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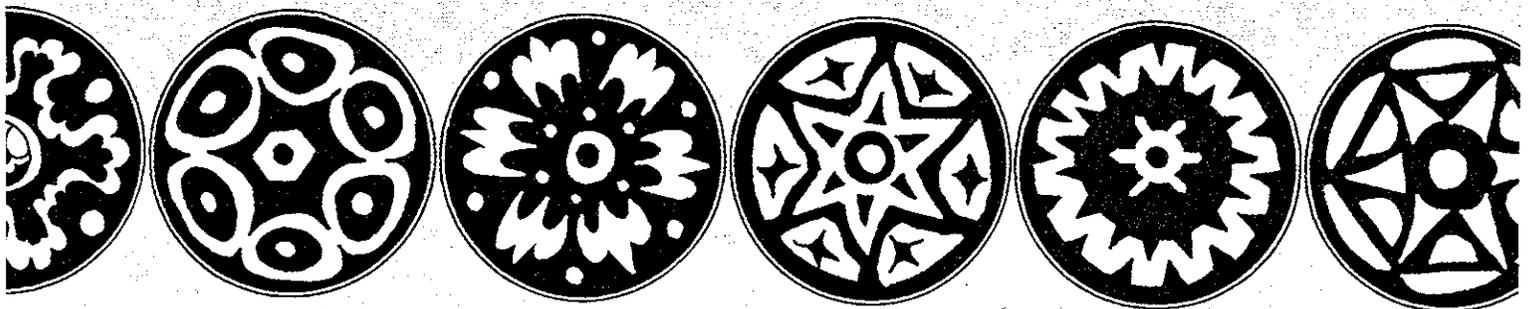
# Patterns in Conservation

*Linking Business, the Environment,  
and Local Communities in Asia and the Pacific*

BIODIVERSITY CONSERVATION NETWORK

WASHINGTON, DC

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## About This Book

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## About BSP

BCN is part of the Biodiversity Support Program (BSP), a consortium of World Wildlife Fund, The Nature Conservancy, and World Resources Institute, funded by the United States Agency for International Development (USAID). BSP's mission is to promote conservation of the world's biological diversity and to maximize the U.S. government resources directed toward international biodiversity conservation. We believe that a healthy and secure living resource base is essential to meet the needs and aspirations of present and future generations.

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## PREFACE

For nearly seven years the Biodiversity Conservation Network (BCN) has supported conservation efforts in 10 countries in Asia and the Pacific. BCN is a big program with a challenging mandate—to have a positive impact on conservation and, at the same time, analyze the conditions under which enterprises can create incentives for conservation and sustainable resource management.

But BCN is more than a big program or an interesting strategy. It is both big and interesting because it is, as the name says, a Network—a Network of more than 30 distinct projects, some 50 specific project sites, over 40 enterprises, and, most importantly, thousands of people in NGOs, small businesses and communities doing work “in the field.”

One of BCN’s primary objectives has always been to “get the word out.” It has always sought to be a conduit for letting the conservation and development community hear about the Network’s people, places, successes and frustrations. Through Annual Reports, “Lessons from the Field”, the BCN web site, maps, journal articles, and workshops and presentations that brought project staffs together, we have tried to be effective communicators of the lessons learned across all of the sites where BCN has provided financial and technical support.

This compilation is just one more of those communication tools. It consists of stories, interviews, and analyses that have been authored by various people connected with the Network. *Chapter One, Can Community-Owned Logging Concessions Work in Indonesia?*, is an interview, a format BCN has used on several occasions to ensure that the “voice” of

the project partners is being heard. In this case, staff from the Gunung Palung project sounds off on what one should consider if they want to start down the arduous path of developing a community-based timber business in Indonesia.

In *Chapter Two, In Search of a Cure*, Bill Aalbersberg of the University of the South Pacific (USP) has written (along with others) about the work he and his colleagues have done in Fiji to create an unprecedented bioprospecting agreement between an international pharmaceutical company, USP, and the coastal community of Verata. As you will see, it is a unique project that has, in unexpected ways, made a positive contribution to conservation and community rights to resources.

*Chapter Three, Butterflies Aren’t Free* and *Chapter Four, Charting Their Own Course*, were written by Nancy Baron, a journalist and biologist who specializes in biodiversity issues and has worked with BCN as a consultant for several years. Like many of us, she felt the Arfak Mountains and Padaid Islands projects (both in Irian Jaya, Indonesia) were the source of such great interest and so many important lessons about community-based conservation, she was compelled to write about her observations and experiences there.

*Chapter Five, Eco-Enterprises and Indigenous Peoples* and *Chapter Six, The Beauty and Danger of Ecotourism*, were written by former BCN staff, Chuck Encarnacion and Diane Russell respectively. Chuck cast an analytical eye on a variety of factors that had an impact on conservation and institutional development at two sites in the Philippines—one in Luzon and the other in Palawan.

## PREFACE

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Diane, on the other hand, focused on an ecotourism enterprise in the South Pacific. She did double-duty in the Solomon Islands as a paying visitor and as a discerning program officer who was, in small part, responsible for the management of the ecotour enterprise itself. As she trekked, she kept notes and, later, wrote about the experience and about ecotourism's contribution to conservation there.

Though the Chapters are varied in terms of "voice" and format, they do have a couple of common threads running through them. First, a focus on common conservation challenges and the lessons learned in facing those challenges down. And, second, candor. There is a pretty consistent ethic throughout the Network that conservation and learning can only happen when there is honesty about the opportunities as well as the problems and constraints of doing this kind of work in the field.

It is our sincere hope that the following pages are not only an interesting read, but also provide good, useful lessons and instruction for the conservation practitioner. Because the Network is so large, there are simply too many important stories to tell in this Compilation alone. We encourage you to check the *Appendix* for a partial list of other sources of information about BCN, the BCN web site ([www.BCNet.org](http://www.BCNet.org)) and, if that does not suffice, to contact our project partners directly. They have a wealth of knowledge and experience. While BCN as a program, ended on 30 September 1999, the vast majority of the projects (including all of the ones in this Compilation) will continue the work at their respective sites.

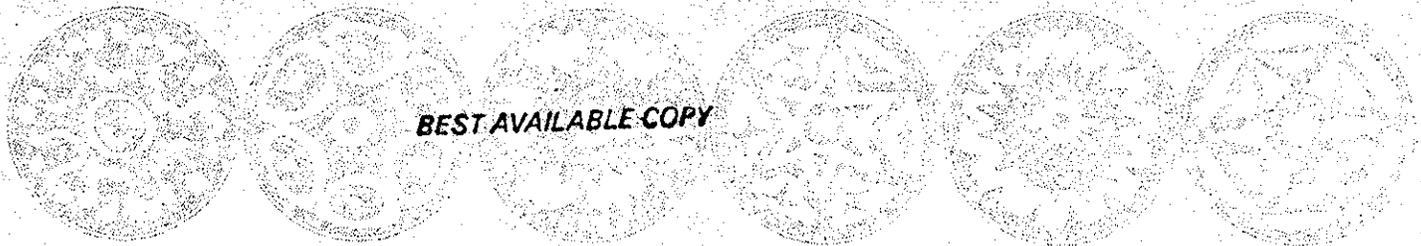
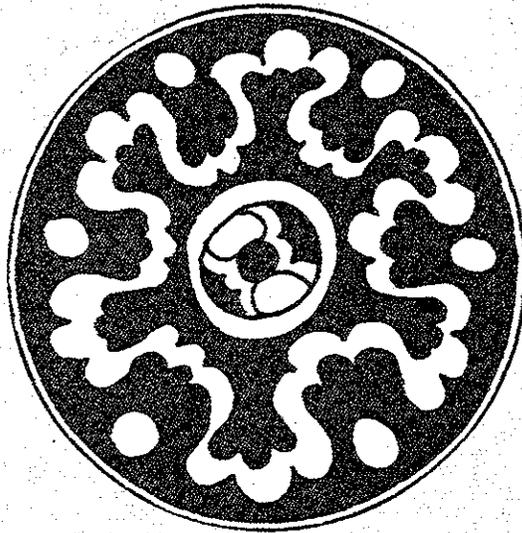
Finally, it should be noted that, in addition to the authors cited for each chapter, a lot of additional editing, writing, layout design and art work was done for these stories by Connie Carrol, Bernd Cordes, Cheryl Hochman, and John Parks (BCN), Sheila Donoghue (BSP), Nick Salafsky (the MacArthur Foundation), Keith Dana (Design Consultants), and Mike DuBois (Linemark Printing). As always, it was a team effort.

Bernd Cordes, *August 1999*

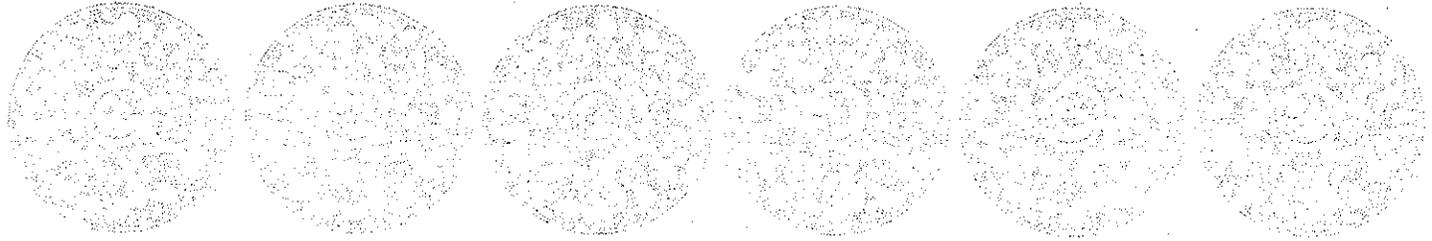
CHAPTER ONE

# Can Community-Owned Logging Concessions Work in Indonesia?

*By Bernd Cordes*



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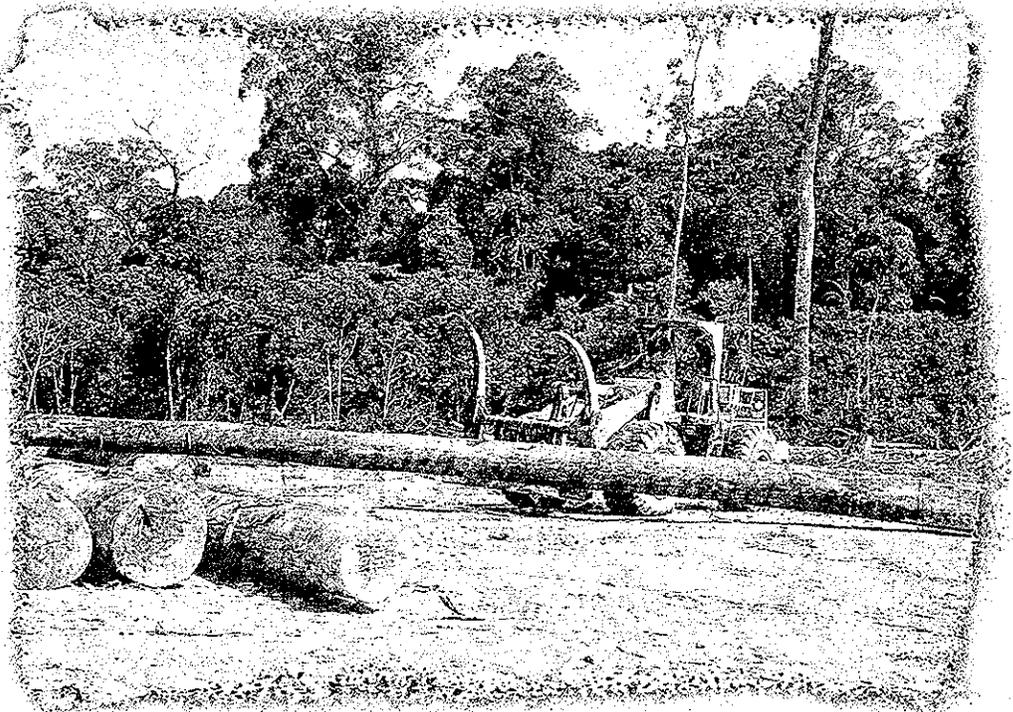
## Introduction

Indonesia's economy crashed. It's leader for thirty-two years was pressured to step down. A generally free and fair election was conducted. And a power struggle continues.

This has all been in the news. These are the big changes that everyone sees—the “macro” economic and political shifts. But there are less obvious changes happening at the “micro” level, especially where access to and ownership and control of natural resources are concerned. It's by no means a revolution, but slowly attitudes and assumptions are changing with regard to who owns what land, who has the legal license to mine what mountain, and who has the right to cut or conserve a forest.

As these assumptions and attitudes change, so do policies—with, of course, some well-placed “influence” from international lending institutions. No matter what the motivation, however, policies, including forestry regulations, are changing, even if only at the margins. New laws are being drafted, others revised, some scrapped entirely. As different interests try to influence what these new policies will ultimately look like, conservation and development minded people and organizations continue to do their work.

One project the Biodiversity Conservation Network (BCN) has been supporting since 1995 fits well into this scheme of things. Four years ago, BCN provided funds to Harvard



*The competition—legal and illegal industrial logging.*

University's Laboratory for Tropical Forest Ecology (LTFE) to try to establish a community-based, sustainable small-scale logging enterprise in the buffer zone of Gunung Palung National Park (GPNP) in West Kalimantan. The basic idea was to identify what valuable timber was left in a 6,000-ha concession area that has already been high-graded and left idle, design an environmentally and financially sustainable rotational cutting cycle, and work with community members and local hand loggers to transform the often illegal work they do into a well-managed and monitored local business. In short, if local people could be assisted to manage their own business, have legal access to the buffer zone, monitor their own cutting, and add value locally to the unsawn timber (which usually just floats downstream to an

**T**he communities with which the project is working most closely—at villages like Semanjak, Muting, etc.—are comprised of a mix of ethnic Melayu, Chinese, and Balinese groups who migrated to the area over the past sixty to seventy years. There is, therefore, little homogeneity ethnically or in terms of traditional patterns of resource utilization.

externally owned sawmill), they might have an incentive to stop going into the National Park and illegally cutting.

Such an activity was unprecedented in Indonesia for a whole range of reasons—forestry policies, tenurial rights, business practices, skill levels, etc. Nonetheless, LTFE, its local partners (i.e., Bina Swadaya) and the communities started down a path to try to make community timber harvesting happen.

Four years later, not a tree has been cut or sold. This is, of course, disappointing. It took over two years simply to get a Memorandum of Understanding (between the Indonesian Government and Harvard University) for the project to be able to go to the field and fully explore the idea through forest inventories, discussing with community members the structure of a potential enterprise, training community members in biological monitoring, etc. The project suffered a series of setbacks too long to list here.

Nevertheless, it is a project that not only still has a life, but has, in several ways, set a precedent for establishing community-based timber operations in Indonesia and is very well-positioned to take full advantage of—and even directly influence—the changes in forestry policy happening right now in the country.

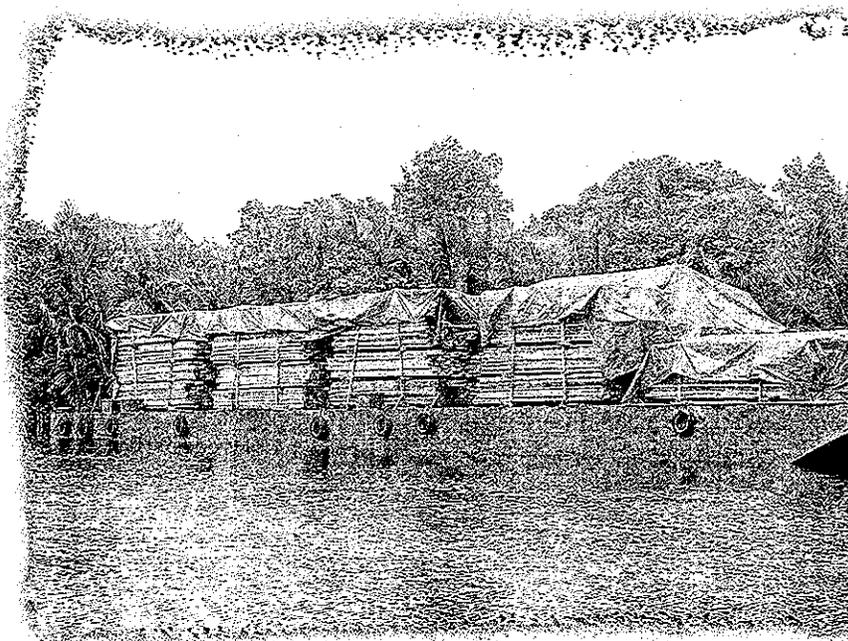
Much has been learned, and though no revenues have been generated, the project has had an impact on conservation in the area. That's what this article is about. BCN asked LTFE's staff, "If someone came to you today looking for advice on how to establish a community-based timber-cutting enterprise in Indonesia, what would you tell them?" After making it clear that "Don't do it!" was not an acceptable answer (at least, not without further elaboration), they reflected on their experience and came up with the following lessons from the field.

## Before You Do Anything In the Field, Know Who You're Working With

*The conversation took place in May 1999 with Edward Pollard (EP), Hikma Lisa (HL), Pahrian Ganawira (PG), and Marc Hiller (MH), all of whom were LTFE staff based in West Kalimantan. The quotes used are not exact transliterations, but are based on extensive notes taken during the meeting and on subsequent edits made by the interview participants.*

**BCN:** Suppose someone approached you today and said he or she was interested in starting a community-based timber harvesting business in Indonesia, and they want to start tomorrow. Given all that you have learned and experienced over the past three years, what would you recommend to that person?

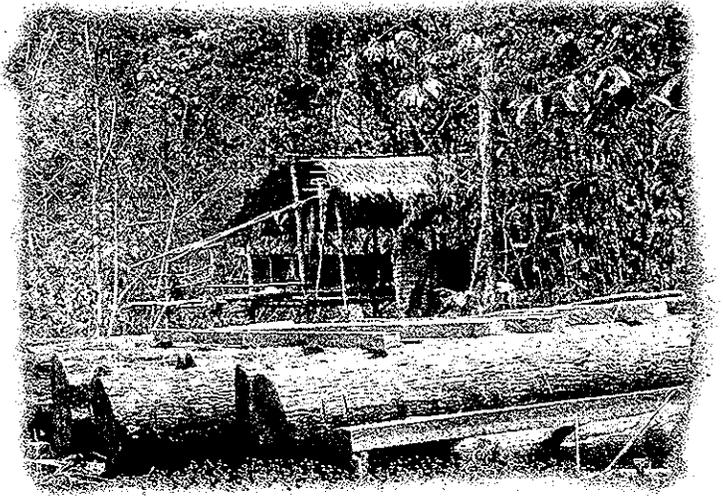
**EP/HL/MH:** First and foremost, we would say, "Know who you're dealing with. Know who the stakeholders are." I think what we didn't fully realize at the beginning was that we were working with communities that didn't have traditional rules or reasons for conserving the forest. These aren't really what you'd call "forest people"—not historically or culturally. They see the forest as a resource; a mine. It's not their forest either by traditional right or current legal standing. Some of them have a utilitarian stake in exploiting and managing the forests, but others don't.



*Processed timber coming out of the Bunung Palung area.*

About three years into the program, BCN staff realized that few of its project partners—whether local communities or international NGOs—could really define their project sites with any accuracy. If there was an existing tool to do that, none were using it. So, about three years into the program, BCN staff began to develop a “Site Definition Document” which was, in essence, an attempt to define project sites spatially (physical boundaries), socially (stakeholders), and temporally (project timeframe) with greater specificity than any of our partners had done in the past. In applying this “standard” across sites, the most consistently difficult element to pin down was, as experienced by the LTFE team, the stakeholder.

So, you have to define the site in terms of who you need to work with. And who you can work with. With us, the project area is in Simpang Hilir District, but many of the current hand loggers [legal and illegal] are from Sukadana District, so how do you decide who you’re going to work with? It’s hard to do, but decisions have to be made. We certainly can’t include the total population of the 14 villages in the project



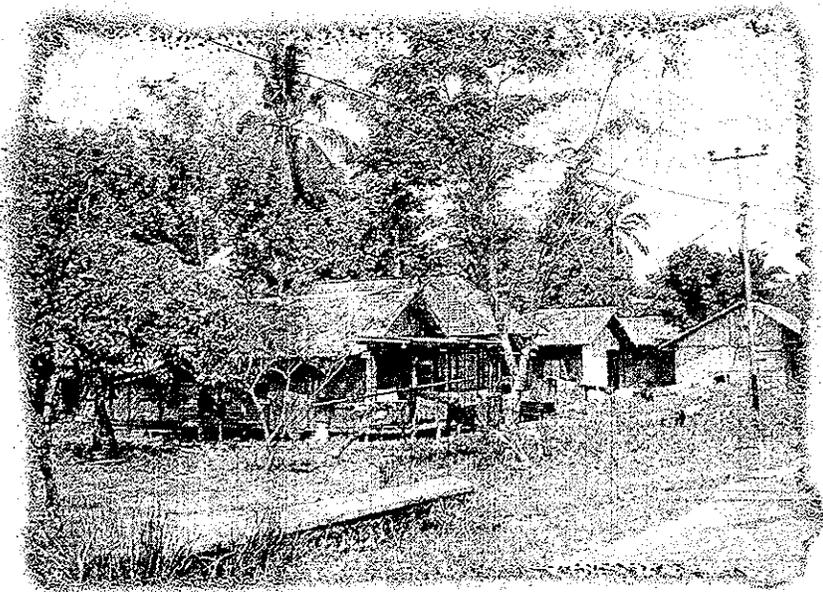
*A riverside logging site.*

area. That’s about 10,000 people. And at best the enterprise we are proposing can employ about 100 people—at first, anyway. You have to define things clearly with and for everyone involved. What are the limits? Who do you include? Why are you working with these people but not these others? We didn’t do this well enough at the beginning of the project, and we didn’t do enough to prioritize and weigh the importance of working with various subgroups and categories of people at the site.

