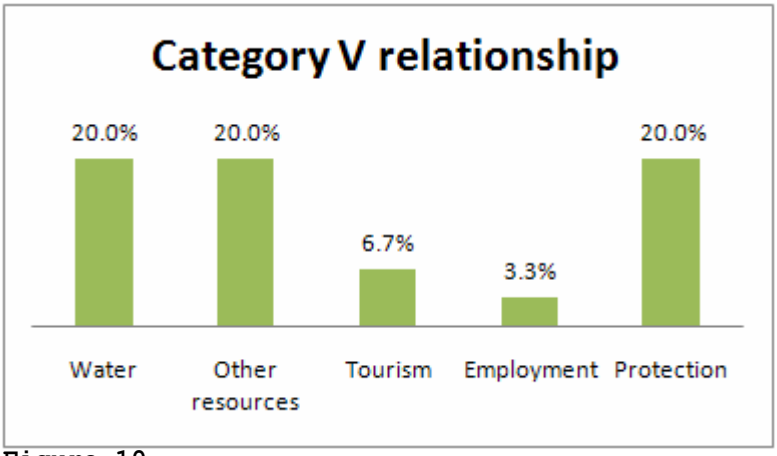


Figure 10

resources they depend on; as one respondent explained, they protect the forest in order to protect themselves.

