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Research Note:

Giving Back: Nature Conservation in Madagascar

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1. Introduction

Conserving nature is all about giving back—giving back the land to the plants and animals that evolved there over hundreds of millions of years, and thus recognizing their intrinsic right to existence. Yet, at the same time, this "giving back" to the voiceless biota often represents a "taking" to the communities living near newly conserved areas, since conservation restricts local communities' use of the land for hunting, fishing, farming, and extractive industries. So, nature conservationists often look for ways to reconcile this conflict and to give back to local communities by substituting lost income streams, building local capacities, or providing incentives for natural resource stewardship. In my own experience I have tried to give back in three ways: through capacity building, providing local employment and care for employees, and creating projects to link nature conservation with sustainable development.

2. Capacity Building

For years, I worked in Madagascar, a country whose populace is among the poorest in the world, to establish parks to protect Madagascar's famous wildlife, which includes many

unusual and endemic species, such as lemurs big and small, leaf-tailed geckos, the world's smallest chameleon, the beautiful sunset moth (*Urania ripheus*), a fabulous array of frogs and birds, and many others. The majority of species present in Madagascar are found nowhere else in the world, and swidden farming, logging, and mining constitute the principal threats to Madagascar's rainforest, spiny-forest, and dry-deciduous forest ecosystems.

Working to conserve Madagascar's nature through the establishment of new protected areas is not a simple task. Enormous amounts of scientific data are required to design nature reserves effectively. Unable to do this alone, my Malagasy counterparts and I decided to work with university students, none of whom had previously been involved in nature conservation or ecological research. Teaming up with a professor at the University of Antananarivo to build these students' capacities for environmental research, we trained them in field methods, worked with them to design their thesis projects, and provided the logistic support for data collection. This method of giving back has had lasting effects—I am proud that all eight of the students we supervised are still working in one way or another in nature conservation in Madagascar. Some have high-level positions of responsibility in various organizations. Though I believe we were able to help these students attain good careers and life-long skills, they gave back to us at the same time. Over several years, this team of students ultimately collected much of the core data that we needed—biological inventories and studies of how local communities utilized fishery and forestry resources—to design Madagascar's largest national park, the Masoala National Park (Kremen et al., 1999).

Relatively speaking, the data collection, which involved months of living in remote rural villages or in tents in the rainforest, was the easier part. Training the students in analyzing, interpreting and writing about their data was much harder. The educational system in Madagascar is largely based on rote memorization—thus students were tentative about drawing conclusions from their research findings. Further, the students had no background to speak of in statistics, so I had to teach them statistics, in French! Concepts like probability distributions and t-tests were difficult for them to understand. Finally, even entering data consistently, and then working with spreadsheets and spreadsheet functions, posed numerous challenges that had to be resolved, one by one. Computers were plagued by viruses; some data files mysteriously disappeared before we insisted that everyone backup their data regularly.

Giving back through capacity building was also a large part of my job as the Conservation Technical Advisor for the Masoala National Park project. In the early 1990s, few Malagasy people had a background in nature conservation. Thus I had to identify people to hire that had relevant translatable skills for key positions in our project. As it turned out, I found talented people chiefly from extractive industries. For example, the person that I hired as our Conservation Director was a forester who had previously been managing logging crews on a pine plantation. He quickly came up to speed on our conservation goals, and then multiplied my work as a capacity builder through his excellent work in selecting, training, and supervising local people from the Masoala Peninsula to be our conservation agents. Following creation of the park, many of these

agents went on to be park guards while he became the Park Director. He is still in conservation, although now working for Madagascar's National Park Service at a higher level. Similarly, another key member of our team was trained as a geologist and worked previously for Shell Oil. He had no background in conservation or Geographic Information Systems (GIS), but following training in GIS with partners at Stanford University, he became a key contributor to park design, and continued working on the interface between nature conservation and rural development for many years thereafter. I think that both of these individuals found not only a job opportunity, but their true calling, in working for people and nature.

3. Providing Work, Food, and Medicine

A second way I tried to give back to the communities that I worked in or near was to hire local people. Any expedition, whether to villages or rain forest, required substantial logistics. For example, for a typical biological inventory, we would hire 20-30 local porters and several local guides, trekking 1-3 days from the village into the forest, establishing a base camp, and then living with the guides at the site for several weeks to collect data. The porters would leave and then return at the appointed time to take us to the next site. Huge quantities of rice were required—as much rice was needed just to feed the porters during the trek in as for everyone in camp for several weeks! We had to hire an additional porter or two just to carry the rice to feed the porters on the trek. Giving back meant providing local employment, and bellies full of rice. One of our guides ate so much rice during the expedition that he left with his salary in his pocket, and a "second salary" packed into a noticeable pot-belly that certainly was not there at the beginning of the trip. The second salary was a source of amusement among our field team for months to come; it reflected the local attitude "*il faut profiter par l'occasion*" (it is important to profit by the occasion).