### **Don’t Think About Top-Down or Bottom-Up; It’s Too Simplistic**

**HL:** Because we’re talking about CBFM [community-based forest management], it would be best if the planning process came “from below” and was initiated by the community. But this is too simplistic. Many people in the community will say they want a bottom-up approach. Some mean it, but others really want to be lead from above.

**EP:** It’s probably easier to try the bottom-up approach where there is a strong indigenous sense of community, maybe like a Dayak community. But with the Malayus and the villages where we are working, this is really difficult. Perhaps here there has to be some leadership from the outside or it won’t get done.



*Munting village.*

**T**he issue of whether or not “outsiders” are assisting or bulldozing is always a tricky one. One of the more frustrating and damaging elements of this project has been the way LTFE’s role has been perceived by the Indonesian and international conservation community. Most see this project as being a full product of Harvard University, with little or no input from the communities. In many ways, this is understandable. The initial project design, the cutting regime, most of the staff in the field, and the funding (through BCN) come from or through LTFE/Harvard. Also, except at the very local level, almost all of the interaction between this project and the Indonesian government has been managed by LTFE staff, and it’s true that most of the decision-making for the larger project issues has been made from Cambridge, Massachusetts rather than in the field.

But this isn’t the full picture. It leaves out the fact that LTFE was legally constrained from working more closely with the communities until a Memorandum of Understanding (MOU) was signed with the Indonesian government in 1997. It forgets that, throughout 1994-97 and beyond, Hikma Lisa and other LTFE staff, by visiting and living in the communities, worked hard to manage expectations, keep open lines of communication, and maintain community support in the face of all the legal and bureaucratic obstacles. It also neglects the fact that LTFE’s original local partner organization had, for very legitimate reasons, to be dropped from the collaborative effort at the beginning of the project, and that by early 1997, LTFE had begun to work with another Indonesian NGO partner, Bina Swadaya (BCN provided a separate grant directly to Bina Swadaya for its work). Finally, it does not acknowledge that this project probably never would have happened without LTFE/Harvard’s name attached to it. For better or worse, no community timber harvesting enterprise has made any headway in Indonesia or with the Indonesian government unless a large, influential international organization was involved.

The point? Any organization looking to replicate this sort of activity would do well to pay attention to the issues of “ownership” and perception, especially given the sometimes competitive and well-founded, skeptical nature of Indonesia’s conservation and development community.

**HL:** But it’s always important to have a representative from the community at planning meetings. It’s important so that the community can have a true sense of ownership and belief in the project, rather than seeing all the work as coming from an outsider. That way, it’ll be enough for the outsider to just provide suggestions—and not commands—to the people below who are doing the work in the field.

**BCN:** *In terms of community ownership, what else would you recommend?*

**HL:** After working for almost four years on this project, I came to the conclusion that it is just plain hard to do any conservation project in a developing country like my own. Why? At this stage, I believe people are ready for development, not conservation—that is, if they are implemented separately. By “people” I mean the community and other stakeholders in the local government. In the field, I find that people in the community can’t really commit to conserving the national park when their stomachs are empty! By that I mean the community members are ready to develop their own skills and capacity to meet their own needs as well as conserve the national park.

**EP:** Exactly. The point is that development and conservation need to happen simultaneously. One needs to be the flipside of the other—you can’t do one without the other. There shouldn’t necessarily be a distinction between the two. That’s what this project and BCN are about.

**EP/HL/MH:** But making sure people feel ownership can also raise expectations. Things would have been easier if we had done more socioeconomic baseline work at the beginning. People’s expectations two or three years ago were just way too high. To an extreme it would have been better, maybe, if we had come in and said to people that we were just Harvard researchers and not told them about this idea for a community-operated timber business, do the preliminary research and work out if it was possible. You don’t want to deceive people, but you also don’t want to raise expectations, and that’s really difficult when you start talking “project.”

Sometimes it’s just more advantageous not to include the community—and not only to keep expectations down. For example, we included community members in our inventory of the forested area. Later, because they knew what was in there and because so much of the other nearby forest was burned in 1993 and 1997, some of them went in illegally and started cutting! People can’t wait and won’t wait.

Even with the MOU, we aren’t allowed to cut. And before there was an MOU, we couldn’t really do anything. Lisa couldn’t even do the household surveys, really. Yet, we were asking the communities to be patient. This really made Lisa’s job tough.

## Location Is (Almost) Everything

**BCN:** *If you're going to do a community-based timber business, does it matter where you work?*

**EP/MH:** That the project area is next to a national park probably complicated things a bit, but it's not necessarily a limiting factor. But it is true that now we spend less time with officials at the forestry offices in Jakarta and a lot more with local park officials on policing issues, boundaries, surveys, and things like that. What it comes down to is, if you care about the park and conservation, and are interested in buffer zone management, do it there. If you only care about creating an example of community forestry, the enterprise and the bottom line, pick a different place with fewer complications.

**BCN:** *At first, the project was intending to work at two sites along the park borders, but only one site went forward. Did this have any impact on the project?*

**EP/HL/MH:** We limited ourselves to working with one group of people, one community, and one piece of forest. Hypothetically, it might have been easier to work at the other site, Kembera, because there most people are Dayak, with cultural links to the forest, more of a sense of community and stronger adat [traditional laws regulating resource use]. But, there



*Sometimes it's more advantageous not to include the community [from the beginning].*

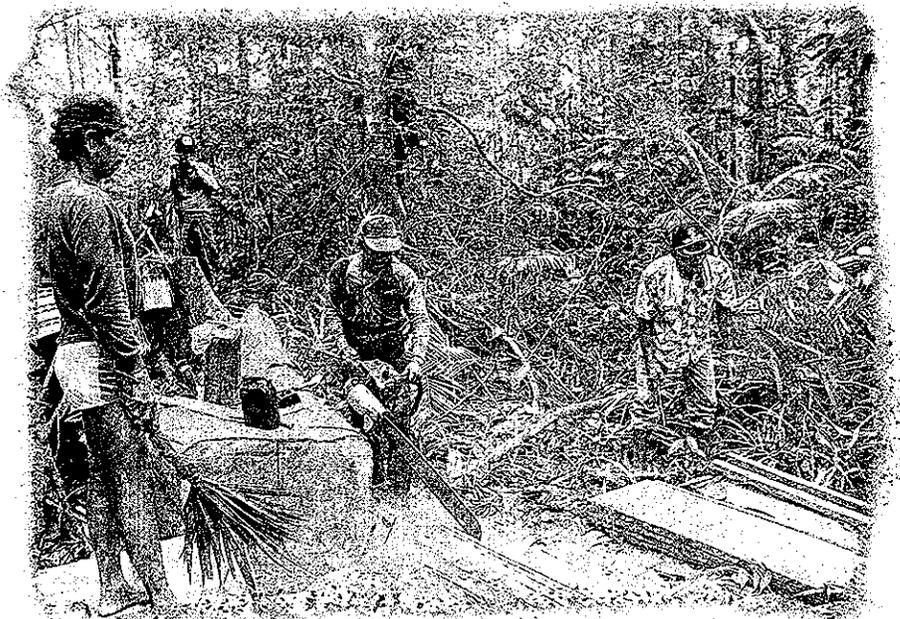
*You don't want to deceive people, but you also don't want to raise expectations.*



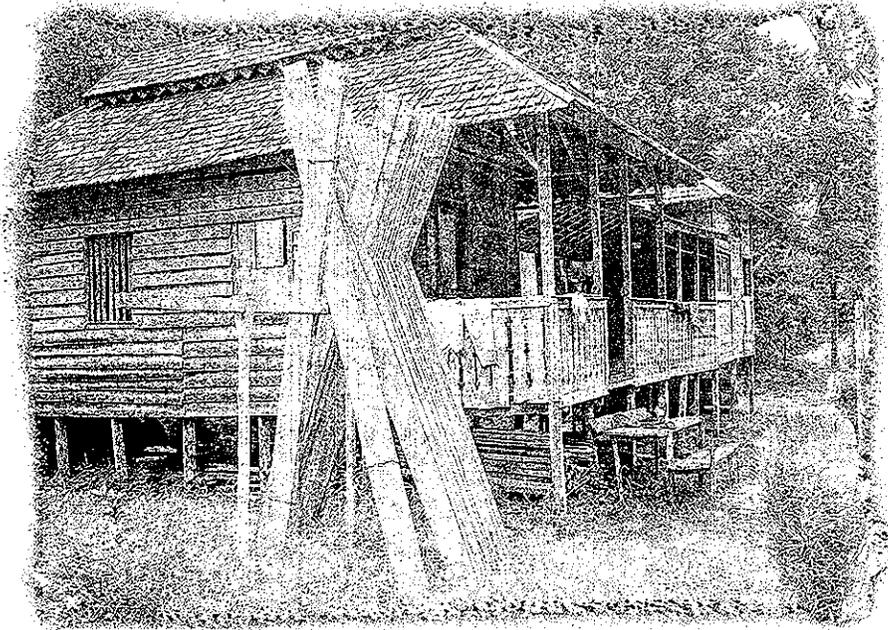
would have been complications there, as well. In fact, they [Kembera] ultimately decided they didn't want to be part of the project. If they don't want to do it, you can't force them. Kembera is already selling wood to local concessions, anyway.

Not working with Kembera is OK, except that it limits us to one project area, one forest. If you want to do this type of business, you have to make sure first that there is enough good quality forest, not minimal amounts of commercially valuable trees. When we first did our estimates of the area, our numbers were too optimistic. This is partly because we didn't yet have the government's permission to go in and do a thorough survey. We didn't get that until later. So, our projections were off.

**A**s part of their work, LTFE staff has spent nights with hand loggers in the forest. These hand loggers have plainly stated to project staff that, until an agreement is signed that allows a community-based timber harvesting enterprise to start operating, they will continue to cut trees in and around the national park—because they need the money. They say that once the agreement is signed, they'll support and work with the project on its sustainable management and conservation goals. But until then, no one should expect them to stop cutting in the name of conservation.



*Hand logging with chainsaws.*



*Processed timber for local use.*

## Figure Out Who the Important "Gatekeepers" Are

**BCN:** *So, if I decided to look into taking over one of these former concession areas, who would I talk with? Who did you talk with?*

**EP/HL:** Right now, because of SK677 [a newly developed community forestry initiative being worked on by the Indonesian government], you have to talk with government officials at the provincial level. But this was different before. It changes. In 1997, we needed a lot of face time with the Ministry of Forestry at the central [Jakarta] level. But now we're having to make up for not investing enough time in our relationships with local government and military officials involved at the district level. It's all so personality driven.

Of course, if the area did have a lot of commercially valuable timber left, they [the government and the company holding the concession title] never would have allowed the project to start in the first place. It's a vicious circle. The area has already been picked over, so timber value is lower overall, which necessitates a larger forest area to reach economies of scale, which hurts the conservation goals of what you are trying to do. On the other hand, that's where the greatest opportunity is for these types of community-based projects—especially now in Indonesia. Go in and look at these former concession areas that are no longer being actively cut by large logging companies. Some think the only other option is conversion of these forests to plantations, such as oil palm. These areas, however, may still have enough wood to maintain a small-scale community enterprise. For communities it then becomes a matter of getting the legal access to use and manage resources.



*If you care about conservation and are interested in buffer zone management, do it next to a park. If you only care about creating an example of community forestry, the enterprise and the bottom line, pick a different place with fewer complications.*



**HL:** It's difficult to "socialize" the project at the provincial government level because it's a new idea to them. In Jakarta, the ministry had a similar idea, so they were thinking along the same lines. But they didn't have any policy to follow it through. That's why we had to get an MOU [or some other exception to existing laws like it]. Now that the current forest minister, Pak Muslimin, has put out instructions for CBFM, it's easier to socialize people.

**EP/HL:** There's so much turnover, and now there's this move toward decentralization in Indonesia. This is a real problem. With all the changes in the country, our government counterparts in the field are constantly changing, leaving, or being replaced. Every four to six months we meet someone new. This is a bit frustrating because we are always having to re-educate new people about the project—starting from the very beginning of the project. You put all your eggs in one basket, then they remove the basket. And the government officials themselves never transfer information to their replacements. So, you need to pay constant attention to face time.

**PG:** Like Ronnie [Cherry—former project leader in Pontianak until mid 1998] talked with people at the provincial and district levels all the time, trying to improve the relationship and understanding of the project between the different government offices themselves and between them and LTFE, but it didn't always work very well.

## CAN COMMUNITY-OWNED LOGGING CONCESSIONS WORK IN INDONESIA?

**BCN:** *So, what would you recommend to deal with the turnover problem?*

**EP/HL:** Having permanent field staff is one very important way to deal with it. Not only so there's some consistency with our relationship on the government side, but also with the community. Too much project field staff turnover has a definite negative influence on how things go in the field, especially with project management. Almost every time we have someone new come along, we have to start our own orientation process over again—language, introductions to governments officials. It just increases confusion.



*If you want to do this type of timber business, you have to make sure first that there is enough good quality forest, not minimal amounts of commercially valuable trees. When we first did our estimates of the area, our numbers were too optimistic.*



**BCN:** *Who, other than government officials, should you talk with?*

**EP/PG:** You also need support from the local police, because they're rumored to be involved in the illegal wood trade as well as in enforcing laws. They work both sides of the business. And help is needed from the stakeholders themselves in terms of socializing new government officials.

**HL:** In my opinion, conservation can only be achieved if the community has a sense of belonging to or ownership of the nature reserve. You have to talk with them always. So far, people in the community only have a general sense of belonging where their forest gardens are concerned, because they own those gardens. That feeling doesn't extend to the park. Also, in the field, the project will always face the challenge of dealing with people who have similar, competing interests—that is, timber. Like the *toke*, timber bosses, or government people. People like this will always be influential in ways that can defeat the project. Aside from that, there are also challenges with hand loggers from the communities themselves, where many individuals simply prefer to work independently from other people or companies, and to work on their own schedules.

**BCN:** *What legal issues should one be aware of?*

**EP/PG:** You have to get support from officials at the kecamatan [district] level. By doing this, you can find out who

**W**hen the project was first conceived, there were two project sites; one in the area near Semanjak, and the other in the area around Kembera, a village on the other side of the national park. After the initial planning phase, Kembera opted out of the project. There are various reasons and stories behind this decision, including a falling out between Harvard/LTFE staff and the community, unreasonable demands of the project (e.g., the construction of a road) from community members, the community's desire to pursue rubber plantation development, confusion with mapping exercises and with political and cultural agendas. Whatever the real reason—always hard to decipher in these situations—the end result was the project's focus on a 6,000-ha former concession area near Semanjak and an agreement that the project would no longer work in Kembera.

**A**n interesting aspect of this project is that the LTFE staff never really had to work or negotiate directly with the entity that actually holds title to the former concession area. Though representatives attended project presentations on occasion, 99% of the work was done with government officials. For example, the MOU allowing the project to enter an exploratory phase makes no mention whatsoever of the parastatal, PT. Inhutani II, which currently holds title to the 6,000-ha area designated as the proposed cutting site.

**W**ith all of the changes going on in Indonesia, public auctions for former concessions (some of which have been taken away from companies deemed to be irresponsible cutters) have already started in Jakarta.

**H**ikma Lisa is the only Pontianak-based staff member who has been with the project from its inception. In many ways, she is the project's continuity in the field. Because LTFE has had a field research station in Gunung Palung National Park since the early 1980s, there have been many young, talented people assisting with this project, but usually for a short-term and on a semi-voluntary basis. Over the past two years, however, more Indonesian and expatriate staff have come on with the understanding that the commitment is a bit more long-term.

**A**toke is, essentially, a middleman. He provides advance money to hand loggers, who then take it, buy food and other necessities, then go into the forest to cut timber, both legally and illegally, for weeks at a time. This system of advance money, repayments, etc. often puts hand loggers in a debtor's position from which they have a difficult time escaping, especially since they add no value to the timber and, therefore, cannot capture a greater share of the earnings. They just provide the raw material to the toke and earn very little cash per unit. One goal of this project is, in fact, to provide hand loggers with an alternative to this system. As a result, it is a direct threat to some tokes.

**I**n addition to this project, there are at least two others in Indonesia that have tried to establish community rights to cut timber. In all three cases, different legal and extra-legal mechanisms were used. That is not to suggest that the work is illegal, it just means that special permits and exceptions were made with different government entities and communities to allow the projects to move forward.

exactly has jurisdiction over the area where you're working. Then, you have to learn what the national and local laws are. What might end up happening, though, is that you have to try to find special arrangements to change a law or to get exceptions to it. Sometimes you can't change a law because it doesn't exist. So, you start to circumvent or create agreements, but you have to be careful not to undermine any existing laws. This sounds contradictory, but it's because many of the forestry laws are themselves too contradictory to follow.

## Paying For It

**BCN:** *What would you recommend in the way of financing a community-based start-up?*

**EP/MH:** Despite all the problems associated with it, grant funds are the easiest way to fund the project. But it depends on how financially sustainable you need the business to be, and how fast. It would be great if you could get up-front capital, but it's tough if you expect no returns for at least three years, especially when you have all these other non-business, conservation-oriented agendas attached.



*There are challenges with the hand loggers from the communities themselves, where many individuals simply prefer to work independently.*



In other words, it might be good to get a mix, where research and development is funded by a donor, but other business-specific things are capitalized through loans or something. If the baseline [biological and socioeconomic] information is already there, you don't need so much, especially, of course, if you're less interested in long-term biological and social sustainability and are more focused on the bottom line. But we have these conflicting goals of sustainability and financial returns. This makes it tough. There aren't a lot of loans out there for a business with conflicting definitions of sustainability and viability.

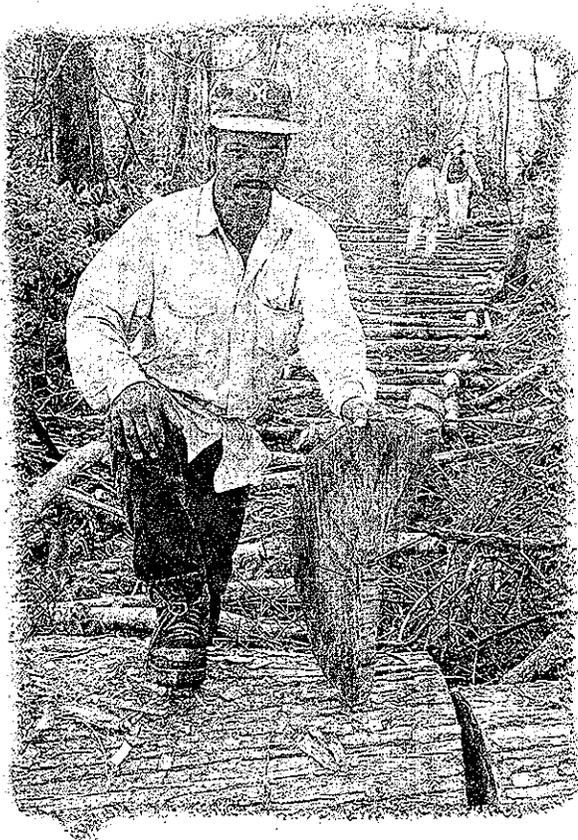
However you do it, you have to guarantee there is enough money to keep the project running for at least a five-year period! So all the project and business activities can be run as

planned. Short-term budgeting won't accomplish your goals. If the project runs out of money, problems in the community—such as a lack of trust in similar, future projects—will eventually come up.

**PG:** One strength of this project is that we've done it relatively cheaply. But this hurts at the government level. You need a lot of money to get their attention. For better or worse, doing this type of work can be easier when it is government to government [a reference to another community forestry initiative in West Kalimantan] rather than NGO to government. Still, LTFE was given a government counterpart to make things happen because we had a name [Harvard] and enough funds to get things started.

### Giving Something Back

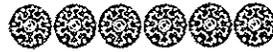
**BCN:** *What distinguishes your work from a regular timber concession is the attention to the community-based element of the timber*



*Taking the trees down a wooden "rail" system.*



*You [might] have to try to find local, special arrangements to change a law or to get exceptions to it. Sometimes you can't change a law because it doesn't exist.*



logging concession would be for LTFE, not them. We're trying to change this, but they don't understand. It's hard to change perceptions once they start.

**PG:** This is especially true with cash benefits. Until benefits start to flow to the community, it's hard for people to think that the resources and the project belong to them.

**HL:** They need to work in the field or get money to feel this sense of ownership and benefit. Without the MOU, we were restricted as to who and how many people we could employ. People weren't happy about this. Of course, even if the MOU allowed us to start the business, it wouldn't have mattered much since the timber business alone can't possibly employ all of the hand loggers and other people from the villages.