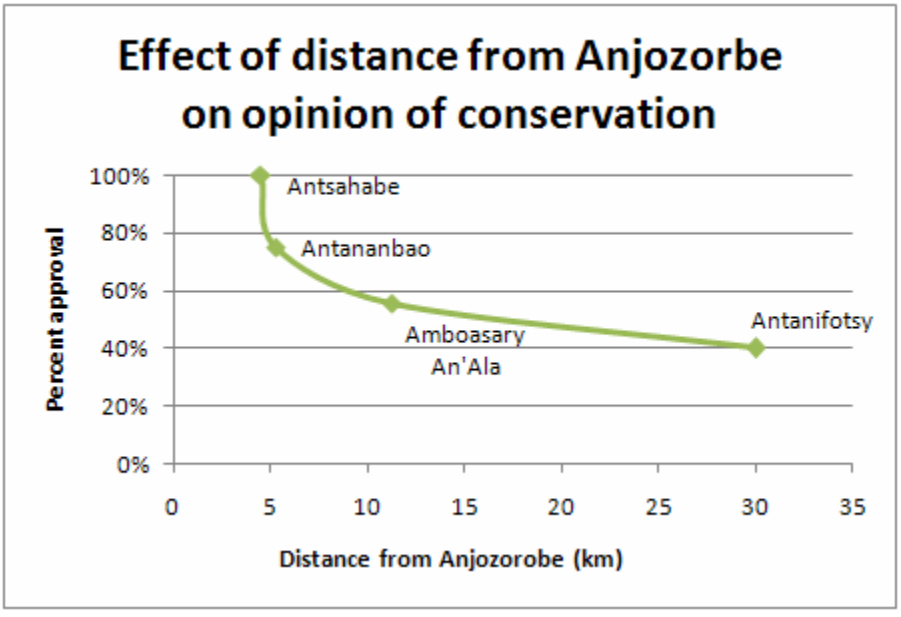
Additional information gathered

Fire is a primary environmental concern in the central highlands and was a main conservation issue for the inhabitants of the area surveyed. This study took place during the last week of the dry season on the highlands, the period with the highest incidence of fires, both anthropogenic and natural. Treeless hills were often burned to rid them of the invasive shrub *Philippia sp*, which grows so densely that it chokes out the grasses that zebu graze on, according to several pastoralist villagers. Indeed, I often saw fresh green shoots sprouting among the charred remnants of the invasive plant along the blackened hillsides during my week of field research. I also witnessed one controlled burn to rid traditional zebu pasturage of *Philippia* (Appendix 3) and was told that such fires are heavily regulated by state law and thus are carefully monitored. There were several burnt eucalyptus plantations near the village of Antsahabe (Appendix 4), which Fanamby employees and my translator testified was the act of a villager jealous of his neighbor's prospering charcoal business. I counted 11 fires in the forested hills surrounding Antanifotsy on November 10, six of which persisted into the night (Appendix 5). The chef of the *fokontany* said this was an unusually high number; another villager insisted that the fires had grown more numerous of late due to the nationwide political instability. Zebu thieves sometimes set fires to draw the men of the communities away from their livestock, making them easier to steal, according to respondents in Antanifotsy and Ambodipaeso. Villagers are expected to help put out fires near

their communities; Amboasary residents, for instance, said they received 80 kilos of white rice from the manager of Mananara Lodge, a nearby tourist lodge, in return for fighting a fire within the protected area boundaries.

Another conservation topic often brought up by community members was ecotourism, especially in the *fokontany* of Antsahabe and Amboasary An'Ala. Nine villagers were employed by Fanamby as tourist guides for Saha Forest Camp, and in the town of Amboasary villagers had long worked as guides and *pisteurs*, who search the forests for species to show visitors, at Mananara Lodge. The youth of the area were especially excited about the opportunity for employment as guides once they finished schooling; at the time of this study, at least three Anjozorobe students in their terminal year were planning to continue studying English and French in Antananarivo the following school year. However, older members of the communities bemoaned the unequal distribution of tourism-linked benefits and employment; four interviewees even stated they wished that more of the community would be able to benefit from ecotourism in the future of the protected area.

Figure 11

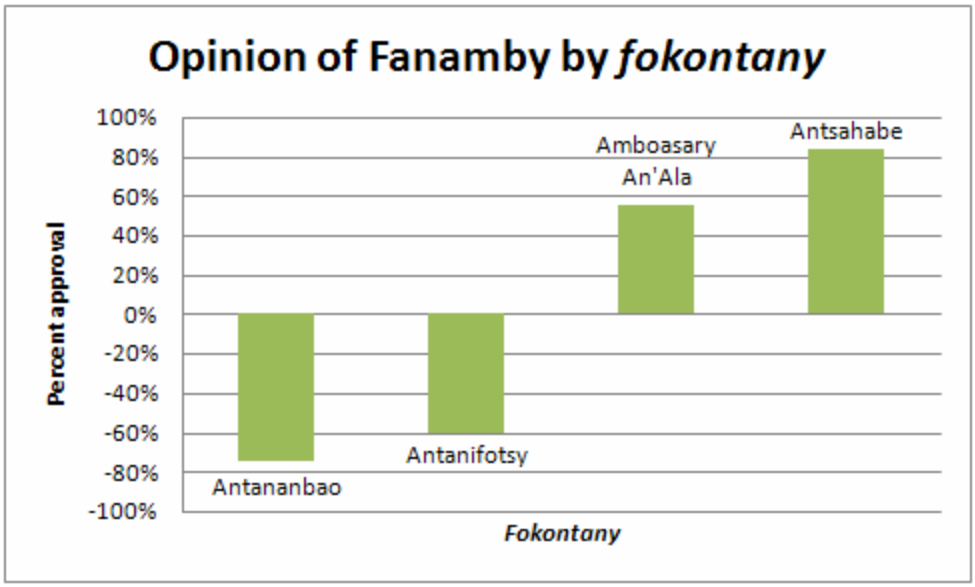


Possible biases in data

One of the difficulties encountered during this study was villagers' apparent reluctance to open up about the

touchy subjects of forest use and conservation views. Communities closer to Anjozorobe, where the Fanamby office is located, were less likely to offer negative opinions of conservation than villages further away. This trend becomes especially apparent when analyzing responses by *fokontany* based on their mean distance from Anjozorobe (see Table 1). People who lived closer to Anjozorobe expressed much less critical views on conservation than those who lived a more significant distance away from the headquarters of the protected area (Figure 11). Analysis of the effect of distance from Anjozorobe on opinions of Fanamby did not yield a significant trend; however, only the *fokontany* of Antsahabe and Amboasary An'Ala had an overall positive opinion of Fanamby (Figure 12).