The local guides were invaluable research assistants, knowing the terrain, the flora and fauna (by local names), and the local customs, and able to supplement our steady diet of rice and beans with an occasional crayfish or eel from the streams. Around the fire in the evenings, we spent time learning from each other, words in English, words in Malagasy, jokes, and stories. While we learned much from them, we also helped them to gain future employment, through the training they received in scientific procedures and data collection, and in scientific and English common names of plants, birds, and mammals. Some of them subsequently worked as guides for other scientists while others became park conservation agents or ecotourism guides.

One of the most important benefits of employing local guides was that the people we hired realized for the first time that the plants and animals that were so familiar to them could excite wonder and amazement in the foreigners who came from thousands of miles just to see them. This realization allowed local guides to see that their flora and fauna had value. It promoted pride in their national biodiversity and a conservation ethic. In a sense, our excitement over these species was a form of giving back in and of itself. At the same time, it advanced our conservation goals, by instilling a conservation ethic in some segments of local communities.

Though these forms of giving back were generally appreciated by the community, it was not without its problems. Often, the porters would go on "strike" half-way to a given destination, leading to half-day delays while we negotiated their wages, as well as the consumption of additional rice! These strikes were extremely annoying, as the porters knew we depended on them completely, and the long waits were extremely tiresome.

Giving back also meant sharing items that were not easily available or affordable in Madagascar. For example, I always brought a substantial array of over-the-counter remedies with me. Ibuprofen and band-aids in particular were the things that I routinely dispensed. Working with colleagues in Madagascar sometimes presented some unusual challenges. For example, our project was head-quartered in Antalaha, a small coastal town, which turned out to have a dearth of affordable decent housing. Finding nowhere to go, my GIS employee and his entire family lived with me for 6 months until they finally could find a home of their own. I did not mind—in fact having the company was nice—but I felt that it perhaps made him uncomfortable since it may have felt that I was somehow "rescuing him" or that he was perpetually in my debt.

4. Creating Projects to Link Nature Conservation with Sustainable Development

Our project was not just about establishing a national park, but was also about finding incentives for local people to support conservation. This brings me to the third way we tried to give back—by working with local communities to develop projects that could produce income from conserving nature or sustainable use of natural ecosystems. Each project was a labor of love, requiring the investment of hundreds of hours of staff time, in conception and implementation. For example, we tried to establish a community cooperative to rear live butterflies from Madagascar for butterfly zoos in Europe and the US. We tried to establish a community-run sustainable forestry project to produce wood certified by the Forestry Stewardship Council. Neither of these two projects actually succeeded, possibly due to their complexity along the supply chain. We had more success fostering ecotourism to the Masoala National Park. The need to develop sustainable livelihoods for local peoples to replace income streams lost due to conservation is acute—and it was certainly very frustrating not to achieve greater success. It continues to be the biggest challenge in nature conservation today.

5. Conclusion

Looking back, the most effective and satisfying forms of giving back were capacity building and the creation of the national park itself—as these both led to long-lasting accomplishments. First, our capacity building was highly successful—the students went on to become influential conservation professionals, as did the conservation team leaders whom we "converted" from extractive industries, and the local guides continue to make their living in science, conservation, or ecotourism. Not only are all these people gainfully employed, but they are making a difference to conservation in Madagascar. The second accomplishment is perhaps more controversial. The Masoala National Park exists. While it is not perfect (its boundaries have been invaded on numerous occasions for

illegal logging and hunting), it certainly provides far more protection for the native ecosystems and species found there than would otherwise be the case. Thus, on the one hand it can be viewed as a lasting legacy protecting the "*patrimoine de biodiversité Malagasy*" (Madagascar's natural heritage) for future generations of plants, animals, and people, and thus as a conservation success. On the other hand, it restricts access by local people to resources essential for their own wellbeing (Golden, Fernald, Brashares, Rasolofoniaina, & Kremen, 2011). Conservation and development projects have largely failed to provide substitute resources and improve local livelihoods. Such contradictions are perhaps the norm rather than the exception for conservation projects including integrated conservation and development projects; thus there is still a huge need to figure out better ways to improve local livelihoods while promoting nature conservation.

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