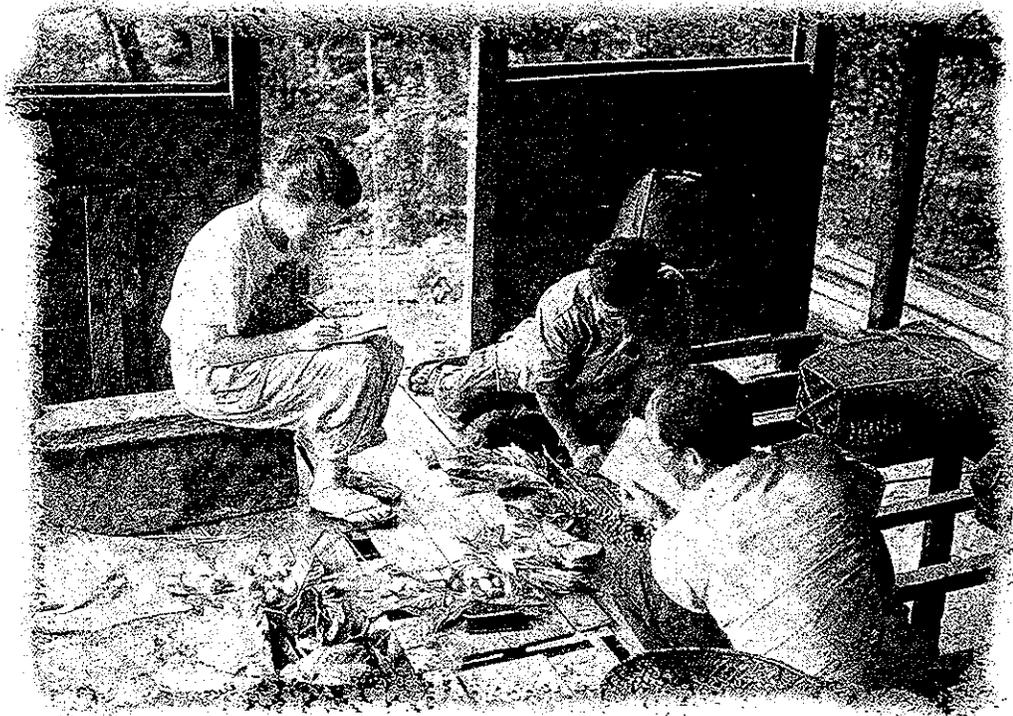
**EP/HL/MH/PG:** Still, some people have become too dependent on the project because they always thought they would make quick money from it. And the regent from Ketapang [the capital of one of the two districts where the project works] hasn't been very supportive of the project because, he said, the project wasn't distributing enough benefits back to the community. But what is "enough?" Can't cash benefits be replaced by other things, like public facilities, in the community?



*We have these conflicting goals of sustainability and financial returns. This makes it tough. There aren't a lot of loans out there for a business with conflicting definitions of sustainability and viability.*



We also learned that kids are starting to work and cut timber at age 12. If you can only employ 100 people, even if they're foresters, you can expect that 12 year-olds will also be



*Inventorying forest plants and trees.*

logging or want to be employed, not just the heads of households. It gets back to the idea of knowing who you are working with and understanding who's cutting the timber.

## Mixing Strategies

**BCN:** *So, if the timber business isn't enough to create incentives for conservation, what else can be done?*

**EP/HL/MH:** We probably would have been better off if we considered other strategies for buffer zone management at the very beginning. If you want to do good community-based forest management, you need to combine cutting with other strategies. It's not enough to do it alone.



*If you want to do good community-based forest management, you need to combine cutting with other strategies.*



Actually, there already was community-based forestry and timber-harvesting at the site, even before we arrived. They were already logging. It just wasn't sustainable. But why should people change their practices? What's the incentive? The concept [community-based logging] isn't new. It's not necessarily a way of increasing revenue. It can, but not if the process of implementing it is too top down and you're just telling people to change without giving them a tangible incentive. If we just wanted to set up an example of community-based forest management it would have been easier to with a community that was starting from scratch, that wasn't already logging, but there was more to this project than that.

**EP/HL/PG:** In the past, the Indonesian government saw the forests and thought, "How can we make more money from this?" A whole generation has to change ideology. Policies have, in the past, been made without consulting CBFM practitioners. Fortunately, that's changing now, but the Indonesian bureaucracy is so big, there are so many people, it's hard to change people's views of national parks and buffer zone management. But that's what has to be done, that's the answer. Foresters and bureaucrats have very conservative ideas about conservation. Our project is especially controversial because we're saying that we want to cut

## CAN COMMUNITY-OWNED LOGGING CONCESSIONS WORK IN INDONESIA?

trees to save forests. We still don't know if it can be done in Indonesia.

**T**his is, of course, part of the point of the project and its design: to work with current hand loggers to add value locally by introducing new skills and a community-owned and operated sawmill. The idea is that this might give a greater incentive—along with greater access to and control over local timber resources—to community members so that they will have a vested interest in more sustainable yields, based on a carefully devised rotational cutting regime.

So, given all of this, we return to the original question: "What does one need to know to start a community-based, sustainable timber cutting operation in Indonesia?" To sum up the observations and experiences of the LTFE staff, if it is going to work in Indonesia, one must:

1. Know the community;
2. Determine if the resource base is really enough and benefits won't get spread too thinly;
3. Know all the stakeholders and try to keep them happy, but make no promises; and
4. Beware—laws that exist in Jakarta may not exist in the field, and visa versa.

Finally, as the LTFE staff put it, "It's hard work, don't expect anything to happen overnight. But it's definitely worth the effort." For conservation and for the communities.



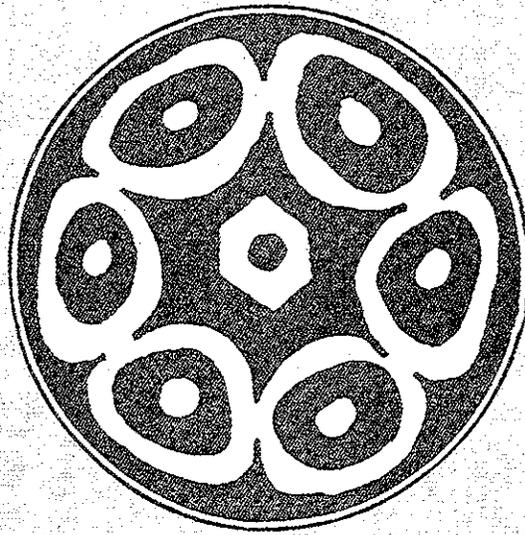
*Rubber-processing.*

CHAPTER TWO

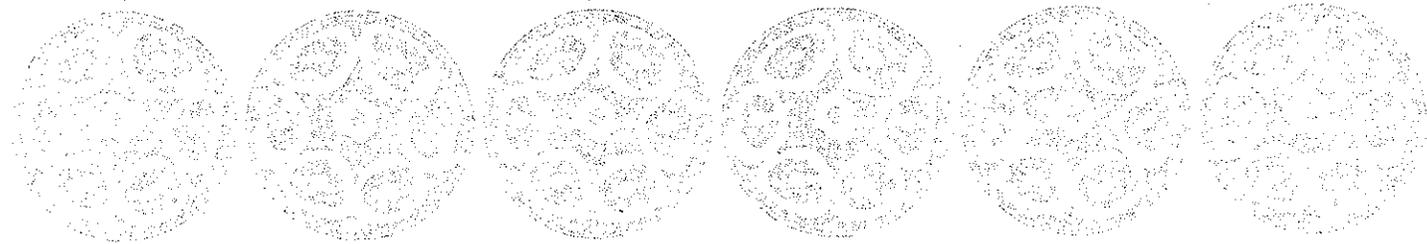
# In Search of a Cure

## Bioprospecting as a Marine Conservation Tool in a Fijian Community

*by William G. Aalbersberg<sup>1</sup>, John E. Parks<sup>2</sup>, Diane Russell<sup>3</sup>, and Isoa Korovulavula<sup>4</sup>*



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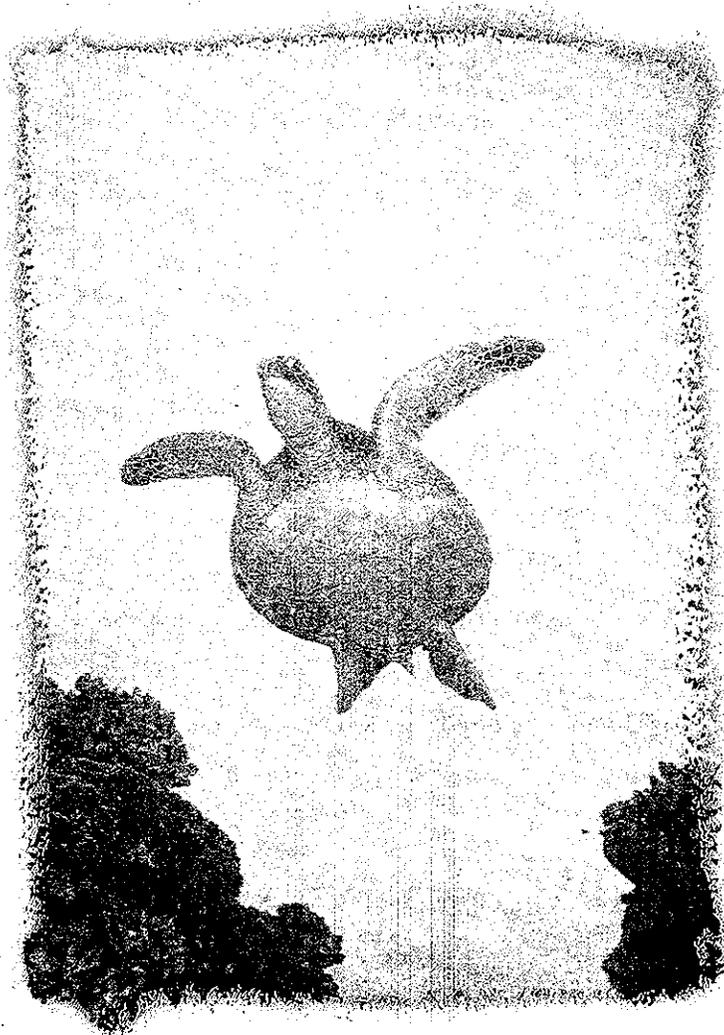
*For thousands of years our ancestors have lived off an ocean whose reefs have been and still are home to a wide range of marine life. Our affinity with the land is, therefore, not merely land-based, but literally extends beyond our shores to encompass the ocean and the reefs that surround us. The reefs are part of our vanua, our identity as a people, and it is an essential element that ensures our very survival as i taukei. Without our reefs, we are sunk in every sense of the word.*

*As major international corporations search for supplies of coral, they look to countries like Fiji, where there is little or no protection for the resource owner, the i taukei ni qoliqoli. Their resources are slowly being depleted, and while these major corporations make millions out of coral, the i taukei receive very little compensation. Logically, they really should be some of the wealthiest people in the country.*

—Prime Minister Sitiveni Rabuka, at the Launching of the Pacific Year of the Coral Reef Campaign.

## Overview

During the colonial era in Fiji, the rights of native Fijians were taken into consideration to a greater extent than in many other colonies. As migrants from other countries and laborers primarily from India moved to Fiji, a large proportion of the land was reserved for the indigenous Fijians. This land could not be sold or otherwise permanently alienated. As a result of this policy and the continuity of local political structures, indigenous Fijian villages have deep social and ecological grounding. There is a tremendous sense of place. Landowning mataqali or family groups continue to manage lands in their territories, and often that control extends as far into the sea as local boats can go. Government consults with chiefs on fishing licenses and other permits for use of the resources, and outsiders pay leases to the mataqali for such uses as hotels, dive areas, plantations and even access roads.



*"The reefs are part of our vanua, our identity as a people, and it is an essential element that ensures our very survival ..."*

*Photo: John Parks*

The picture is not totally benign, however, with respect to biodiversity conservation. While the forests and coral reefs of Fiji house many plants and organisms with medicinal potential, there are both internal and external pressures on these resources. Internally, the population grows and intensifies resource use for commercial and subsistence purposes. Land leases and extractive licenses are a source of income for the mataqali, but lessees do not have incentive to conserve. Waste disposal is a problem. Externally, industries such as logging, coral harvesting and mining encroach on the land and sea resources. From the quote on the previous page, one can see that the Fiji government is concerned that communities are not getting a fair share of the revenue from these extractions.

Conservation groups seek ways to help communities to husband their biodiversity in the face of these pressures. These groups know that it is not enough to tell people to conserve. There must be incentives, coupled with awareness of the benefits of conservation. As many of the pressures revolve around increasing commercialization and need for cash, enterprises that generate cash benefits to communities are often part of incentive packages. But community-based enterprises such as small-scale ecotourism and the processing of forest products are risky endeavors with steep start-up and maintenance costs.

What are some more innovative, less risky ways to generate benefits that could provide incentives to conservation? If set up in an ethical way in partnership with a reputable company or research institute, bioprospecting offers an attractive alternative—an enterprise that carries little risk to the communities and offers fairly substantial cash benefits. The incentives to conservation include not only the cash from sample fees—and potentially from medicines produced from the samples—but the increased awareness of the value of biodiversity as a result of the prospecting. Community members can be trained as sample collectors, processors, and to monitor populations of key species.

Within the bioprospecting partnership, the institutions shoulder any financial risk. In addition, there is usually not a



*Conservation groups know that it is not enough to tell people to conserve . . . there must be incentives, coupled with awareness of the benefits of conservation.*

*Photo: John Parks*

heavy time outlay involved so that community members do not risk losing time away from other important activities. An added benefit is that, further down the line, communities can use cash benefits to finance other enterprise or conservation activities. The skills used can be transferred to other resource management and research and extension functions.

Despite these benefits, many community activists and scholars express profound concern about bioprospecting as an appropriate venture for communities. These concerns center on the intrinsic inequality between a community and a large, profit-making corporation as well as the difficulty of figuring out the magnitude and distribution of benefits. As some bioprospecting ventures involve the identification of bioactive species based upon local knowledge, there is worry that intellectual property rights will be respected and rewarded.

There are other downsides to bioprospecting, inherent in the nature of the enterprise. For one, short-term financial benefits from sample fees are not sustained for very long—there are a limited number of samples that can be obtained from any one site.<sup>5</sup> Second, while there is low risk, there is also little investment in the community in terms of infrastructure.



*Despite these benefits, many community activists and scholars express profound concern about bioprospecting as an appropriate venture for communities.*



Finally, the per capita magnitude of benefit may be quite low, too low in fact to present an attractive alternative to extractive activities.

This case study illustrates how a bioprospecting venture, informed by the concerns expressed in this overview above, sought to work with a community in Fiji to maximize the economic and conservation benefits. A key feature of this story is the determination of the main partners to work patiently through each step of the process and retain a vision of an equitable bioprospecting agreement with long-term benefits for all partners. One result achieved already is significant advance at the national and institutional levels in policies about bioprospecting. Another is the boost given to ongoing conservation and development initiatives in the community.

The case study first describes the bioprospecting project in general, then briefly depicts the community and the site. The next section focuses on project activities with the community, including resource management workshops, relations with community residents living in the capital, and biological monitoring activities. It describes how community leaders were trained in monitoring and gave a presentation on their program at an important international conservation conference. The study concludes with future activities planned for the project and the community.

### The Project

Since the University of the South Pacific (USP) was founded in 1968, one of the main research areas of its Chemistry Department has been the isolation of natural products from plants used for medicinal purposes in Fiji. These efforts have been hindered by lack of scholarships for postgraduate research students and dependence on informal contacts in developed country laboratories for spectra required for structural determination and for evaluation of biological activity. A number of overseas researchers made large-scale collections of plant and marine organisms in Fiji. Usually ostensibly for "academic purposes," these samples often ended up being tested by large companies for possible commercial development. In most cases, this work was done with minimal, if any, USP involvement.

In 1995, USP applied for and received a planning grant from the Biodiversity Conservation Network (BCN). With funding from the BCN grant and a close partnership with a pharmaceutical company, USP planned to expand work into

the marine area and upgrade its facilities to add value to local samples before they were sent overseas.



*There are other downsides to bioprospecting, inherent in the nature of the enterprise.*



From the outset, the developers of the project saw bioprospecting as a means for furthering community development and community-based conservation as well as scientific knowledge. Due to the range of biodiversity and interest in conservation, one coastal community, Verata, and one rainforest community, Namosi, were chosen as source areas. Traditional leaders in both areas were recent graduates of USP and had expressed concerns about environmental threats—overfishing in Verata and logging and mining in Namosi.

Finding a pharmaceutical company partner was at first relatively easy. USP approached Dr. Brad Carté of Smith Kline Beecham (SB) who had been collecting marine samples in Micronesia. Dr. Carté's professional reputation, his interest in equitable benefits for source countries, and his emphasis on the marine environment that is so important to the Pacific region made collaboration with him and SB attractive. He responded positively to the request that SB extends its work to Fiji.

The discussions leading to the development of an equitable prospecting agreement began in a virtual policy vacuum. None of the parties involved—USP, SB and the Fiji government—had any stated policy on bioprospecting. These institutions realized the benefits of using their involvement in the BCN project to develop such guidelines. The development of these policies was aided by a growing literature, including Biodiversity Prospecting put out by the World Resources Institute in 1993 and a number of position papers by Sarah Laird and others.

The original discussions on, if, and how bioprospecting could take place in Fiji were held with the Environment Department. Fortunately, a bright young scientific officer, who also happened to be from Verata, was in charge of these talks. He called together a working group from relevant government ministries that set the parameters for this particular project and eventually for bioprospecting in general in Fiji. Government ended up choosing a regulatory role to define the approval process and also to ensure that the rights of communities were protected.

After the national government approved the project, USP and its partner non-governmental organization (NGO) the South Pacific Action Committee for Human Ecology and



*The discussions leading to the development of an equitable prospecting agreement began in a virtual policy vacuum.*



Environment (SPACHEE) approached the provincial governments for native affairs with jurisdiction over Verata and Namosi. In both cases, the heads of the provincial government were also traditional leaders and had close connections with USP. Once these leaders were satisfied with the proposed activities, they arranged for someone to accompany the USP team to the villages. In Fiji, the indigenous people own the land, traditional authority is respected, and government is seen as protecting traditional rights. Thus following traditional protocols made approval for bioprospecting by the community very likely.

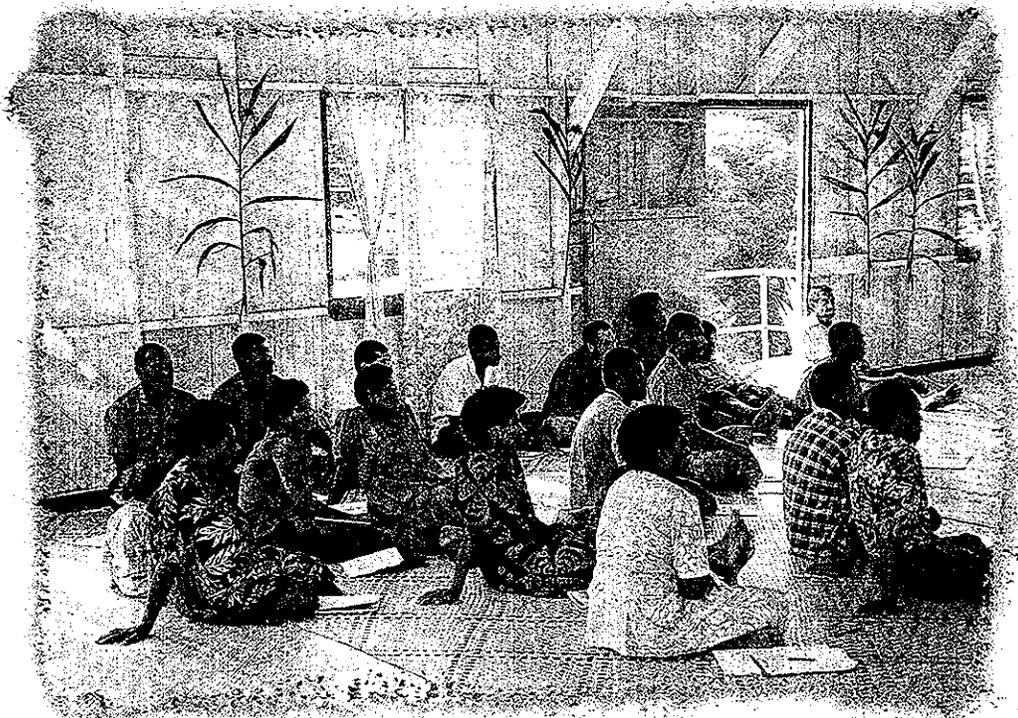
The next step was the development of the formal bioprospecting agreement. Brad Carté suggested that the project team recruit Charles Zerner, leader of the Natural Rights and Resources Program at Rainforest Alliance, to advise on

equity issues. Zerner in turn advocated bringing in Michael Gollin, a leading authority on bioprospecting contracts. In October 1995, USP, SB and other members of the project team met with a representative of the Fiji government and the Verata community.<sup>6</sup> Mr. Gollin acted as facilitator and the World Wide Fund for Nature/South Pacific (WWF/SP) agreed to act as rapporteur. Mr. Gollin had earlier prepared a questionnaire for stakeholders asking what they wanted from the agreement and any constraints they felt in joining it. For the meeting, he drafted an outline document based on responses to the questionnaire. The meeting was unusual in that it was held in the source country and open to a variety of stakeholder representatives.