Figure 12



----------DISCUSSION----------

General views of the conservation agenda

One of the most striking outcomes of this study was the number of villagers who defined conservation as those activities prohibited by conservation law. The statement « ne pas » was the most frequently cited definition of conservation that which one "cannot do." However, a general trend emerged that community members tended to view the idea of conserving and protecting the environment positively, despite a more negative outlook on the processes involved (see Figure 6). Even the sole villager who found current regulations on forest use too harsh took a decidedly positive outlook on forest protection. It can be concluded, thus, that communities affected by the protected area, though most view conservation as a series of rules on their interactions with the forest, believe conservation of biodiversity and natural resources to be important and necessary.

Drawing from the 30 interviews conducted, local communities are generally supportive of the Anjozorobe-Angavo Protected Area. Villagers do not appear to blame Fanamby for the failures of the conservation agenda in their area, while those who accept forest conservation also approve of Fanamby's work. Respondents that exuded "positive" sentiments towards conservation in the area were not making empty statements, as a majority of these villagers both commended Fanamby and viewed the resulting changes in their relationship with the forest optimistically. Even apparently "negative" statements often coincided with approval of environmental protection; defining conservation in terms of restricted community activities did not result in lowered opinions of the ideas behind conservation. All in all, respondents' receptiveness of conservation is an encouraging sign for the protected area. However, positive local perceptions are too often overlooked by park supervisors who focus on

managing conflict instead of integrating conservation values into reserve management (Allendorf et al 2006). Additionally, ignoring the minority who support conservation but disapprove of the consequent changes to their lifestyle may cause discord between community and NGO managers of the protected area further down the road (Klein et al 2007; Allendorf et al 2006).

While community members exhibited a high knowledge of the cultural *fady* associated with the forest, they showed poor knowledge of the particulars of the new protected area: specifically, its exact location and its co-management status. Though most villagers believe the forest was created and is regulated by either Fanamby or the state government, and actually knew that the reserve is co-managed between Fanamby and their communities, a large percentage of villagers defined their relationship with the forest as one of "protection" (see Figure 12) either through respecting *fady* or actively fighting environmentally degrading factors such as fires and illegal timber harvesting. These responses suggest that Fanamby must go to greater lengths to inform communities that they, too, manage the protected area in order to ensure that co-management of the reserve equally represents all impacted communities. Alleged community protection of the forest despite this knowledge, however, provides heartening evidence of long-standing local appreciation of conservation.

Differences in perceptions of community members and Fanamby personnel

In protected areas co-managed by outside agencies in collaboration with local communities, consistency in perceptions about the environment and local resource use among both parties is vital to the success of the reserve (Raik and Decker 2007). Villagers

interviewed felt positively overall towards Fanamby, keeping in mind the potential biases in responses, and in particular appreciated its development aid. In contrast, the Fanamby representatives interviewed held decidedly critical opinions about community use and management of the forest before the establishment of the protected area. Both personnel interviewed condemned previous community resource use, attesting that villagers exerted heavy pressure on the forest and noting widespread deforestation as a result of local demands for timber and arable land. Fanamby thus gives the impression that it is "saving" the forest from the destructive practices of the people, an approach that has not boded well for protected areas established on the same principle (Stevens 1997).