One of the first points of discussion was whether there would be a three-way agreement between SB, USP and Verata or whether separate SB-USP and USP-Verata contracts were preferable. People concerned about conservation and community rights believe that contracts that involve the communities as equal partners are preferable as they recognize the crucial role of communities in conservation of resources, knowledge and national development. The drug companies, however, have legal constraints to only pay benefits to legally constituted bodies. This issue was not fully resolved during the meeting. The absence of any firm policy by SB and USP also created difficulties as on some issues no final stance could be given by the representatives at the meeting.

By the end of the week, the parties reached agreement on most points and participants were left with issues that needed to be resolved at a policy level. SB was to write a final draft of the agreement to be translated into Fijian for conclusive discussions with the communities. The BCN grant included funds to pay the costs of legal representation for the communities to review the contract.

In April 1996, SB closed down their natural products discovery division.<sup>7</sup> USP immediately began a search for another partner. The project was already into its first six months of implementation. The project team felt that an institution that acted as a broker would most likely be able to enter an agreement

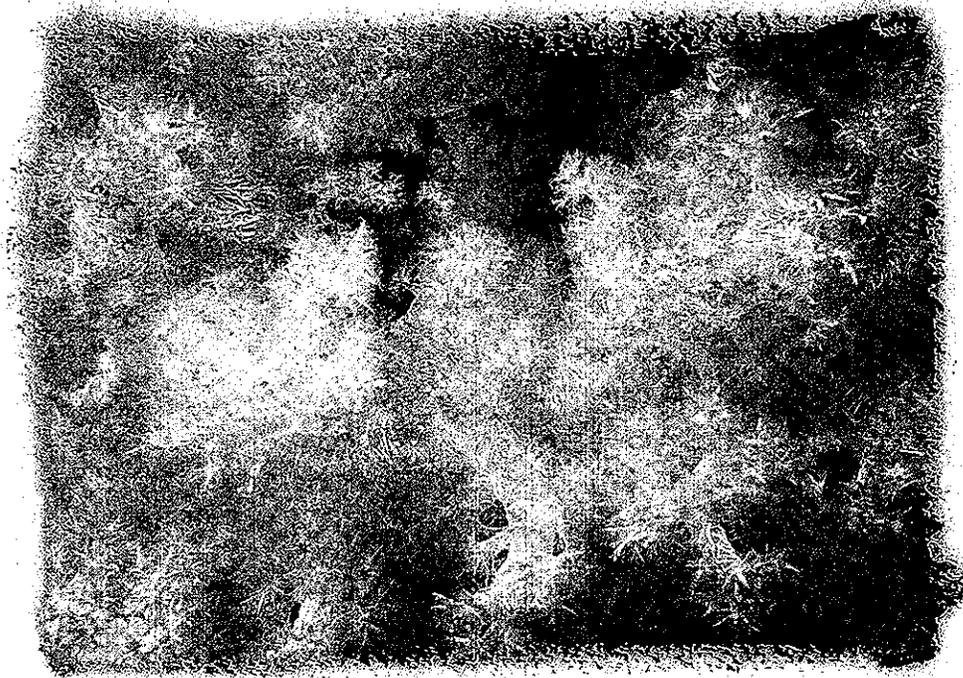


*Consistent local participation throughout the development of the equitable prospecting agreement was a cornerstone in the successful implementation of the bioprospecting enterprise.*

Photo: John Parks

## IN SEARCH OF A CURE

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*During the second half of 1998, over 50 samples were collected by the project, 20 of which were sourced from marine invertebrates found within project waters.*

*Photo: John Parks*

on short notice, and so they contacted the Strathclyde Institute of Drug Research (SIDR) at Strathclyde University in Glasgow, Scotland. SIDR was at that time in the process of signing an agreement with a Japanese drug company to provide 5,000 samples, and so they were quite keen to become a partner. Strathclyde's agreements provide 60% of all funds obtained from licensing samples to the source country. Although they retain a substantial 40%, there are several advantages to this type of arrangement:

1. SIDR has greater credibility and negotiating power compared to a developing country institution and thus can obtain higher fees from drug companies. As an example, SB had agreed to pay USP U.S. \$100 per sample, while the sample fee in the SIDR agreement comes out to U.S. \$200 (as 60% of the total fee).
2. Because they share fees with the host country institution, SIDR is a partner in the bioprospecting. It is thus more likely that they will represent the interests of the source country. This kind of agreement is different from negotiating directly with a drug company, which must place their profits first.
3. Although in both cases the primary discussions were held with a concerned scientist, the SIDR scientist had greater influence with the legal department of the organization compared to SB.
4. Bioprospecting partners such as the government, NGOs and community groups perceive that an entity associated with a university will be more likely to honor its contractual commitments than a large multinational drug company.
5. The 60:40 split compares favorably with that offered by other collectors/brokers, which may be as low as 10:90. The Manila Declaration of the medicinal plant scientists in Asia/Pacific calls for at least a 50% share of sample fees to be retained for the source community.
6. It is possible that SIDR can license the samples to other companies once the original licensing period expires, thus increasing the benefit.

The main disadvantage of SIDR over SB was that perhaps SB was in a position to provide a greater range of in-kind benefits such as preparation of a manual of marine biodiversity, training for USP researchers, and possible contributions to a community fund. There are no in-kind benefits from the drug company to SIDR. SIDR does offer to provide assistance in scientific work to USP, but not to communities. Another limitation to dealing with SIDR is that all contracts have to conform to the contract between SIDR and the drug companies. For example, it is considered best practice to give the source community prior informed consent on

the possible commercial development of a product based on their resource. Within the SIDR framework, SIDR guarantees the right of commercial development to the drug company partners, so prior informed consent of the community is not possible.

SIDR has a simple pro forma contract that was used as the basis of the USP agreement. They preferred to contract directly with USP and have USP contract to communities. As samples may eventually be provided from communities other than Verata this contract allows USP greater flexibility to work with different communities. The principles that had been established in the SB draft contract were then used to suggest changes and additions to the contract. A revised document was then distributed to stakeholders and the Rainforest Alliance (RA) reference group, a group of international experts in bioprospecting. The draft contract received extensive comments and suggestions which, wherever possible, were incorporated into the final USP/SIDR agreement.

An associated USP/Verata contract was subjected to the same process and translated into Fijian. This contract has been reviewed by a community lawyer who, partly because of her involvement, is now also the Fiji focal point for Article 23 discussions on protection of Intellectual Property Rights (IPR) under the Convention on Biological Diversity. Except for the possibility of joint ownership of any commercial products under collections in Verata and recognition of community stewardship of the resources, IPR issues are not part of these contracts, as the collections are not based on traditional uses. The communities are advised that they can request that certain plants (for example, of special medicinal value to them) not be collected under terms of this contract if that is their desire.

A key feature of these contracts is that a small amount of sample is licensed through SIDR for a limited period (usually one year). This sample remains the property of the community and if not under a licensing agreement can be reclaimed by the community. These agreements set out a broad definition of sample to include derived chemicals and products. They also give Verata first right for recollection and provide for appropriately qualified people from Verata to be employed by the project.

Because USP currently covers its collection costs with the BCN grant, all royalty fees are passed on to Verata. Collection and processing fees come to about U.S. \$20 per sample, while the cost of machinery used in the grinding of material and extraction comes to about U.S. \$5,000, or an additional U.S. \$10 per sample for 500 samples. Under the agreement, the division of royalty benefits will be set within two years. This timing allows further discussion in Fiji and

the rest of the Pacific on how benefits can be most equitably shared and best used for conservation and development.

Although this bioprospecting process is perhaps unusual in that it has been supported by outside funding, many of the lessons learned are widely applicable. Perhaps the most important lesson is that the agreements should not be confidential. This openness allows wide international advice on whether provisions accord to

best practice or not. It is very useful to have available a register such as the RA reference group, people with experience in negotiating these agreements who are willing to offer advice on draft agreements.

### Verata

The USP-BCN project proposal originally sought to involve two Fijian communities in the bioprospecting activities: Namosi in a rainforest area, and Verata on the coast. When the project budget was reduced, the project was only able to work in Verata, although the idea of involving Namosi has not been forgotten. This section describes some of the key activities undertaken with Verata people during the life of the project, and how the community has come to view bioprospecting and other environmental issues. It focuses on the role of community leadership in Verata in mobilizing not only its own community but serving as a model for others as well.

Verata is a tikina, or county, comprised of eight villages within the province of Tailevu, on the eastern shore of Viti Levu. It is a highly important locale in Fiji, being one of the first sites where Fijians consider their ancestors to have settled—the equivalent of Plymouth Rock in the United States. The chiefly families retain great prestige, and Verata people maintain ties to many other mataqali throughout the land. Activities carried out in Verata thus have resonance throughout the country. In addition, Verata is not far from



*Although this bioprospecting process is perhaps unusual in that it has been supported by outside funding, many of the lessons learned are widely applicable for other conservation projects.*



## IN SEARCH OF A CURE

Suva, so there is very active participation of Suva residents from Verata in the development of their area. The project has been able to draw on Suva dwellers' participation along the way. Most critically, however, the project has been able to work with local leaders who care deeply about the way resources are managed and have learned new skills in the process. (See inset box on next page for a synopsis of Verata's demographic and ecological setting.)

The relationship between Verata and USP is woven from many threads. One strand goes back to the early 1970s to the relationship between USP Professor of Natural Products Chemistry, William (Bill) Aalbersberg, and his teacher of Fijian during Bill's stint as Peace Corps Volunteer. Another strand was added in 1993-95 with the Community-Based Biodiversity Conservation surveys carried out by USP Professor of Pacific Islands Biogeography, Randy Thaman.

One of Professor Thaman's mature students was the son of the paramount chief of Verata. He had expressed concerns about diminishing natural resources in Verata. As part of a project funded by the MacArthur Foundation, two villages in Verata developed biodiversity lists of useful organisms using Professor Thaman's rapid rural assessment method. In this method, different groups generate lists of a certain number of various types of organisms (e.g., grasses, medicinal plants, fishes, and shellfish) and their cultural significance. These



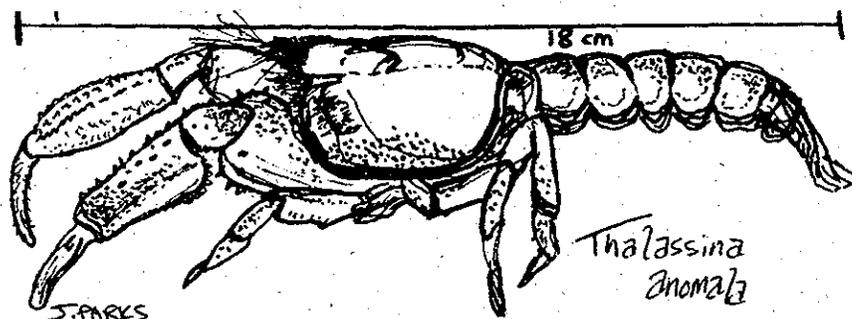
*Tikina Verata is a highly important locale in Fiji, being one of the first sites where historians consider the first Fijian ancestors to have settled—the equivalent of Plymouth Rock in the United States.*



lists were collated and discussed with the communities. The follow-up development of plans to conserve this biodiversity was taken on in association with the BCN project.

As the idea of a bioprospecting project was conceived within USP, partnership with Verata seemed a natural choice. The project team, which by then included SPACHEE, contacted traditional and government authorities to vet the idea of a bioprospecting project that would use their resources. The team then met with the community to discuss the concept and the nature of participation.

Lively discussion ensued. People were interested in having their medicinal plants evaluated and receiving financial



*Near shore marine resources, such as this mangrove-associated mud lobster (*Thalassina anomala*), are vital to the subsistence diet and cash market economics of Verata residents.*

*Sketch: John Parks*

benefits, but linking these activities with conservation raised questions. For example, if certain marine areas were declared tabu for gathering, would bioprospecting proceeds adequately compensate for the loss of commercial or subsistence returns from the non-use of tabu sites? What time-frame would be adequate to regenerate the key species in the tabu areas? These are complex questions that biological and socioeconomic monitoring are helping to answer.

Full community support is critical because the central objective of the project is to link the process and benefits of bioprospecting to conservation. These communities were accustomed to people coming and taking plants with minimal, if any, benefits so the idea of communities receiving substantial benefits was warmly received. They were also concerned about environmental issues such as overfishing, mining, and coral harvesting. The project provided an example of how benefits could be obtained through conservation rather than extraction.

## Project Activities in the Community

Direct community participation during the initial phases of the project conveys the message that community voices will be heard throughout all project activities. What becomes clear to local participants from this message is that their knowledge and input from the outset will become the foundation upon which all project activities are structured. While this may seem at first to be a 'common sense' approach, the history of integrated conservation and development projects (ICDPs) shows that, according to a recent review, "ICDPs often do not spend enough time identifying community institutions and their relationships . . . [they] should devote more time and financial resources to working with community institutions" (WWF 1997).

Moreover, where projects succeed in facilitating local input from the start, some fail to revisit this message later during

more technical phases of the project (e.g., monitoring and evaluation, empirical data analysis). Project managers assume that these project activities are not appropriate within a rural community context or of any procedural value to local decision-makers.

A comprehensive review of the ICDP process conducted by World Wildlife Fund further states that:

"[I]ntegration of local knowledge is difficult because ICDP planners and implementers frequently do not share the same values or world views regarding people and nature as local peoples. Traditional conservation approaches separate people and nature . . . Planners need to understand and use local names, land-use classifications and terminology to facilitate discussions with the community regarding management of resources. ICDPs must work to make the dialogue between 'projects' and communities more of an equal, two-way process" (WWF 1997).

### The Demographic and Ecological Setting of the Tikina Verata Project Area

<i>Total area of Verata:</i>	140 km <sup>2</sup> tikina (terrestrial area); 95 km <sup>2</sup> qoliqoli (marine waters under customary control).
<i>Number of villages:</i>	8
<i>Population (1995 census data):</i>	1,571 residents in 319 households. In addition, there are 643 urban residents who claim resource governance rights within Verata.
<i>Number of mataqali:</i>	49, all living in Verata with direct control over land and sea areas.
<i>Principal revenue generating activities:</i>	Sale of yaqona (kava) and other cash crops such as dalo (taro); sales of marine resources such as beche-de-mer, mud lobster, clams, reef fish; land leases and fishing access permits sold to outsiders.
<i>Key habitats:</i>	Coral reefs, mangrove forest, seagrass beds and intertidal mud flats, riverbanks, grasslands, and secondary forest (both agroforest systems and abandoned garden areas).
<i>Marine resource sustainability indicators being tracked:</i>	Populations of mana (a mangrove lobster, <i>Thalassina anomala</i> ) and kaikoso (a seagrass-associated clam, <i>Anadara antiquata</i> ); coral reef fishes. Populations of these indicator species are being monitored within five tabu, or no-take, fishery areas in Verata as an effort to use science to test the utility of this traditional practice as a fisheries management tool.

## IN SEARCH OF A CURE

As is outlined through this case study, the project activities in Tikina Verata are fully in line with these recommendations.

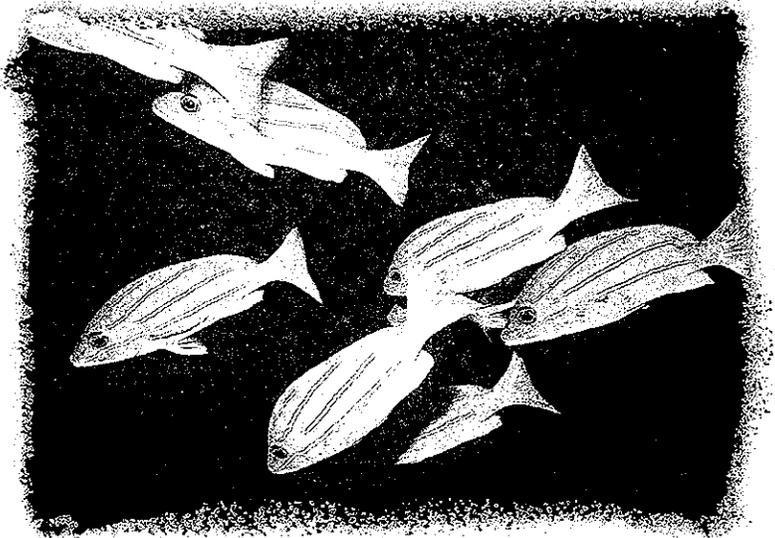
Local ownership of the project process is a direct consequence of the commitment to community participation from the project outset. An appreciation of the value of local concepts within the most technical aspects of the project (monitoring, sample collection) strengthens this sense of project ownership even more. In some cases, participation in resource management workshops and monitoring rekindles pride in traditional practices as participants see how their concepts compliment applied scientific principles during fieldwork to provide a fuller, more comprehensive perspective towards resource management issues.

During the planning phase of the project, SPACHEE organized three participatory workshops in Verata that focused on natural resource management. These workshops included a one-day environmental awareness workshop in all the seven villages, a participatory rural appraisal workshop in Ucuivanua (the chiefly village in Verata), and a community integrated resource management workshop held in Kumi and Ucuivanua.<sup>8</sup> At present these activities are funded under the BCN project but, lacking such external funds, sample fees could be used for these important purposes.

The series of one-day workshops were held in February 1996, organized and conducted by SPACHEE together with the Fiji Department of Environment. The two main objectives of the workshops were to identify the 10 most important problems in the village and opportunities/solutions to these problems. One of the significant results of these workshops was the willingness of the villagers to be open in discussing a broad range of environmental issues. Some of the major environmental issues raised by the villages were:

- Inadequate water system (need for pipes, tanks, etc.)
- Coastal erosion
- Destructive fishing practices, such as the use of duva, a local fish poison, and dynamite
- Soil siltation due to road construction close to the villages
- Coral mining
- Indiscriminate burning practices

The workshops screened environmental videos as well as videos of the village environmental issues. These videos sparked intense discussion about problems and solutions. The participants sketched their own village and area maps to show where resources, activities, problems and opportunities are located, to see the dimension and scope of issues to



*Curbing the use of destructive fishing practices was identified by community residents as a key issue to be addressed through BCN-supported conservation activities.*

*Photo: John Parks*

be investigated, and to know the boundaries of resources. The maps included information such as:

- Topographical data (elevation, slope, drainage, etc.)
- Information on soils, vegetation, agro-ecological zones
- Infrastructure
- Water availability
- Areas with specific problems or potential for improved production.

A participatory rural appraisal (PRA) workshop was then held for a week in June 1996. Representatives from six of the seven villages in Verata came to the workshop. The main focus of the workshop was biodiversity conservation. Participants looked at the ecosystem role of habitats such as mangrove and coral reefs in their areas, after which they ranked community problems. They prepared a community action plan for their own villages at end of the workshop. Resource people from some government agencies, NGOs and USP came to assist in the PRA workshop.

The organizers felt that, on the whole, the series of one-day workshops and the PRA exercises were an effective way of raising environmental awareness because community members actively participated in the discussion as well as coming up with resolutions. It was not a one-way communication.

## Integrated Village Resource Management Planning

SPACHEE came again to Verata in July 1996 to help facilitate the design of a Village Resource Management Plan. The overall objective of this workshop was to assist villagers to develop the skills needed to plan the sustainable commercial and subsistence use of their natural resources, including the protection and rehabilitation of those resources—in particular plants and animals that are rare, endangered or of particular cultural, economic or ecological importance.

The initial pilot villages were Ucunivanua and Kumi Villages, with the remaining five villages in Verata to be covered after the first two workshops had been evaluated. The workshop was held overnight in each village to take advantage of informal discussions at night and to avoid hurrying to return to Suva. The aim was to develop a model that can be adapted for rapid application to many villages.

The participants included a wide range of men and women, older and younger people who could play a central role in the promotion of the protection and sustainable use of resources and biodiversity. Representatives from other villages in Verata were also invited. This workshop was supposed to train them to be facilitators in their villages.

The main issues discussed were: a) the concepts of sustainable development; b) the importance of the protection and sustainable use of biodiversity and ethnobiology as natural and cultural capital (the bank account) needed for the development and maintenance of this generation and of future generations; and c) the need for community-level management and planning of the use of natural resources.

First, there was a brief discussion of the nature and importance of biodiversity and ethnobiology and its management as a basis for sustainable village development, and the distribution of lists of plants and animals and uses generated during the 1993-95 Community-Based Biodiversity Conservation surveys. There was also some discussion on the types of development that seem to be unsustainable and destroying the biodiversity of the area.

Then the workshop broke up into smaller groups to identify and discuss: a) the various types of plants and animals (both marine and terrestrial species) becoming scarce or

extinct; b) the types of ethnobiological knowledge that should be preserved and protected; and c) actions that can be taken/strategies (both traditional and modern) that can be used to protect or sustainably use biodiversity for both commercial and subsistence purposes.

One of the important outcomes of this particular workshop was the development of an integrated Village Resource Management Plan. On the last day of the workshop the villagers had reached the point where they were able to compile their own resource management plan, integrating both terrestrial and marine resources. Since the workshop, the plan

since has been adopted by the Tikina's governing council and implemented. Highlighted local policies resulting from the implementation of plan include: a) bans on the use of poisons and dynamite in fishing activities; b) reductions on mangrove deforestation; c) a moratorium on granting further licenses to allow commercial fishing operations legal access to Verata's waters; d) ban on the extraction of live coral

for commercial cement manufacturing; and e) the declaration of marine reserve areas through traditional practices across various habitat types to encourage fisheries sustainability.