According to several village interviewees, however, their community's historical relationship with the environment consisted of protecting the forest. When asked what the forest needed protecting from, respondents claimed that it had been highly exploited in the past by *vazaha*, referring to both foreigners and communities far from the forest – never by their own communities. Moreover, Fanamby employees and local villagers perceived "destruction" of the forest differently. New protected area regulations prohibit brushfires, but many communities have no options for feeding their zebu without ridding the landscape of *Philippia* by burning; in Andringitra National Park, another Category V protected area, this is recognized as a valid form of land management (Kull 2002; Davide). Community members know the environmental dangers of this practice: they often defined conservation in terms of protection from brushfires, knew the Fanamby regulations against fire, and hoped for fewer fires in the future; yet it remains that villagers have no alternatives if they are to maintain

their traditional pastoral customs. As Bennett (2003) insists, local natural resource use and accompanying practices must be considered "sympathetically" if community-based conservation strategies are to succeed.

Impacts of the protected area on local lifestyles

Modern reserves in Madagascar have begun to demonstrate what Richard and O'Connor (1997) refer to as "change in the currency by which a natural habitat is valued," focusing increasingly on "the socioeconomic well-being of the local people" as well as ecological health. At the time of this study, three main sustainable development projects existed in the villages surveyed: ecotourism, agricultural initiatives, and eucalyptus plantations. Two of the villages surveyed, Antsahabe and Amboasary, had already realized considerable benefits due to the tourist lodges of Saha Forest Camp and Mananara Lodge, respectively. The Fanamby-run lodge, Saha Forest Camp, and ecotourism site near the village of Andreba appear to be prospering despite the recent political crisis: according to a Fanamby employee at the visitors' center, the reserve saw a considerable increase in the number of tourists this year (Olivine). Fanamby has also jump-started a number of alternative revenue-generating projects ranging from household bee-keeping to sustainable agriculture, depending on the soil and climate conditions of the region. The adaptability of these projects provides evidence that Fanamby did the social research deemed necessary by Hume (2006) to ensure the success of projects to replace traditional land use with sustainable practices; additionally, these initiatives appear to preserve culturally important agricultural practices while discouraging ecologically damaging shifting

cultivation (Myers 1980). Foreign investors in cooperation with local villagers started a number of eucalyptus plantations to reduce the strain on the rainforest for construction timber and fuelwood or charcoal.

As noted in Figure 12, the *fokontany* of Antsahabe and Amboasary An'Ala were more approving of Fanamby than those of Antananbao and Antanifotsy. Though these results may be attributable to an unwillingness to speak out against a powerful neighbor, villages in closer proximity to Anjozorobe might also be more approving of Fanamby because they benefit more from its projects. This conclusion would explain why only the *fokontany* containing Antsahabe and Amboasary villages, which benefit most from tourism income, were positive overall in their evaluation of Fanamby, whereas the *fokontany* that receive little to no benefits from tourism were on the whole negative towards Fanamby. Villagers voiced concerns during interviews that not enough people in the communities are benefitting from these initiatives. Those excluded not only miss out on economic compensation, but also have difficulty continuing traditional practices due to resource use restrictions, as has been previously documented in Sagarmatha National Park in Nepal (West and Brockington 2006) and Dja Nature Reserve in Cameroon (Nguiffo 2001). Understandably, as Fanamby started these initiatives fairly recently and Anjozorobe-Angavo is not yet recognized as an official protected area, the organization lacks resources to disseminate revenue-generating projects among all 34 participating *fokontany* while also ensuring that villages benefit equally from these projects. Yet the trend that *fokontany* further from Anjozorobe feel more negatively

about Fanamby could be due in part to the perceived favoritism shown to villages to which Fanamby has easiest access.