## Project Relations with the Suva-Based Committee

The community of Verata is not only a locale but also a network of kin and neighbors that stretches from the ancestral homelands to the cities of Fiji and on to the rest of the world. These Verata people remain by and large concerned about and involved in the development of their lands, and their heritage. Thus the Suva-based Verata Development Committee got involved at an early stage of the project to advise project planners.

The group met regularly on an adhoc basis. Professor Aalbersberg or a SPACHEE representative often attended these informal meetings, at first to explain the idea of the project. Later, once the group had agreed to the project and assisted in getting approval for it from the paramount chief, advice was sought on the conduct of the project. The role of this group highlights a key factor often missed in community resource management—that the community is not just the people living in a given area, but those who may have migrated, temporarily or semi-permanently, from the area.



*People were interested in having their medicinal plants evaluated and receiving financial benefits, but linking these activities with conservation raised questions.*



These people are often the main source of investment capital and ideas for community ventures.

## Training of Community Sample Collectors and Collection Activities

Each village was invited to appoint two members interested in and knowledgeable about local plants to become sample collectors. About 10 people, several of whom had been part of the biological monitoring training, assembled at the training site. Mr. Marika Tuiwawa, a botanist in the Biology Department at USP, had worked with Professor Aalbersberg to develop a list of plants to be collected based on those desired by SIDR and those identified in Verata by Professor Thaman's rapid rural assessments.

A half-day was spent in discussing the purpose of the collections, how plants would be collected, and voucher specimens prepared. The collection required about 1 kg of plant material to be placed in labeled bags together with a name card, location, and the name of the collector. The list of desired plants was distributed and collections made using local knowledge about where the plants could be found. Sixty-five plants were collected in one and a half days of the first meeting, and another 40 on a collection day a few months later. Verata has a much richer marine than terrestrial biodiversity, as much of the land consists of grasslands and secondary forests. During 1998 and 1999, sampling from Verata's rich diversity of marine biota became a focus within the bioprospecting enterprise.

In November 1997, two of the members of the collection team were asked to participate in a People and Plants Workshop organized by the WWF/SP and conducted by ethnobotanist Dr. Gary Martin. Participants learned how to prepare voucher specimens and use them to develop a community register of their important plants.

## Community Involvement in Ecological Monitoring

Because a semi-structured, highly participatory methodology was used to develop the Community Action and Village Resource Management Plans (VRMPs) during the initial

phases of the project, by the first year of project implementation (1997) the community was prepared for the more technical phases of the project, such as design and implementation of project monitoring and evaluation (M&E) techniques and biota sample collection training for the enterprise.

During the middle of 1997, BCN (with assistance from SPACHEE and WWF/SP) held a participatory M&E workshop for the Verata project during which interested community members were trained in ecological monitoring techniques. The goal of the workshop was to design an



*The goal of the workshop was to design an ecological monitoring protocol that was a useful management tool enabling local fishers to 'keep watch' over their marine resources, while also generating periodic indicator data to assess the overall health of the project's nearshore marine system and fishery populations.*



ecological monitoring protocol that was a useful management tool enabling local fishers to 'keep watch' over their marine resources, while also generating periodic indicator data to assess the overall health of the project's nearshore marine system and fishery populations. The structure of the participatory M&E workshop was intentionally constructed as a follow on to the earlier PRA workshops conducted. Thus, previous outputs such as the VRMPs were revisited in order to provide a community-developed framework from which to discuss M&E, develop a monitoring plan, and bring about a seamless integration between community exercises conducted by the project.

The workshop employed local concepts of resource use, ecological principles, and scientific sampling and analysis to develop a biological monitoring program that would be totally implemented by the community teams. Through a series of participatory exercises, representatives from the seven Verata village communities determined which fishing grounds within their nearshore marine habitats were to be monitored, as well as which indicator species populations within these areas they would track through time and why it was useful to do so. In addition, pursuant with their Village Resource Management Plans, these representatives selected a fishing ground that was declared a tabu, or no-take, area for comparative study against resource populations within other harvested fishing grounds. Local participants were trained in simple, appropriate sampling techniques to collect indicator species population data within 1 square meter quadrats along systematically distributed 100 meter line



*BCN's participatory monitoring workshop employed the 'learning by doing' principle; here local residents conduct a baseline frequency-length survey of an important clam species they chose to monitor.*

*Photo: John Parks*

transects within randomly determined sample sites within both harvested (i.e., treatment) and tabu (i.e., control) study areas. Participants also learned how to complete simple descriptive analyses with data collected, including the development of histogram graphs of monitored results for presentation and discussion with the broader Verata community. In the end, participants came away from the workshop with a monitoring plan that they had developed, and more importantly, felt empowered in that they were now well positioned to implement the plan and use the information collected for resource decision-making. A report in Fijian and English detailing all the workshop activities and outputs was also produced shortly after its completion to encourage sustainability of the methods employed (Parks 1997).

A few months following the workshop, the resulting monitoring program attracted the attention of NGOs and government officials who were interested in hearing that community members could learn and employ skills involving scientific measurement and data analysis (Baron 1998). Consequently, a second workshop jointly organized by the University of the South Pacific and WWF/SP and facilitated by BCN, SPACHEE, and WWF Staff was held for government managers, NGOs, and other individuals interested in the use of a community-based methodology. Held in Suva with a one-day field trip to Verata, the workshop was a great success and formed collaborative partnerships between Fijian NGOs and government

officials in working at a community level. One high-ranking government official noted that "In my 16 years of government service, I have never attended a workshop in which I worked like this with members of NGOs. I had previously viewed their intentions with suspicion, but now realize that they can be valuable partners in our conservation work."

Since 1997, local participants in the monitoring activities have been so encouraged by the replenishment results of the trail tabu area in comparison to resource populations within harvested areas that they have decided to append their VRMPs by replicating the comparative approach at four other village areas and have independently established four new tabu areas across two other habitat types using three new indicator species (BCN 1999). This adaptive management example of how local communities are capable of using science to systematically collect information on marine resources and use such information to make informed decisions was one of two BCN-supported examples that were

highlighted with a broader Indo-Pacific scientific and academic community audience at the 1999 Eleventh Pacific Science Congress in Sydney (Parks 1999). The peer feedback received at the Congress on the community monitoring results from BCN's marine projects echoed BCN's own reaction regarding the Fiji results—cautious enthusiasm, with acknowledgement of the need to ground-truth and further test this approach before definitive conclusions on its management application are drawn.



*"I had previously viewed the intentions of NGOs with suspicion, but now realize that they can be valuable partners in our conservation work."*



BCN assumes that due to the local ownership over the adaptive management process, there is a greater probability that such marine resource monitoring activities will be sustained in the future, even beyond BCN support. In addition,

locally-managed fisheries no-take areas and simple data collection techniques lend themselves toward lowered project monitoring costs. In fact, BCN has found some evidence that suggests that such local efforts, while associated with much



*The peer feedback received on the community monitoring results from BCN's marine projects echoed BCN's own reaction regarding the Fiji results: cautious enthusiasm, with acknowledgement of the need to further test this approach.*



lower costs than those of formal monitoring conducted by outside scientists, may exhibit a corresponding increase in monitoring efficiency (BCN 1998). However, it should be noted that BCN strongly cautions the idea that community monitoring could be used as a substitute for formal scientific study, but instead suggests that the two be done hand-in-hand. While this recommendation may at first appear to be somewhat idealistic, BCN advocates that such an approach is necessary to accurately triangulate results of local residents with those of independent experts and thereby (hopefully) corroborate local observations regarding changes in their natural surroundings.

The systematic collection and analysis of both ecological and socioeconomic data are essential activities in determining whether or not project interventions are leading to conservation objectives being achieved. Thus, as demonstrated in Verata, locally-employed quantitative techniques can play an important role in project management, acquainting community participants with their role in the more technical aspects of project management and the value of such activities within their own decision-making processes. As illustrated in the Verata case (and also demonstrated elsewhere in the BCN project portfolio) direct observation and simple resource population are neither beyond the scope of local stakeholders nor incompatible with customary notions of natural resource ecology. In fact, the Verata example has become a model being replicated by other conservation groups such as WWF/SP in other areas of Fiji of how to fuse scientific principles with traditional management practices to sustainably manage marine resources (BCN 1999).

## The Next Phase

The BCN program is slated to end in September 1999, but the partnerships will remain, and in all likelihood, expand. A list of some of the key activities that will be undertaken during the next phase of the project life follows:

1. Sample collections in Verata are ongoing, and may be developed with other emerging links to both additional potential prospecting clients and other communities' sites where samples can be sourced.
2. Community leaders from Verata will continue to work with other community projects in Fiji and perhaps elsewhere in the region on community conservation activities and ecological monitoring replication.
3. The most appropriate form of benefit distribution of incoming revenues was recently decided by the Verata communities to be through a Tikina Trust Fund, but decisions on what types of community projects or improvements are to be funded through the Trust Fund is still undetermined.
4. In an effort to diversify sustainable income-generating activities and reduce dependency on the bioprospecting enterprise, one option of interest to the community is the processing of kava (*Piper methysticum*) residue. Kava is a popular drink in the Pacific that is receiving wide renown in the world for its medicinal properties, and the residue of the drink can be used as well for certain products.
5. Another monitoring workshop conducted during late 1998 focused on helping the community to monitor the socioeconomic impacts of the project—not only the cash benefits being generated from the enterprise, but also the impacts of monitoring on household cash income and workshops and awareness raising on behavior.

## Conclusion

This case study has shown how a community can play an active role in a fairly sophisticated conservation and development project, both in relation to technical aspects of the enterprise (such as collection and processing) and monitoring (using 'appropriate science'). It also illustrates how bioprospecting as an enterprise intervention can be linked to wider community-based conservation objectives. We have seen how the project was conceived, how the community involvement was structured, and how knowledge of the concepts and issues in conservation has accrued over the life of the project.

The Verata communities and their wider, urban residents have continually and collectively decided upon the path the project has taken, and their decision-making processes have had a direct correlation with the evolution of the project into what it embodies at present—an intervention achieving a notable degree of conservation. The fact that there has been a high degree of ‘hand-shaking’ between the project partners’ vision and the communities’ vision of where the project should go is partially reflective of the project partners’ ability to: a) clearly hear and internalize local residents’ expectations of what decisions need to be made for which resources; b) in both enterprise and monitoring activities, effectively act as facilitators, rather than manipulators, towards the communities’ perceived end result of the project; and c) ensure that consensus is built between communities and project participants involved, inclusive of the national policy-makers and end-market clients.

A project is not a community. Life goes on in Verata—people have to make a living, get food, send their children to school and contribute to their church. A project can only do so much in a short time span. The relationships are strong, however, and the commitment to conservation has come from the beginning from community leadership. In a few years we will see the fuller impact of these activities as people continue to take steps to conserve their biological resources. The Fiji government is increasingly active in this arena and interested in Verata as a model. So too are other communities in the Pacific and the world that are grappling with rapid deterioration of their resource base. Innovative ways to obtain the financial, social and intellectual capital for development that can conserve resources are sorely needed. If bioprospecting is carried out respectfully and judiciously, the benefits can be solid, and the risks minimal. Linked to community resource management and tied into other enterprise options, community bioprospecting can provide an important catalyst for sustainable rural development.



*BCN has found that when coupled with traditional management practices, the appropriate application of scientific techniques can result in effective and innovative resource management tools to be used at a local level.*

*Photo: John Parks*

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## End Notes

1. University of the South Pacific, Institute of Natural Resources, P.O. Box 1168, Suva, Fiji; Tel: (679) 212 416; Fax: (679) 302 548; E-mail: aablersberg@usp.ac.fj
2. Biodiversity Conservation Network, c/o World Wildlife Fund, 1250 24th Street NW, Washington DC, 20037, USA; Tel: (1 202) 861 8370; Fax: (1 202) 861 8324; E-mail: john.parks@wwfus.org

3. 96 Park Terrace-West, New York, New York, 10034, USA; Fax: (1 212) 942 5304; E-mail: drussell@afr-sd.org

4. South Pacific Action Committee for Human Ecology and the Environment (SPACHEE), 2A Denison Road, Suva, Fiji.

5. Recollection, milestone fees and of course potential royalties could bring benefits down the line.

6. Due to U.S. budget cuts the project had to be cut back to only one community as described below.

7. Dr. Carté is now based at Singapore University and plans to collaborate with USP in the future.

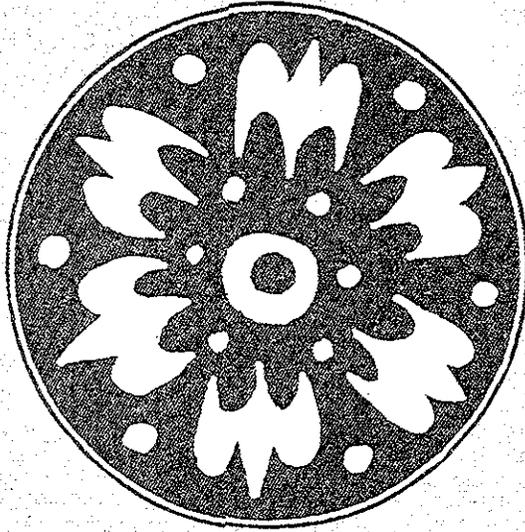
8. Since the workshops, another village has been added to Verata tikina to make a total of eight villages.

9. The participatory M&E approach employed by BCN at its grantee projects is inherently designed so that as community members collect relevant information on their natural surroundings, this information can be used to enhance local resource decision-making, and improve capacity to address threats facing natural resources. This process of collecting, analyzing, and using information systematically to address newly arising challenges and adapt existing management strategies to meet them is defined by BCN as adaptive management. Thus, BCN's participatory M&E process has inherently been associated with such issues as community empowerment, self-sufficiency, and long-term project sustainability.

CHAPTER THREE

Butterflies Aren't Free

*by Nancy Baron*



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The view from the air shows it all—a coral-lipped shore, an aquamarine harbour peppered with dug-out canoes and the frontier Indonesian town of Manokwari. This is a wild place, with big bites taken out of it. We double past the Christian mission. Then banking above a vast monotony of oil palm plantations, trees spaced in tidy rows like hair transplants, we leave the altered landscape of the lowlands, and, rising over ridges of jungle, head for an enclave of some of the most strange and wonderful nature left on earth—the Arfak Mountains, homeland of the Hatam.

Irian Jaya is the largest, richest, least developed Indonesian province, making it a government target for, among other things, accelerated logging, gold mining, oil palm monoculture and transmigrant settlement. Nearly all of Irian Jaya has been blueprinted for intensive development. But,

because of its incredible diversity of unique plants and animals, it is also a focus of the world's conservation community—to try to save it.

But for all the efforts going on around the world, there are still no surefire paths to saving nature. This was the reason that the Biodiversity Conservation Network (BCN) was created. This experimental, seven-year program funded by the United States Agency for International Development wanted to learn from real experience—through the disasters as well as the successes—under what conditions conservation fails or succeeds. This is a highly unusual situation in the conservation world where money typically depends on painting a rosy picture. With BCN, “failure” and the lessons learned from it are valued as much as “success.” In essence, BCN tested the notion that, if communities could

derive substantial and sustainable benefits from an enterprise directly linked to conserving the environment around them, then they will have an incentive to actively conserve and manage that environment. Linkage is the key.

Arfak is one of 20 projects BCN supported in some of the most significant and most threatened natural environments in the Asia-Pacific region. The idea at Arfak is to try to find a solution—a win-win for the local people as well as for the endangered animals and their habitats.

Before the Hatam began ranching birdwing butterflies, they poached and sold them through the black market, with no regard for the species' survival. Poaching was one of the Hatam's few means of making money. But this was, in the long run,

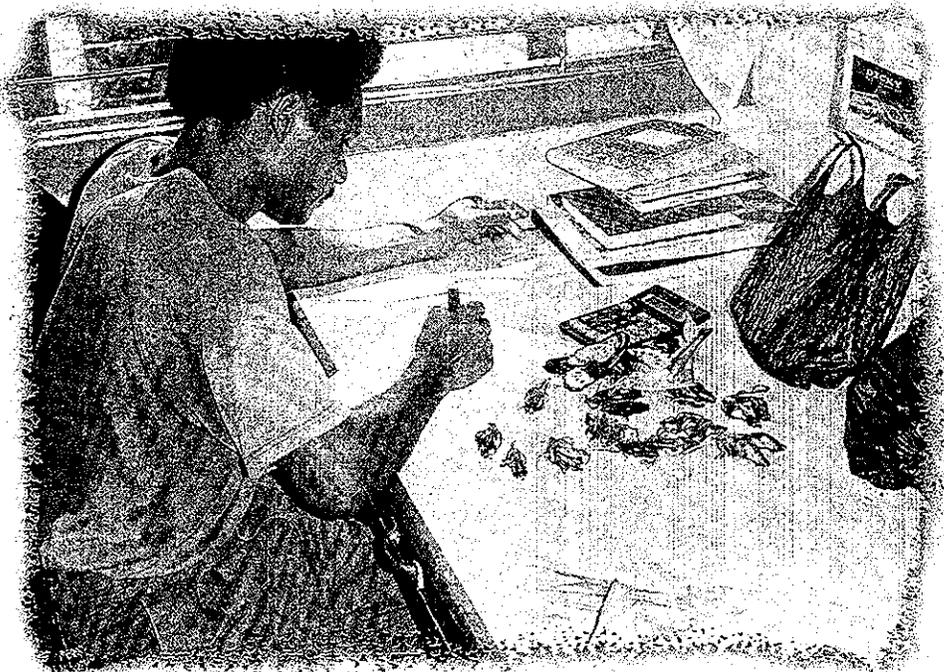


Photo: Hank Cauley 1995

a no win deal for both the people and the butterflies. The Hatam were paid a few cents per butterfly while the butterflies were headed for extinction. Only the middlemen, opportunistic traders in Manokwari, were making money—at both the locals' and the insects' expense.

## The Experiment

In 1989, the Hatam and the World Wide Fund for Nature-Indonesia Programme (WWF-IP) launched an experiment—could carefully managed exploitation of endangered butterfly species save them from extinction? The theory went like this: by creating a reserve of primary rainforest in the center of the Hatam's 22 villages and, at the same time, helping them to legally ranch birdwing butterflies, the Hatam would make more money than by poaching. Some of the poachers and a lot of other community members (1,300-plus as of 1998) would become ranchers, and the butterflies' numbers would increase because the ranchers would leave 10% of the females to fly back into the reserve. And since the butterflies need untouched primary rainforest, and the Hatam would see the sense of preserving it to protect their livelihoods (a continuous, untainted stock of butterflies is needed from the forest to keep the ranching alive), all the other animals that live in the forest would benefit too. At least, that was the theory. In 1993, BCN entered the picture to support the development of the business, to monitor the results, and to evaluate where theory ended and reality began.

In September 1998, our small BCN team traveled to the butterfly farms in Arfak and interviewed a wide spectrum of people to see how the Hatam communities—and the butterflies themselves—were faring. Was the experiment working? Were local communities receiving sufficient benefits from the butterfly business to conserve the Arfak Reserve? Is community-based conservation really happening? Do the existing policies support the butterfly business and their conservation? And what is the likelihood that the enterprise, and long-term conservation will succeed?

Even in the United States—which has well developed infrastructure, a population that is well experienced with a cash economy, and established markets—only about one out of every seven businesses survives beyond five years. In Arfak by contrast, there was no infrastructure, the people were entering a cash economy for the first time, there were limited established markets for the butterflies, and by 1998 the country was in an economic crisis and the government was shaky. Trying not only to be financially self-sustainable—but ecologically and socially sustainable, too—was a tall order, indeed.

## FIELD NOTES

Hiking through the Arfak rainforest, the birds are tantalizingly abundant but hard to see in trees tall as skyscrapers. Cicadas grind on like a chorus of tiny table saws, interrupted by the raucous shrieks of sulfur cockatoos and the whoops of birds of paradise. Marsupials—tree kangaroos and cuscuses—clamber up and down the trees' dizzying heights with the help of prehensile tails. On the ground, a long nosed, spiny echnida, an egg-laying mammal, snuffles through the undergrowth, feeding on worms. We watch a pretty little torrent flycatcher nabbing red dragonflies above a fast flowing stream. And everywhere flit butterflies. Mind blowing butterflies. If you were to tear a year's worth of days off a calendar, throw the pages into the wind and watch them flutter away, you might get a sense of their diversity. John sketches them to remember. For a long time we don't talk. Finally, John breaks the silence. "This is as close to Eden as we'll find on Earth," he says.

## Ranching Butterflies

Today, six species of endangered birdwing butterfly are ranched in the buffer zone on the Arfak Reserve's perimeter. These are unusual farms. The Hatam—who knew the birdwings' ways—planted their favorite food plants in gardens on the Reserve's perimeter. The combination of flowering and leafy plants provide a complete habitat where butterflies find everything they need to grow and reproduce. The "live stock" flutters in from the Reserve and are attracted to the gardens. Technically, the farming of butterflies is ranching (as opposed to "farming") because the breeding stock is free.

Once the gardens are established, butterfly ranching is low maintenance. The butterflies are the perfect product: light, low bulk, non-perishable (they are sold as dead stock), unique to the Arfaks, require simple technology, and can offer high commercial value. They make an ideal cargo for the Hatam, who must hike 12 hours down a tangled root path to the town of Manokwari where they sell the pupae to Yayasan Bina Lestari Bumi Cendrawasih (YBLBC), the butterfly cooperative set up to run the butterfly business and

## BUTTERFLIES AREN'T FREE

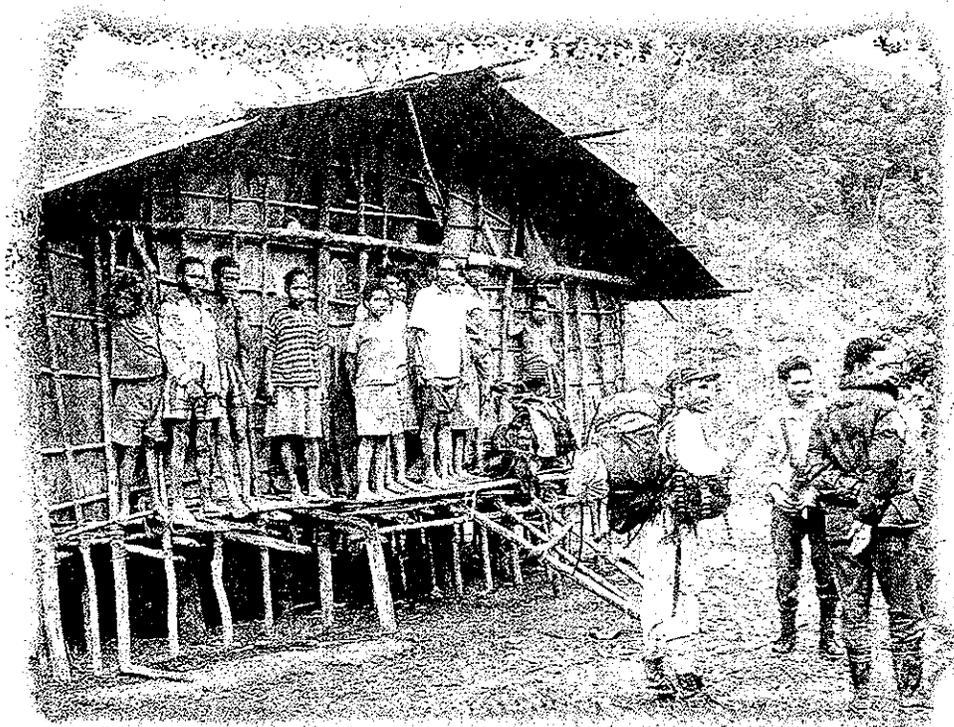


Photo: Nancy Baron 1995

a local NGO offshoot of WWF-IP. The cooperative buys and sells the butterflies, arranges for special CITES permits—because these are endangered species—markets and ships the butterflies and, of course, pays the farmers for their exquisite crop. Iridescent beauties the size of swallows, *Ornithoptera*, as the birdwings are known, are highly prized as objets d'art. A single specimen can command hundreds, sometimes thousands of dollars.

To avoid inbreeding, the butterfly ranching relies on the presence of the forest and wild butterflies for breeding stock and fresh genetic material. The farmers fully appreciate that encroachment on the Reserve, such as slash and burn for farming, or logging, means diminished returns. The Hatam refer to a forest as *hutan limba*, forest wasted, or *hutan utuh*, forest in tact. Four of the birdwing species can only exist in *hutan utuh*, which also happens to be home to the butterfly species with the greatest commercial value.

Our fact-finding expedition into the mountains included Pak Saragih, John Parks and Avi Mahaningtyas. Saragih is the head of the YBLBC butterfly cooperative. While the Protestant missionaries, ensconced here for over 30 years, may be the Hatam's spiritual shepherds, Saragih, a Sumatran Muslim, has taken on the role as their father of development. Parks is from BCN's Washington D.C. office. A big blonde surfer who is part Hawaiian, Parks is savvy about community-based businesses and ecology. It is his personal

mission to devise ways to teach indigenous people how to use simple means to monitor and manage their resources so they can determine their own futures. Avi Mahaningtyas, an Indonesian member of the BCN team, is experienced in community conservation and development and is a knowledgeable translator.

### The Meetings

As soon as we arrived, the farmers gathered with great excitement to greet Saragih and led us through their villages. Carved from the jungle and bordering a clear stream, the village of Minyambou consists of two rows of houses on either side of a single footpath. Tidy wooden cabins and a few traditional "houses of a thousand legs" are perched on poles of bamboo. But the overall impression was garden. The Hatam have

planted riotous arrangements of flowers—red ginger, orange heliconias, pink cosmos, and two-story high hibiscus, frilly beacons for the high flying butterflies that live in the wilderness of the Arfak Reserve but come here to dine.

A large moving shadow startled me. High above the flowers, in the filtered light of the rainforest something large is flashing neon-like—green, red, yellow, and black. My astonished eyes gradually comprehend that this living light show is not a bird, but a butterfly. Flapping heavily, powerfully from hibiscus to hibiscus, the butterfly hovers, its body-lengthed tongue coiling and uncoiling, probing blossoms for nectar. Its size and strength bend anyone's definition of "butterfly." A farmer, seeing my amazement, said something in Hatam. "What did he say?" I asked.

"The flowers make us happy, the butterflies make us rich."

Swept along by the exuberant Hatam, we entered a small cabin joined by about 30 butterfly farmers, all men. One held a sleeping baby. The men squatted, feet flat on the floor, knees towards heaven. Several women sat down outside the hall, observing us with somber interest. Women make up half the number of actual "farmers," but according to the patriarchal rules of this clan-based society, only the men attend meetings.

Our meeting began with a lengthy prayer expressing the Hatam's longing to Jesus for the day when they will become

"civilized." Saragih's address honored the people. He tells them that they are not, "a poor and rotten people" as some western Indonesians consider them. Then he introduced us as representatives of the organization who have helped support the establishment of the butterfly cooperative, and who want to know "what is working for you with the butterfly farming, and what is not working for you." This launched a very long and intense debate. A clan-based society, the Hatam are truly a "discussing people."

### FIELD NOTES

The next day, we begin the long hike back towards Manokwari, along the tangled root path that serves as a butterfly transport highway. We pass Hatam carrying butterflies down and heavy supplies up the mountains. "Acheemo" we greet each other. I can see why selling butterflies is a better idea than Bombay onions. We are at about 5,000 feet of elevation when some farmers stop Daud. Daud motions us to leave our packs, and we follow the farmers, thrashing through the jungle to a clearing. In the centre is a perfect cone-shaped hut about waist high. This is the bower of the Vogelkop Bowerbird—found only in Arfak. Unlike the male bird of paradise, who wears his glory, the little bower bird male lavishly over-compensates for his plain looks by building a palatial boudoir. The male weaves this elegant dome and then landscapes a front lawn with torn up moss. A deck paved with bright red berries extends out about three feet. On it, the bird lays out his hopeful offerings—a pile of yellow chrysanthemums neatly stacked in one corner, some flattened blue batteries in another, some brightly coloured feathers. The bower is only for love. The eggs are hidden elsewhere. There are not many of these birds left. We stay for a long time, the male flying about, clucking in irritation. We are cramping his style. When we finally leave, Daud explains we should pay the farmers. The reason that noone has killed this bird is that they hope to make money. If we don't pay up, they may kill it. John and I pay.

Shur Woresor was about 50. Like many of the older Hatam he was missing teeth, and he could pass for 65. He told them, "The ranching has enabled me to put an aluminum roof on my house, and I can also buy oil, sugar and salt." He expanded the gardens so his wife and children could tend their own plants and harvest the pupae. They may spend their money; he says, on what they want, "luxury items like health or education." According to Hatam custom, whoever plants the food plants should get the money from the butterflies that come and lay eggs on them.

But in the last year, the farmers said things have changed. In September 1998, one goliath butterfly pupae bought them 1 kg of sugar. A year ago it would have bought them 3 kg. The farmers asked Saragih to increase the price of the butterflies to reflect the devalued rupiah and rising inflation. Saragih responded that the price is based on market demand and explained the problems that the business faces. "The cooperative is a small dinghy with a lot of people in the boat. When you are in rough seas, the strategy is not to speed up, you go slow and steady so you don't get swamped."

### The Goldfish Ponds

The butterfly business is acting as a catalyst for conservation and business in unanticipated ways. During a break from the meetings, the farmers took us behind the village where they had diverted a stream and dug a series of fishponds. With pride they told us, "Before we had no farming understanding, we only knew how to directly harvest forest goods. Now we have confidence." One farmer recounted how he ferried the fish up the mountains in a big plastic bag. "I had to change the water nine times on the way up. But I didn't lose a single fish."

One farmer, named Ingriss Wonggor said, "Now we don't have to hunt birds for food. When our children say, they want meat, we can give them fish. If we could have a lot of fish, we won't have to eat birds. Then there will be lots of birds and people will come to see them. So my brother, Daud, for example, can be a guide."

In fact, the butterfly ranchers have organized themselves into some 80 Butterfly Groups—what they call kiosks. These kiosks, in turn, have become the anchor for collaborative harvesting of things like markissa syrup (passion fruit) and vegetables that can be sold in the Manokwari market. The kiosks have, in practical terms, become a catalyst and stepping stone and, in social terms, a means of organizing and pooling the Hatam's collective voice on community-level conservation and development issues.



Photo: Hank Cauley 1995

### History of the Arfak Reserve

From discussions with the farmers, it quickly became evident that there was a major problem brewing—the status of the Arfak Reserve. The Hatam felt they'd been duped in 1987-88 when the Reserve was established, and that it wasn't the first time. The whole history of the Hatam has, they feel, been a series of others laying claim to their homelands.

First colonized by the Dutch, in 1963 the eastern half of the island of New Guinea was colonized again, this time by the new republic of Indonesia, which was and is hungry for land and resources. While Irian Jaya represents almost 21% of Indonesia's total territory, it has less than 1% (1.5 million) of its population. In the 1980's, the Indonesian Government began transplanting "straight hairs," as the "fuzzy haired" Irians refer to the Javanese, to help solve both Java's population problem and to have a colonizing effect on the ever-simmering Free Papua Movement. Setting up Javanese style villages at the base of the Arfak Mountains, the Indonesian government tried to lure the Hatam down with promises of "a healthy home" with a corrugated tin roof (a highly prized item in Arfak, where organic roofs have a six-month life span), two hectares of land for growing rice and vegetables, and financial support for a year while their crops grew. But the Hatam had no history of tending anything and were hopeless rice farmers. Their new neighbors called them "the

stupid, rotten people" and mocked their forest ways. Shamed and frustrated, the Hatam tore off their corrugated roofs and filed back up into the mountains.

In 1987, on the heels of this fiasco, WWF-IP saw an opportunity. A young WWF-IP staffer named Ian Craven approached the Hatam with a plan to map their lands, establish a reserve and ranch birdwing butterflies on the perimeter of the Reserve. The Hatam were eager to move into a cash economy. Butterfly farming was, in many ways, the *quid pro quo* to the Hatam agreeing to the Reserve.

The butterfly ranching fit with the Hatam's culture. With no tradition of animal husbandry, they could work on altering the forest structure slightly (by taking forest-based food-plants and replicating conditions in their gardens), sit back and wait for the butterflies to carry out their own life cycle, then harvest the results. The Hatam supported the butterfly project because only they could do it. The transmigrants from Java, Flores and Lombok couldn't compete because they didn't know anything about the butterflies' habits, about the food plants, or about the forest. Butterfly ranching was all about pride.

Craven worked with the villages to define the Reserve. The Hatam liked what he was doing because it formalized boundaries between the villages and cleared up disputes. They put the 70 km<sup>2</sup> Reserve in the centre of a necklace of

villages. The villagers set the rules about how they would access the forest and established which areas they would work for the butterflies. When the Hatam villagers finally signed a letter agreeing to the Arfak Mountains Nature Reserve, its boundaries and the traditional concept of "Igya ser Hanjop," which means roughly, "Let's guard and use our land and resources," it was their understanding that they could still fully access the Reserve's resources—but that outsiders could not. Soon after, the Reserve was established.

Although no one is entirely clear about what happened—Craven was killed doing a biological survey from the air when his missionary plane crashed—somewhere along the line, something shifted. When Hatam farmers found government forestry workers nailing signs on the Reserve boundaries that said, "State Forest," they went ballistic. The Forestry workers were verbally aggressive. The Hatam tore down the signs, and violence seemed imminent.

The Hatam are renowned for their short fuses and, recounting the story to us in the Minyambou meeting, they grew heated. One farmer said, "If the government insists on making it a state forest, which means people cannot go into the forest and cut rattan and wood for their homes, we are ready to fight."

Another intense looking villager was following the discussion with angry black eyes. Finally he spoke with great passion, saying that it would be better to destroy the forest than allow the Indonesian government to assume total control over it.

Duncan Neville, a former WWF-IP staff member who worked for several years with the Hatam to establish their farms explained that sometimes, "If the Hatam see something not being a success, they would rather destroy it than see it and be reminded of it. It's their mindset."

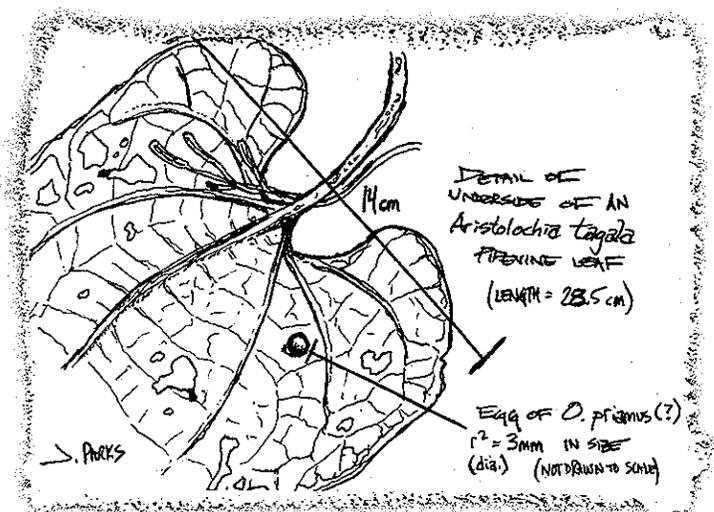
### Butterfly Biology

As the Hatam know, butterflies can't exist without the plants on which they depend. Adults feed on nectar while caterpillars eat leaves. The larvae are so specific about their food preferences that they can't eat anything else. Tasting plants with their feet and antennae, adult butterflies determine whether they have found the right food plant, and there they lay their eggs. For birdwing butterflies, only the climbing vine called *Aristolochia* will do. The caterpillars must have enough leaves to feed them through their six weeks of development to a pupa. Within the natural diversity of the



Photo: Hank Cauley 1995

## BUTTERFLIES AREN'T FREE



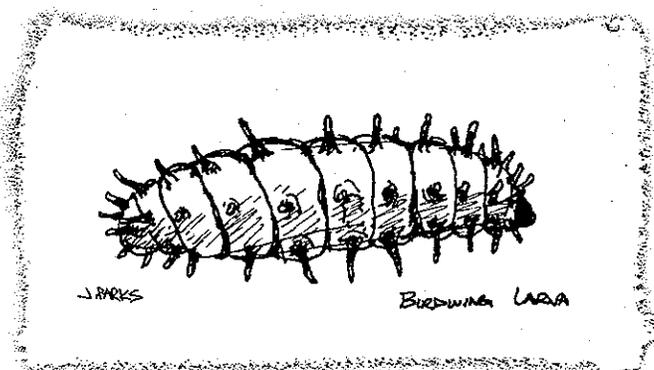
Sketch: John Parks

rainforest, *Aristolochia* are few and far between. And different species of birdwings specialize on different species of *Aristolochia*.

It's hard to imagine ruthlessness in a caterpillar. But, because the birdwing butterflies are limited by the availability of *Aristolochia*, a *goliath* larva will strip a vine clean of foliage, then wriggle to the base of the plant where it makes a deep, lateral cut through the trunk of the vine, killing it off. Other *O. priamus* or *goliath* larvae sharing the same host foodplant are, as a result, starved to death. Thus the *goliath* larva has secured a future free of competitors.

The natural survival of the butterflies in the wild is astonishingly low. *Ornithoptera* usually lay about 200 eggs in a lifetime. Only two eggs make it to adulthood. In the Hatams' gardens, the butterflies' survival climbs from 1% to 60% because the farmers keep predators such as birds at bay. The eggs hatch and become leaf nibbling caterpillars. The caterpillars are succulent, covered with soft spikes—a juicy morsel by most bird's standards. This is a vulnerable time for the caterpillar. John Parks spent time caterpillar watching. If he stuck his nose too close, the caterpillar tried to protect itself by extruding ominous looking orange horns. If he placed it on the top of a leaf, it immediately crawled underneath, so as not to be seen by predators.

The farmers showed us how they carefully wrap the hard-shelled pupae in mosses for transport. The next day they carried their valuable cargo a long day's hike to the YBLBC butterfly cooperative in Manokwari. There, the coddled pupae metamorphose to adulthood in a temperature-controlled room duplicating the butterflies' natural mountain environment. As soon as the butterflies emerge, they are injected with ethyl alcohol, killing them instantly, before



Sketch: John Parks

they can do any damage to their wings and, therefore, allowing them to retain their commercial value.

## Unexpected Outcomes

The butterfly enterprise has had unexpected results. For example, it alleviated some tension amongst the villagers. "The clans were scared of each other," said Duncan. "Working with the butterflies helped because it was like a common enterprise . . . We took guides into villages where they had never been before in their life. There was a lot of competition about it, but because it was a joint enterprise, they were all working on it together, and they were trying to learn from each other."

"Instead of saying you should do this and that, we used to spend a lot of time walking around the mountains," recalled

## FIELD NOTES

Toward evening we come to a tear in the forest canopy, cut by a large river. As we wade across and clamber up the other bank, a whooshing—like steam engines—swivels our heads up in time to see a flock of 50 Blyth's hornbills streaming across the spotlight of the moon. They flap with necks outstretched, their knobbed heads and heavy wings pushing noisily through the air.

I have rarely seen a hornbill, never mind 50. Hornbills are highly vulnerable to habitat loss, poaching, and being eaten. I take this sighting as a sign of hope for the future. Daud, our guide beams at my excitement and his own. For the first time, he is seeing hornbills magnified 10 times by Zeiss binoculars.



Photo: Hank Cauley 1995

Duncan. "We'd walk around the villages and see what they were doing that was succeeding. We'd go to one village and notice that they had put the plants under one type of bush and given it a mulch of leaves. And then we'd go around to the next village and say, 'Hey did you see what they're doing over there?' So we were making sure the knowledge was being shared about. It worked way better like that because there was intervillage competition, as well." He continued, "Thirty years ago, if people were walking between two villages and they were alone, they could easily be killed. You couldn't go outside your village area. People would ask the question, 'What is that person doing on my land? They can only be there to poach, to spy out a raiding party or to steal. I don't know them, they are no relation to me—so shoot them.'"

"When the farming groups were set up in the mountains, we wrote them letters to invite them to a workshop," Duncan reminisced, "instead of just sending word by someone or a general notice. They started replying with letters using the same format. It formalized the relationship and gave them some status."

## Moving into Marketing

The first phase was technical, working with the villagers to figure out the best ways to grow the food plants. "Then we moved into the second phase, which was setting up the marketing operation," recalls Duncan. "That was really the

most difficult thing. We produced a lot of butterflies, and then we needed to sell them."

First of all, they tried to work with the illegal poachers, partially because they represent the major threat to the butterflies, and partially because they are the ones with the markets and business skills. "Initially we wanted to work with the Chinese traders who had been buying poached butterflies illegally for a long time, and who had existing markets. We would have taken their business and legalized it. But you've got to remember the profits from doing it illegally are huge. They pay Rp 3,000 or Rp 4,000 (U.S. \$.30 or U.S. \$.40), and they sell it for U.S. \$80. They're talking huge profits because they were paying such low rates and marking them up so high. So they could afford to have stock vanish in the post, or lose stock—they were making a lot of money. We offered to set up a business with them because it would have been easier. But it didn't happen, they didn't want to do it."

When the thieves didn't work out as a marketing partnership, Duncan approached the missionaries to help establish an institutional umbrella under which they could put the butterfly business. They weren't interested in going into business, either.

Finally, in desperation, WWF-IP set up an offshoot NGO to run the business—YBLBC. "We were quite pressured for time," explained Neville, "because the villagers were

producing more butterflies than we could sell. If we had delayed any longer, they would have gone into the forest and cut all the vines down.”

When the business began YBLBC and the farmers weren't sure what prices the butterflies could command. Now, they've determined that different species range from U.S. \$5 for a pair of *Ornithoptera priamus poseidon* to U.S. \$390 a pair for *Ornithoptera paradisea chrysanthumum*. Hybrid birdwings are especially prized for their uniqueness. Yoso, YBLBC's marketing director, explained with great animation how he figured out what he could get for a hybrid by auctioning it off using the connections of a dealer in California. Pitting a French buyer against an American in an auction, the hybrid sold for U.S. \$7,600. The Californian took 40% for her role, but it was still a coup. Yoso beamed shyly at his own ingenuity.