Furthermore, interviewees conveyed a certain amount of negativity in regards to the eucalyptus plantations, which were founded by *vazaha* and are promoted today by Fanamby as alternatives to traditional reliance on the forest for wood. One villager who hoped for more benefits from the protected area in the future specifically mentioned an increase in the number of families who profit from the eucalyptus plantations. Despite the pervasiveness of eucalyptus forests in the region, it became apparent during this study that a privileged minority actually receives income from the sale of construction timber, firewood, and charcoal; thus, neighbors have begun burning the plantations in jealousy and disappointment. Additionally, interviewees mentioned the replacement of forest hardwoods used for fuel and construction with eucalyptus as a change in resource use resulting from the establishment of the protected area, but acknowledged that the alternative wood is "inferior" to the original. Several people said that eucalyptus is not strong enough for building houses, so they prefer to continue using trees within the reserve for construction; we interviewed the chef of one *fokontany* in the middle of a clearing site within the forest, where he had been cutting hardwood trees to build a floor because the wood is sturdier than eucalyptus. Problems have also been encountered with eucalyptus in nearby Ambohitantely Special Reserve, where villagers burned plantations because they did not adequately meet their resource needs (Klein et al 2007).

Fanamby has gotten a decent start on local development in nearby villages, but conservation law alone may not be able to prevent communities further from Anjozorobe from reinstating traditional

forest use practices if alternative development initiatives are not brought up to standard soon. To minimize jealousy, prevent future destruction of sustainability projects, and sustain community interest in conservation, Fanamby will have to focus on equalizing the benefits recouped among *fokontany* near and far, as well as providing opportunities for involvement in projects to all interested community members (Ramamonjisoa 2005). It may also be necessary to better adapt enterprises like the eucalyptus plantations to the needs and partialities of local communities (Klein et al 2007; Raik and Decker 2007). The current levels of dissatisfaction with Fanamby's five years of development projects may impede continued community support forest conservation if improvements are not made (Hockley et al 2005).

----------CONCLUSION----------

Community acceptance and support of conservation measures is crucial to the success of protected areas. While conservation projects initiated by local residents themselves have enjoyed incredible success in Madagascar (Schaechenmann 2006), co-managed reserves that allow for community leadership can also flourish (De Lacy and Lawson 1997; Mallarach 2008) provided they "balance social, economic, and ecological objectives" (Keough and Blahna 2006). The most important consideration of community-based conservation is a thorough

understanding of the conditions under which it works best; conservation projects should be adapted accordingly (Berkes 2004).

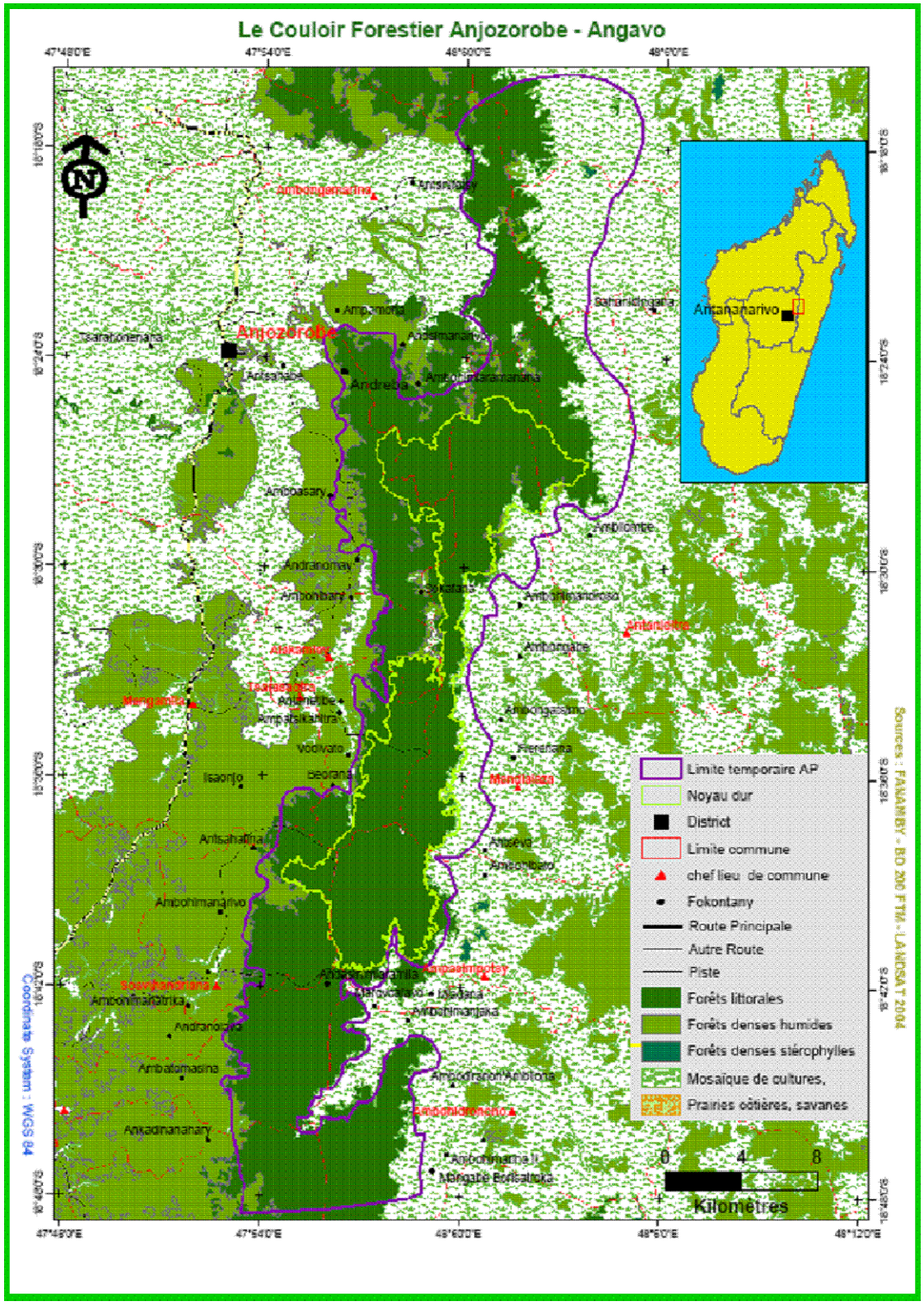
The perceptions of conservation expressed by residents of the Anjozorobe-Angavo corridor demonstrate high levels of community willingness to participate in environmental protection, a heartening sign for the pending protected area. Not only do local villagers see the benefits of resource management, they also generally find diminished resource use to be a positive change due to the promise of revenue-generating projects in exchange for conservation and protection of the forest. It is also worth noting that the projects initiated by Fanamby do safeguard traditional relations with the land in that they preserve the agricultural tendencies of local communities.

As of right now, though, the Anjozorobe-Angavo "Protected Area in Creation" does not adequately compensate residents for their foregone forest resources. Moreover, Fanamby has demonstrated a distressingly low comprehension of past community forest use and current land management practices. It remains to be seen whether a Category V protected area can be administered effectively if one half of the co-management team does not recognize or empathize with the long-established rapport between its collaborators and the forest. As Jarosz (1993) contends, "Human activities do not cause regional change; rather, human activities shape, and are shaped by, place and history…In turn, regions shape human activities due to particular contextual details of place." It is this relationship that a Category V reserve seeks to protect, and of which Fanamby employees in Anjozorobe show little understanding.

This study has shown that greater dialogue is needed between the two protected area management parties. While Fanamby's work in the Anjozorobe-Angavo corridor has preserved the historical reliance on agriculture, functioning projects benefit a small minority of easily accessible villages, while others do not sufficiently replace traditional resource extraction. Fanamby must create better-adapted projects or allow for more community forest use to lessen the impacts of the reserve on local lifestyles. For example, constructing firebreaks around the rainforest and permitting controlled fires for *Philippia* removal would greatly benefit zebu herders while administering to communities' desire for fewer fires (Klein et al 2007); additionally, investment in hardwood plantations along with eucalyptus cultivation would provide villagers with traditional construction timber without harming the rainforest, and might also help soften negative opinions towards eucalyptus (Horning 2003). Fanamby must also better distribute revenue-generating projects among villages impacted by the reserve. Community inclination towards protection of their environment already exists; it now remains for the other co-manager to ensure protection of communities in order for the Anjozorobe-Angavo Category V Protected Area to meet its biodiversity and cultural diversity conservation goals.