Although the Hatam no longer poach the butterflies, some other tribes still do, and the government does little to support the Hatam's efforts to legally and sustainably ranch birdwing butterflies. The illegal trading prices undercut what the cooperative can offer since YBLBC pays the farmers fair prices. And usually, if poachers get caught, the government only confiscates the butterflies. There does not seem to be any real consequences for poaching. Poachers tell buyers that a bribe of U.S. \$2 is generally enough to fix things if they happen to get caught. Then there are permitting nightmares. Because the Indonesian government is so bureaucratic and is responsible for enforcing CITES rules on trade in endangered species, there are delays of three to six months in granting export permits for the legally farmed butterflies (making it difficult for YBLBC to be responsive to clients and shifts in demand since they need these permits for each new shipment), while illegal sellers appear to have access to much faster bureaucratic channels.

### Keeping Watch on the Resources

Back in Manokwari, at the YBLBC office, John Parks led a monitoring workshop for the farmers. Monitoring or, more simply put, “keeping watch” allows the Hatam to manage their resources, to keep track of the impacts of the butterfly ranching on the butterfly populations, and supports the butterfly business with valuable information about stocks. This workshop was a follow up to a similar training he did a year ago.

Not only have the Hatam applied what they learned last year, but they have organized themselves into monitoring teams and have been collecting the data on their own. At this workshop they were keen to learn more and take the monitoring a step further.

Over 40 farmers hiked down from the mountains for the three-day event, many with their families. The families lounged in the treed area behind the YBLBC office where there are dormitories for the Hatam and cooking facilities. The workshop was inside the cooperative. Despite the sweat-inducing heat, the Hatam were unwavering in their attention. They saw monitoring as their tool for controlling butterfly production and controlling threats. Parks has a gift for making science simple, and so they hung on John's and Avi's every word. He started with basic ideas so that the Hatam could easily understand the foundations of analysis and of responding to what you learn—that is, adaptive management. With simple participatory activities, Parks checked whether the farmers understood. They did.

Despite the skepticism of many scientists in Indonesia and elsewhere, Parks knows communities can monitor and, therefore, manage how they use their resources for the long-term. He has seen it at several BCN-supported projects. This, he believes, is the key to sustainable use and conservation being mutually supportive instead of at odds with communities. Monitoring one “resource”—such as butterflies—is only a microcosm of how the Hatam are trying to apply the same watchful eye and control over a larger area and all resources often in seeming competition with the government and even conservationists from WWF-IP, which was not confident the communities could adopt monitoring techniques that were meaningful for conservation. In the end, conservation projects—even governments—come and go. But the communities are there for the long haul. Through monitoring, they become aware of changes and can seek solutions if they observe that things aren't going as expected—and they can do this before it is too late.

A few days after the workshop, John and some farmers thrashed through the woods to measure the scarce distribution of *Aristolochia* near the Reserve's boundary. The farmers were clearly able to apply what John had taught them. Later Daud Wonggor took John to his forest gardens where he had planted *Aristolochia* and caterpillars hung like grapes from the vine. Daud assessed the health of the vines and looked for signs of pests, or the chew marks of larval butterflies, and recorded his findings. “Mon-i-TOR-ing,” exclaimed Daud with a piano keyboard smile. Then he gave John two thumbs up.

### Tenure Hanging in the Balance

Even though the Hatam have taken day to day control of their lives and livelihoods, the unresolved issue of tenure remained a source of tension. The YBLBC staff blamed WWF-IP for the confusion, but it's probably not that simple. The main

government official dealing with the Hatam was a man named Daud Wommessin, who works with the Ministry of Forestry. Years ago, Wommessin worked for WWF-IP. Recently, in his new incarnation as a government employee, he won a prestigious environmental award from Indonesia's former president, which leads Saragih to believe that he has considerable influence. Saragih was lobbying Wommessin hard to return the Reserve to the local concept of *Igya ser Hanjop*, and to give the Hatam total rights to manage the land.

When I asked Daud Wommessin what he knew of the story, he shook his head ruefully, "That was not handled very sensitively," he said, referring to the altercation in the forest between the government workers and the Hatam. Wommessin was a hard read, but after two long conversations, I thought I understood something. Although he was careful not to say so, I concluded that Wommessin was

suggesting it might, for the sake of the forest, actually be better if neither the government nor the Hatam have clear ownership over or develop the Reserve. He is clearly a conservationist who wants the Reserve to remain intact. "So," I said, "you think ambiguity about the status is a good thing for the wildlife. Nobody owns it, nobody can use it." Wommessin looked at me hard and drew on his cigarette.

If I interpret his meaning correctly, this is an important point in the context of Indonesian conservation efforts. Many Indonesian NGOs are seeking to wrest control of natural resources out of the state's hands and award full tenure to communities, especially indigenous ones. There is so much effort to do this; it seems these NGOs see tenurial transfer as an end in itself, as a panacea. But if one looks across the border to Papua New Guinea, conservationists lament the fact that clans do own the forests and all the resources six meters

below the earth's surface. Because of this, the clans can and, often, do sell those resources to the highest bidder—usually at far less than market value and to companies that don't adhere to environmentally-sound mining or logging practices. Might this happen in Irian Jaya if the clans are given full traditional tenure rights? Perhaps, perhaps not. Might joint management of the resources be a suitable alternative? Is it necessary to have full tenure to have a positive impact on conservation or, as has happened at other BCN-funded sites, can it be enough (for conservation and sustainable management) to award limited access permits and *quid pro quo* management responsibilities to communities?

### The Experiment's Results

There is an Indonesian expression: Not only did I fall off the ladder, but also then the ladder fell on me. First the rupiah tumbled, going in 1997-98 from Rp 3,500 to Rp 11,000 to the U.S. dollar. Then, nature kicked the ladder. In the wake of El Niño, forests burned out of control and a prolonged drought dried up the rice paddies. The butterfly farming was climbing the ladder until the economic crisis made it fall off. Indonesia's economic crisis is breeding an ecological one, because as poverty and population increases, nature comes under ever increasing pressure.

We fully understand that the butterfly farms alone will never be able to totally sustain the Arfak population of 15,000 Hatam. In 1994, butterfly-generated income reportedly accounted for 75% of the cash



Photo: Hank Cauley 1995

## BUTTERFLIES AREN'T FREE

income in the 22 Hatam villages. But by 1998, on average, just 40-50% was derived from butterfly sales, partially because of the devalued rupiah, but also because of diversification into other, non-linked enterprises (e.g., markissa syrup, derived from passion fruit, which does not need a healthy forest to thrive).

The farmers are starting to diversify their earnings based on what they learned from the butterfly business. Growing and selling peanuts, for example, is a new income generation initiative that was an offshoot of the butterfly enterprise. The butterfly enterprise is as one farmer told me, "a little bait on the end of a fishing rod that can make a big catch." More than anything the butterfly cooperative has helped the Hatam organize and has become a foundation upon which many more things are being built. Butterfly farming is also changing the Hatam's mindset. To the Hatam, ranching and selling butterflies is much more than a business, it is a hard path to self-respect.

The Hatam are increasingly proud of what they can do and have new confidence in their abilities. Through simple resource monitoring techniques taught to them by John, they are keeping watch over their own resources with diligence and far-sightedness that goes beyond what many "outsiders" expected.

What are the lessons for conservationists? Enterprise as a means to conservation can work, but not unless it is paired with other conservation strategies like education awareness. Other conditions critical to success include strong, enduring leadership, supportive government policies, and, of course, who owns or has, at the very least, legal access to the resources—which, in the Arfak case, isn't quite clear.

If the Hatam don't believe they control the future of their resources, they will have no incentive not to exploit them like any outsider would. The Hatam are truly trying to "keep watch over their butterflies," which is just a small part of a larger effort to control all their resources, even though this might be in direct competition with the government and, even, conservationists.

I think this conservation experiment has done much good for the Hatam. I am, though, less certain about the butterflies. In the short-term, the ranching may have actually increased local populations of birdwings, which were reportedly not as common before. But in the long-term, the butterflies are in a precarious situation if conservation is based on a totally utilitarian view of the resource base. If appreciating the butterflies for their own sake has no part in the equation, what's to say that the Hatam won't embark on other, more commercially lucrative enterprises that could spell the end for the butterflies. When anyone intervenes in another culture, there's really no telling what direction things will go—it's the law of unintended outcomes. The Hatam are applying new skills to pursue their own aspirations and values. As BCN's Bernd Cordes said, "We start with butterflies, but what's to say the Hatam won't go to logging because of what we've done . . . because butterflies don't offer enough money, enough incentive for sustainable management. The Hatam have their own systems, their own values. But what was enough at first might not be enough later. As long as the Hatam see a substantial value in the trees themselves, they might have an incentive to go there. That's why BCN supported timber cutting in Papua New Guinea—to see if it can work. People always want more."

But, if the butterflies, birds, and forests lose—who wins?

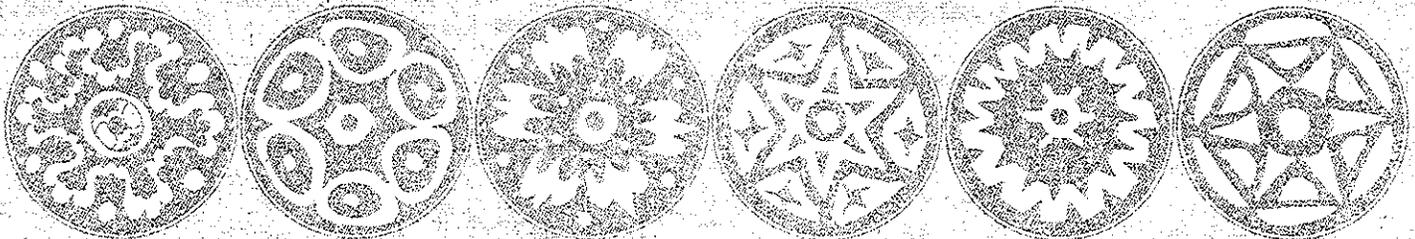
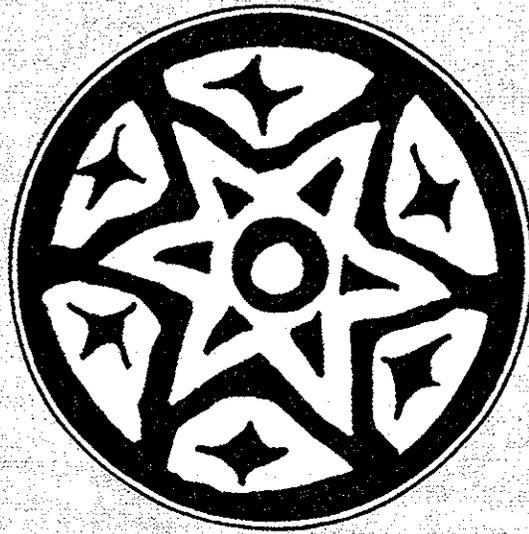
*An update from Irian Jaya: By mid-1999, YBLBC successfully spun-off the butterfly business into a registered, for-profit entity called PT. BLBC, allowing it to be run on a more commercial basis and separating it a bit from the financial operations of the not-for-profit work YBLBC does. They have already begun to form the shareholder arrangement under which PT. BLBC will operate, whereby individual butterfly farmers will buy shares in the business using their own savings. In addition, YBLBC secured significant funding from the Indonesia Biodiversity Foundation to continue the biological monitoring and enterprise development that began with BCN funding. They will also use the money to initiate community mapping of the area and its resources. A bright and interesting future for the project, indeed.*



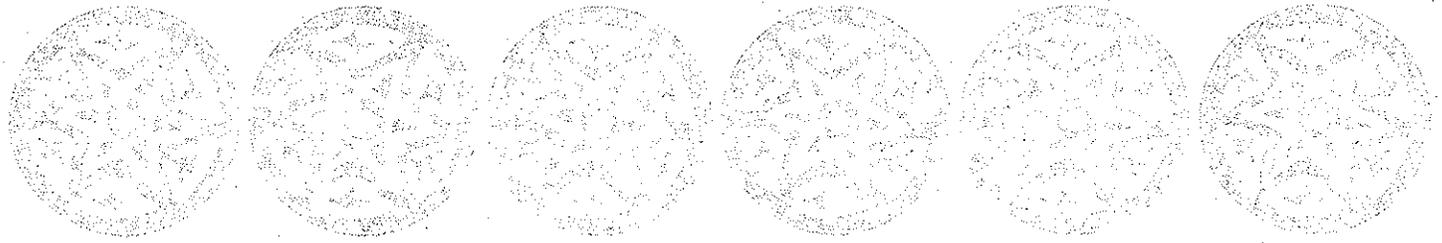
CHAPTER FOUR

# Charting Their Own Course

*By Nancy Baron*



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To the coastal communities of Biak and the Padaido Islands in Irian Jaya, the oceans are everything. The sea dictates if people eat or go hungry; if they can travel or must stay put. Not long ago, villagers moved from a subsistence lifestyle into a cash economy. Now, by selling fish and invertebrates to outsiders, community members can buy those things the sea doesn't directly provide. But over the years, destructive fishing practices such as reef bombing, cyanide use, and small-mesh gill nets, have crumbled the reefs' ability

to support life—including the long-term livelihoods of a growing island population.

Despite disasters and unexpected events, community-led efforts have begun to turn this situation around. The communities are steering a course towards conservation—albeit not really by the route that was anticipated.

## Background

The Padaido Islands is one of 20 community-based projects BCN supports in the Asia-Pacific region. By linking enterprise to conservation, it was thought that the downwards slide of environmental destruction caused by reef bombing and cyanide poisoning could be reversed. Given the Islands' world class snorkeling and diving potential, a community-owned marine ecotourism business and its spin-offs seemed like a natural way to develop alternative sources of income. Not only could it take some of the pressure off the fisheries (for many households the only source of cash income) but, done right, it could demonstrate how coral reef conservation and business development could be compatible.

Or so argued Yayasan Rumsram (a local community development group based in Biak) and Yayasan Hualopu (their academic and marine conservation-oriented counterpart based in Ambon.) Together, these two NGO's hatched a plan that they hoped would help the communities achieve their own goals for a better life and, at the same time, preserve the extraordinary richness of the reefs.

As Jeffry Marien, the Director of Rumsram, states, "If you want to do conservation here you have to think about incentives. Like it or not, people will never take care of the coral reefs if they can't eat. The community needs assistance badly to face and compete with people from outside who have more experience and expertise . . . Rumsram won't be here forever. You have to gradually transfer assistance. The challenge is how to make the community self-sufficient."



*One of the Padaidos' future fishermen.*

*Photo: Bernd Cordes*

In fact, a trickle of visitors had been coming to the Padaido Islands for several years, so the community built one small cottage on Dawi Island to accommodate them. The idea was to gradually build on this modest start.

Rumsram's and Hualopu's strategy was to make community awareness the foundation on which to build all other project activities; that is, to help people see very clearly the importance of sustainably managing and conserving the reefs on which their livelihoods depend. Ecology lessons explained the impact of bombing and cyanide on the fisheries and paved the way for the communities' acceptance of other fishing technologies, such as larger-meshed fishing nets and rumpsons (floating Fish Aggregating Devices that attract pelagic fishes), as alternatives to always fishing the reefs. The communities' concern for their failing fisheries—which they recognized but didn't really know how to address—spurred their interest in keeping watch over the threats to their future. With assistance, they began monitoring the results of their interventions and the ecosystem's recovery. Enterprise activities included building boats and small cottages to accommodate divers and sightseers, managing a day use beach with user fees, establishing community tourism management boards, teaching financial skills, strengthening the role of women in resource-use decision-making, and expanding a savings cooperative that was started in the early 1990s with Rumsram and UNDP assistance.

But time after time, the communities encountered unexpected, external challenges: first a tsunami, then the Indonesian economic crisis and the cancellation of flights connecting Biak to the rest of the country and world, the development of a large resort hotel on community lands, and ever increasing pressures from industrial fisheries.

Indonesia is experiencing a tumultuous time. No one could ever have anticipated the twists and turns this project has taken—economically, politically and ecologically. Nonetheless, in terms of community-led conservation, this has been one of BCN's most successful projects. In the final analysis, the most important result of this project is not the development of a self-sustaining ecotourism enterprise, but the communities' decision to apply the skills they've learned to what has emerged as their most urgent need—to establish tenure over their land, reefs and fisheries and, in turn, to try to conserve these resources for the future by applying new skills and information.

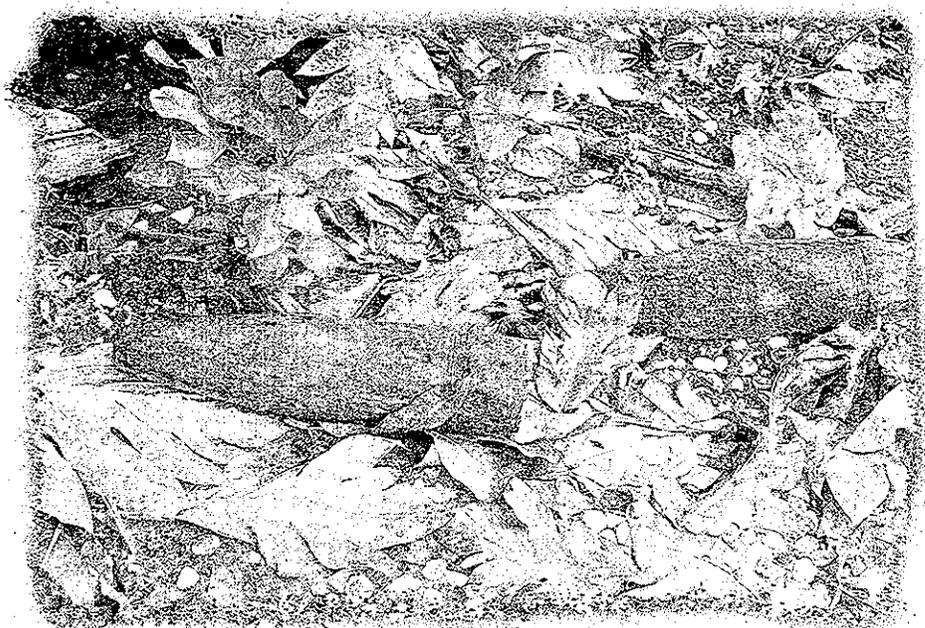
### An Explosive History

The Padaido Islands are made of sea creatures, squeezed by the weight of time and ocean into limestone. Over the eons, chunks of shattered sea bottom rose from the water to be carpeted by trees and festooned with vines and mangroves. The flatter white sand islands are made of coral, slowly ground down by waves and the crushing jaws of millions of coral-eating fish. Below the sea's surface, the islands are encircled by some of the world's most exquisite reefs. Like thriving underwater cities, these corals support a teeming variety of fish and invertebrates, themselves in turn food for larger sea-going fish.

Yet increased competition for marine resources between locals and outsiders has led to the deadly but expedient practice of using explosives and cyanide to harvest fish. The history of bombing in the area goes back a long way. The reefs around Wundi Island are a distressing sight—a colorless, underwater graveyard of broken and bleached coral. During WWII, military activities took their toll. Wundi, an American base, became both a target and a testing ground. Bombs exploded on land and in the sea, a seemingly strange paradox in this paradisaical setting. In 1945, when troops pulled out, they dumped their leftover ammunitions into Wundi's lagoon, where they lay for many years, undisturbed but for the slowly encrusting sea life.

In the 1960s, migrants from the islands of Sulawesi and Madura started fishing the Padaido Islands. They imported a new technology. Instead of nets, they tossed bombs. Stunned by the underwater explosion, fish float to the surface where they can be easily gathered. Local fishermen watched this new style of fishing and worried—but not about the damage being done. Given the abundance of fish and reef around them, it never occurred to them that they could sabotage themselves. Rather, they worried that they were being left behind by this highly efficient form of extraction. Local fishermen had no money to buy dynamite, but it dawned on them that they had a free source of explosives—the undetonated bombs left behind from the war. So they devised their own technology. Using jerry-rigged goggles made of glass and elastics, they searched the lagoon and sea

This WWII history is, actually, an important tourist draw for Japanese, Dutch and American visitors. Old, rusting WWII material is everywhere in evidence on Wundi.



*WWII Bomb casings on Wundi Island.  
Photo: Bernd Cordes*

**W**undi is just one of the 30-plus islands that make up the Padaido chain. The Padaidos are located off the southeast coast of larger Biak Island. This project's work is focused on Saba and Opiaref villages on the southeast coast of Biak, and Wundi, Dawi, and Pasi Islands in Upper Padaido.

bottom for the unexploded 100 kg bombs. Once one was located, they attached ropes to it and, using motorized outriggers, hauled the explosive onto shore. There they sawed them open and gingerly filched the gunpowder. Beer bottles made bombs that could send a stunning wave 500 square meters. Cored out papayas were also effective grenades.

Sefnat Rumbiak, a fisherman and resident of nearby Pasi Island, recalls, "From '64 to '69, I spent time learning how to make bombs without killing myself. Then in 1970 I started using them." The bombing went on for years—by outsiders and locals alike. Gradually the fishers noticed that there were no longer as many fish. They blamed the dwindling resources on the fact that, because of the bombs, "the fish were smarter, or more afraid and harder to catch." But older

fishers could remember, prior to the 1960s "when fish were larger and more plentiful—as well as more stupid."

### **Rumsram Surfaces**

In the late 1980s, Rumsram was a fledgling NGO formed of local people. Many of the members were friends from school who became colleagues with a shared vision to help their communities develop. Jeffry Marien, a member of this founding group and now the Director of Rumsram, remembers a visit by World Wide Fund for Nature (WWF) staff, who came to the Islands with brochures about coral reef conservation. Jeffry sat in a boat while the WWF folks went into the water and surveyed the local reefs. "I didn't know how to use a snorkel then . . . They came up from the water and said most of the coral was dead. At the time, I didn't know why."