----------**APPENDIX**----------

Appendix 1 – Map of the study site



Appendix 2 – Interview guide

1. Information de base
    - Village/âge/occupation/*fady*

1. Comment est-ce que les membres de votre communauté interagissent avec la forêt ?
2. C'est quoi la conservation à vous ?

2. Aire protégée

3. Où se trouve l'Aire protégée ? Quand est-ce qu'elle a été établie ? Par qui et pourquoi ? Est-ce qu'il y a un propriétaire ?
4. C'est quoi Fanamby ? Qu'est-ce qu'ils font ?
5. Quelles sont les règles de l'aire protégée ? Qui les fait ?

3. Relations avec la forêt

6. Avant la création de l'aire protégée, quelle était la relation entre votre village et la forêt ? Comment les gens ici ont utilisé la forêt ? Comment la forêt a aidé la communauté ?
7. Avant l'aire protégée, est-ce qu'il y avait des règles communautaires sur l'utilisation de la forêt ?
8. Comment votre village utilise-t-il la forêt maintenant ? Comment la forêt aide votre village maintenant ?

4. Perceptions de la conservation

9. Comment percevez-vous la conservation à Anjozorobe ?
10. Que pensez-vous Fanamby ?
11. Si vous pourrez, qu'est-ce que vous changeriez à propos de l'aire protégée ?

L'Aire protégée d'Anjozorobe-Angavo est classifiée comme Catégorie V, qui veut dire que c'est une aire où la protection d'un rapport intégral entre les humains et la nature est essentielle pour sauvegarder l'environnement et la biodiversité.

12. D'après vous, c'est quoi le rapport intégral entre les humains et la nature ici ? Est-ce que le programme de conservation ici est suffisant de sauvegarder ce rapport ?

Appendix 3 – Fire as an agricultural technique

Controlled burn of *Philippia sp.* in Amboasary An'Ala (13 November 2009)

Appendix 4 – Fire as an act of jealousy

Burnt eucalyptus plantation between Antelomita and Antananbao (9 November 2009)

Appendix 5 – Fire as a form of political protest

Aftermath of a controlled burn (foreground) and an ongoing forest fire within the protected area near Antanifotsy (3 November 2009)

Forest fires behind the village of Antanifotsy (3 November 2009)

View of eight simultaneous forest fires near Antanifotsy (3 November 2009)

----------GLOSSARY----------

Malagasy terms
Fady – taboo
Fokontany – smallest administrative unit of Madagascar
Pimente – type of spice
Ravintsara – tree whose leaves are used to produce essential oils
Sokake – Antandroy term for the radiated tortoise
Tavy – slash-and-burn technique used in clearing land for agriculture
Olobe – community elders
Orana – rain; crayfish
Vazaha – stranger, typically white or from a Western country; also used to refer to Malagasy from distant areas

Acronyms
ANGAP: *Association Nationale pour la Gestion des Aires Protégées*
GCF: *Gestion communautaire des forêts*
GeLoSe: *Gestion locale sécurisé*
ICDP: Integrated Conservation and Development Project
IENGO: International Environmental Non-Governmental Organization
IUCN: International Union for the Conservation of Nature
MBG: Missouri Botanical Garden
MNP: Madagascar National Parks
NEAP: National Environmental Action Plan
NGO: Non-Governmental Organization
PLANGRAP: *Plan de Gestion du Réseau National des Aires Protégées de Madagascar*
RNI: *Réserve naturelle intégrale*
WWF: Worldwide Fund for Nature

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