## **Threats**

### **Pressures . . . from Inside and Out**

"We thought that reefs were reefs and fish were fish," recalls Jeffry. "We didn't understand the connections—that little fish feed on the coral reefs and bigger fish eat the little fish." The WWF people explained the connections between reef

bombing, dying reefs and diminishing fish stocks to the Rumsram team. The implications for the future hit home hard. Bombing was destroying the fishes' food source and, therefore, the peoples' as well. But by then it was such a widespread practice, the prospect of stopping it was daunting.

By the early 1990s, the Government of Indonesia was flagrantly issuing industrial fishing licenses to other islanders and countries "and local people had no recourse to deal with the fishers from Sulawesi, Madura, and the Buginese," says Jeffrey Marien. "The outsiders used non-environmentally friendly gear and, of course, bombs. The result was an escalation—like an arms race."

### The Tsunami

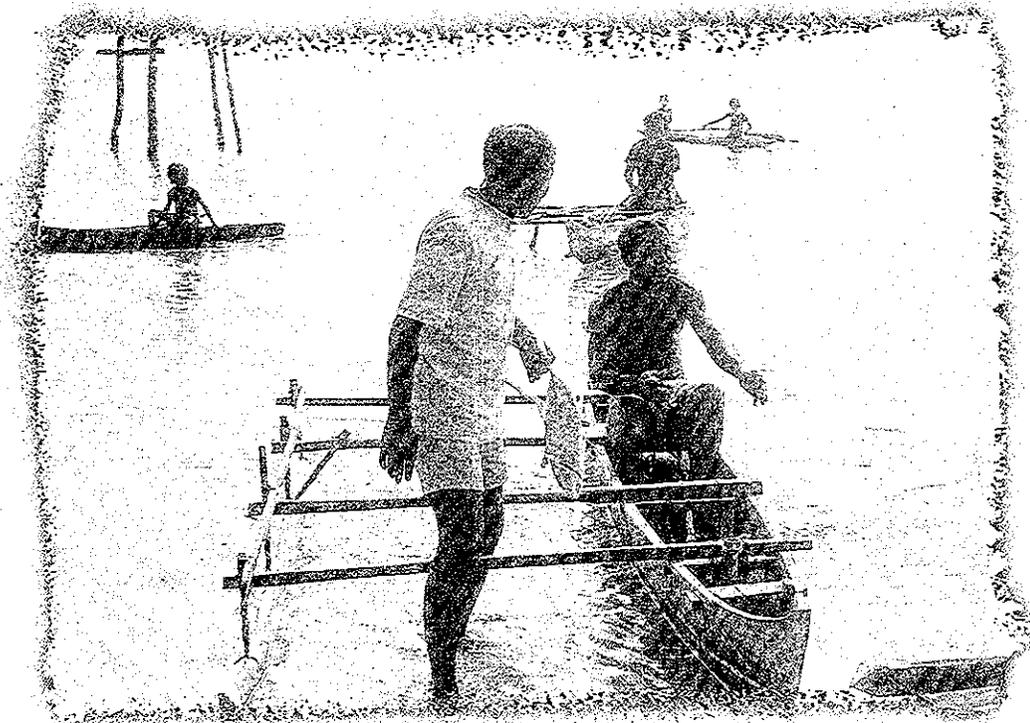
Human-induced pressures are not the only ones impacting the island ecosystems. Local people refer to time as B.T. and A.T.—Before the Tsunami and After the Tsunami. Every islander remembers what he or she was doing at 2 p.m., 17 February 1996. Yulianus Wongor, 49, was salting fish in his beach cottage on Dawi Island. "Suddenly everything started shaking" he recalls, "I felt dizzy. Then my house started crumbling around me." He shouted at his daughters, aged 9 and 15, to get outside. Before following them, he tried to put his salt fish safely in a basket, but water surged through the door, filling the hut, and his morning's catch sailed away. As he thrashed after it, he looked seaward just

The earthquake's epicenter was located just 60 km southeast of the Padaido Islands. Reports said the tsunami's wave reached southern Japan.

in time to see a giant swell engulf nearby Runi Island. In the moments that followed the 7.8 scale earthquake and the tsunami it triggered, many locals lost their lives. Those that survived lost their homes, their livelihoods and any sense of security.

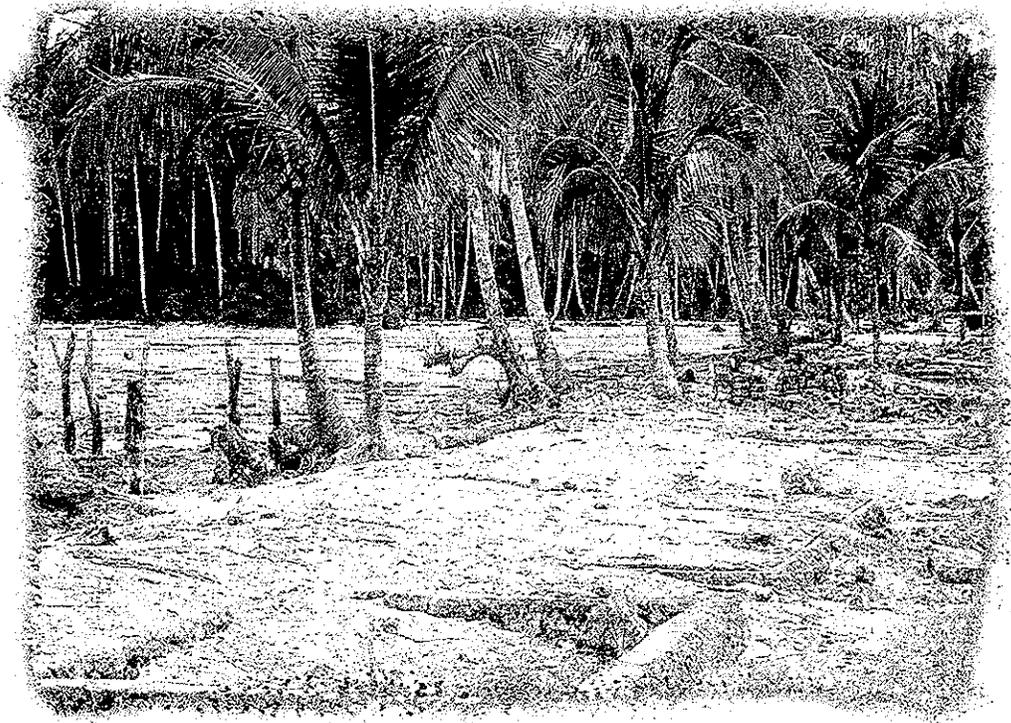
The great wave scoured the seas of fish and invertebrates, shattered and flipped massive sections of coral reef, washed the town of Saba off its foundations, and swept away most physical traces of the ecotourism and conservation project that had been developed in the last year—offices, boats, guest cottages, snorkeling equipment and the local co-operatives' shops. One structure was left standing—the original cottage built on Dawi before BCN funding started. Later, people said they found a Bible under the cottage, explaining why it wasn't destroyed.

Immediately following the earthquake, the catches of demersal fish and reef fishes dropped by almost half. Many of the Islands' wells were ruined with salt water, although



*Jeffrey Marien buys dinner on Pasi Island.*

*Photo: Bernd Cordes*



*Foundations of former homes on the coast of Saba.*

*Photo: Bernd Cordes*

conversely the soil became more fertile. Besides the destruction of homes and fishing equipment, illnesses due to rotting carcasses and disease-bearing mosquito populations plagued the people. Traumatized, the people were uneasy about staying on the small offshore islands, like Dawi, which are the destinations for the ecotourists. The women have shifted from collecting shellfish on the offshore islands to producing coconut oil for income because they feel safer closer to home. (This, in fact, is helping the shellfish stocks recover and has been good for the coral, since a sort of crowbar is often used to get at the shellfish underneath.)

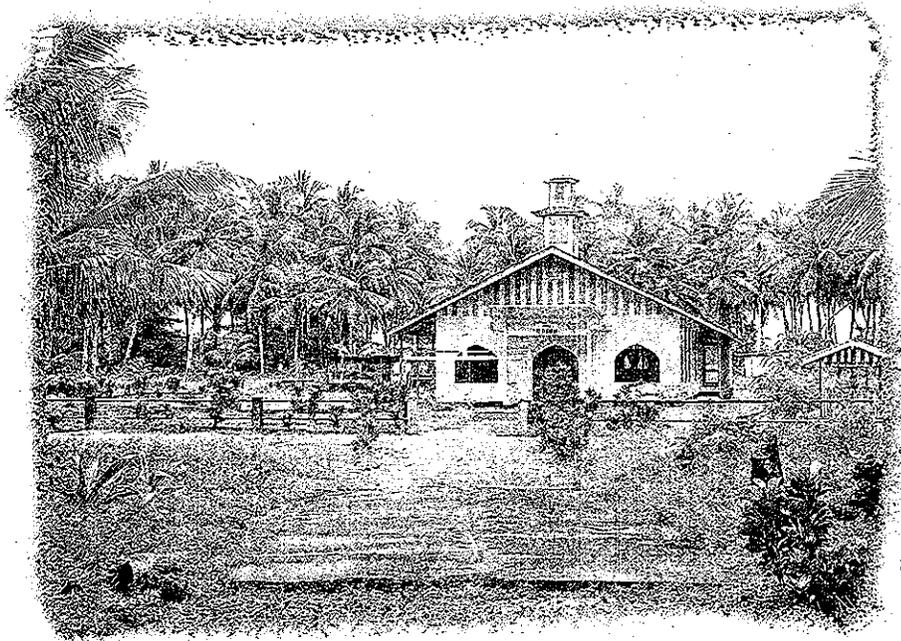
### **Fatal Harvest**

In 1993, cyanide use began—a cruel technology that causes slow death to the prism-colored reef fish, and lasting damage to the reefs on which they depend. Squirted from a bottle, the sodium cyanide stuns fish, which allows them to be collected for the Aquarium trade. Although the fish appear to recover, their digestive tracts are forever ruined, causing death by starvation. Still, the fish survive long enough (often three to six weeks) to be shipped to North America where they are sold to tropical fish enthusiasts. Inexplicably to the aquarist, the newly acquired fish soon dies.

## **FISH WITHOUT A FUTURE**

Using cyanide to catch fish for the aquarium trade (and live food fish too) is frighteningly prevalent in coral reef environments because it is far easier than trying to net-catch them. Conservationists are struggling to address this problem by educating aquarium hobbyists to buy only fish that are

certified as being net-caught, and to be willing to pay a little more for the trouble and skill it takes to catch them this way. Conservationists are also trying to develop user-friendly cyanide detection kits so that customs officers and buyers can easily test whether the fish have been poisoned.



*Wundi's church—the first building you see on arrival.*

When the cyanide fishery was at its peak, a Biak-to-Honolulu-to-Los Angeles flight facilitated capturing and shipping cyanide-caught fish to unsuspecting tropical fish buyers. This problem was remedied on its own when all international flights through Biak were canceled in 1995, making live fish export impossible. Now, however, cyanide is sometimes used to force lobsters out of their hiding places.

### **The Giant on the Doorstep**

Currently, most of the tourism in the area is centered on the five-star Biak Beach Hotel. This sprawling hotel was built using government funds and financial backing from Jakarta at a time when the Garuda Airlines flight still connected Biak with Bali, Honolulu and L.A. The idea was to make this sleepy tropical paradise a destination stopover for adventurous scuba divers and snorkelers.

The hotel convinced the Saba villagers to sell their land. Although the residents asked for Rp 1,000 per meter, the hotel compensated the landowners with a pittance—Rp 400 per square meter (worth U.S. \$60 at the time). The hotel said the community would be 'shareholders' and promised employment in exchange for land. In September 1998 the number of locals employed was 16 from Saba, 18 from Opiaref and 62 from Biak, all of which were in low paying jobs. Assistant housekeeper is the highest position a local Irianese has attained.

With the economic crisis and the devaluation of the rupiah, the hotel is limping along with a 10% occupancy rate. The

people that would be attracted to the hotel are not likely the same types who would stay in the charming but rustic Padaido's cabins. Hence there is not direct competition for clientele. But there is competition for the reefs themselves as a key tourist attraction.

In the eyes of people from Saba, the Biak Beach Hotel is a squatter on their land. The hotel's clients dive on their reefs without permission. After the village was washed away, the community members moved inland and uphill to rebuild. Seeing this beachfront "empty," the hotel began thinking about expanding and setting up an exclusive-use marina where the reef currently exists, because, they argued, the area was no longer being used. Like a giant on the doorstep, the hotel demands more and more to be satisfied.

### **Tenure: The Turning Point**

Land and marine resource ownership in Irian Jaya is historically clan-based. But when Indonesia took over Irian Jaya in the late 1960s, the Jakarta government declared that all land belonged to the state—by law.

The traditional community-based system of marine resource management called *sasi* forbids the use of specific resources for a designated period of time in order to allow them to recover. Policed by village groups, *sasi* remains strong in some areas, but is almost nonexistent in others. These community-based systems are eroding as traditional governance disintegrates under pressures from population

The *sasi* system was brought to the Padaidos in the mid 1960s by a clergyman who came up from Ambon. Known as *sasi* in the Malukus and other areas—in the Padaidos, the term *nasisen* is more commonly used. Since it was brought into the area via the church, the church became an avenue for broader discussions on resource use.

increases, central government regulations, modernization of a cash economy and encroachment by fishers from other areas.

The village chief, who is elected by the communities for an eight-year period, is the highest local leader. Decisions on land and sea ownership are based on the results of meetings between village heads and church leaders. But the village chief does not have the authority to give sea and land concessions to communities outside the village. This is the right of clans. The role of final decision-making on appropriate penalties for rule violations has been taken up by the church.

The Padaido Island communities have agreements among themselves regarding boundaries for community fishing grounds and fishers' right-of-access to areas claimed by their community. Still, conflicts arise.

Local community boundaries are not formally recognized by higher levels of government, nor do those boundaries necessarily provide protection from outsiders. The Indonesian government acts on its own self appointed authority, sometimes compensating community members, sometimes not. So, while the communities have full, day-to-day access to resources, they still do not have the recognition from the government that would give them "legal" control or title.

As one example, though noone has ever talked directly to the islanders about it, the government has plans to form a marine reserve around the Padaidos for diving and snorkeling. At present, the marine sanctuary (a Taman Wisata Laut) is on paper only. Borders have been discussed, but not established. Under the current plan, it includes at least 11 of the 30-plus islands in the Padaidos area. Because the decree for the reserve was issued without any discussion, the communities fear it will have an impact on their access

to and tenure over resources. So, for now, the reserve is regarded as a threat, even though, from a conservation standpoint, it could become part of an effective strategy.

## Charting Their Own Course

The communities know that the increasing claims on their resources jeopardize their ability to control their future. This had a powerful effect on the direction this project has taken. While the intent was to make the communities aware of the threats to their fisheries and reefs and to help them build new businesses based on sustainable enterprises, the communities have taken their awareness of the importance of conserving their reefs and fisheries and applied all their new knowledge and skills to achieving their over-arching goal—gaining tenure.

The communities are entirely focused on convincing the government to recognize their right to manage, use and safeguard resources and demonstrating their competency to do so. Each activity is designed to establish ownership and control of resources and to gain legal and effective acknowledgment of their rights by outsiders and other locals alike. This motivation has had a galvanizing effect on community involvement and has demanded flexibility and adaptability from Rumsram and Hualopu as an interconnected suite of solutions moves the project in new directions.

### A New Awareness . . .

After WWF explained the interdependencies of ecosystems and the devastating effects of bombing, Jeffrey Marien and his



*Saba's headman (left) and a Hualopu consultant talk spatial planning.*

*Photo: Bernd Cordes*

## THREAT REDUCTION

Local residents report that threats to the Padaidos' reefs are now being met:

- Reef bombing by locals: 90% reduction
- Use of sodium cyanide to catch lobster: 30% reduction
- Permitting outsiders to fish: 20% reduction
- Locals anchoring on the reefs: 100% reduction (buoys now serve this function)

Rumsram team began working with the local Protestant church to spread the word. "People listen to the church," says Jeffrey. "So every Sunday after church came ecology lessons. Part of the sermon became, if you destroy the coral, you destroy the future for your children." Jeffrey explained that, "the coral reefs are like gardens: you don't destroy them if you want them to keep producing. Or like coconuts—if you want coconuts you don't destroy the trees."

Other progressive minded community members soon came on side. Saba's headman recalls with pride, "Before I was headman, I was a policeman. I realized the bombing was destroying the source of our living. Not only that, but people were putting their lives in jeopardy and dying due to accidents with the bombs. Every Sunday, I too would talk in church after the sermon. I was famous for my tough policy. I used a small boat for patrolling which I often paddled myself. When I saw a bomber slip into the water [to collect the stunned fish] I would go over and wait for him to reappear, then bust him. It was common practice that there would be a bigger ship waiting somewhere to get the fish from the bombing . . . I didn't care who the bomber was . . . I threw the chief of Wundi Island into jail for six

months. As soon as I retired as a policeman, I was elected headman by the people."

Cliff Marlessy (another founding member of Rumsram and Hualopu) sums up what the NGOs have learned: "Don't introduce whole new systems if you can help it. You can either go through the culture, or the church, but in this society the culture wasn't strong enough, so we used the church as the vehicle."

Everyone goes to church on Sunday. If you build on what is there, you are not creating yet another series of meetings and demands on peoples' time. "In the Padaidos," says Cliff, "we introduced the value of the coral to ecotourism and to fish stocks." This gradually led to strong community peer pressure against bombing and commitment to protecting the reefs. It worked because the church already has a well established relationship of trust—essential to changing values and behaviors—and because it is often a unifying element in a society divided, in some ways, by clan relationships.

### . . . and a Common Cause

In 1993 a Bali-based bottom-fishing boat came to the Padaidos. On board were staffs from the regional planning board, government fisheries officers, the director from the industrial fishing company, and police officers.

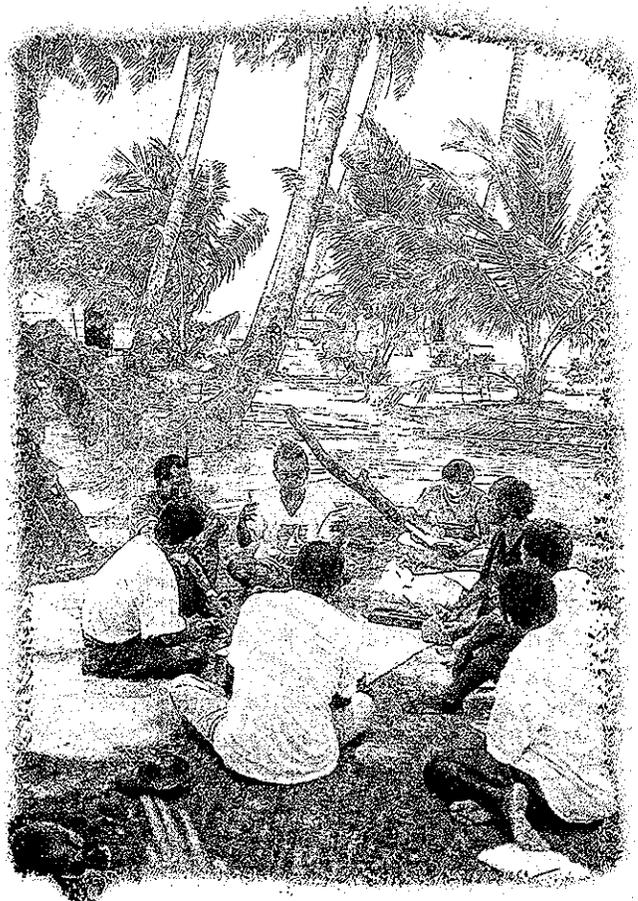
In an act of territorial protection, the local fishers, including Sefnat (a former bomber and now ardent convert for conservation) armed themselves with bows and arrows, boarded the boat, and threatened the intruders. To avoid conflict, the company decided to leave the Padaidos for good, although they continued to fish near Biak.

"The irony" says Sefnat, "is now that we are protecting the reefs and the reef fishes, the communities are effectively feeding the larger oceanic fish for the industry—the Butonese and long liners from Sulawesi. These fishers are also finning sharks. They often take only the fins and leave the rest, or sometimes they give the bodies to the communities for food. Now most of the big sharks have been fished out. Only small sharks survive."



*Approaching a rumpon off the coast of Dawi Island.*

*Photo: Bernd Cordes*



*Talking strategy in Biak.*  
Photo: John Parks

### Working Together to Strengthen Customary Law

Today the communities have devised a new approach. All outsiders must report to the respective village headman and request a permit. The headmen have a common agreement to, in effect, reject the permit by sending the fishing boats to the deep sea and advising them not to fish around the Islands.

This requires a shared sense of purpose within the communities, which has happened as a result of the islanders working together. Facilitated by Rumsram, this solidarity relies on the local social infrastructure, based on the headmen and the church.

Recently, community members spotted a boat from Sulawesi fishing within the community area. They reported it to the Governor of Irian Jaya, who then ordered it to go. Another boat from Jakarta is currently under investigation. Saba's headman believes they will eventually be successful in attaining greater resource access and control because there is a good precedent. Today it is much rarer for outsiders to fish the Padaidos, but this is sure to be an ongoing struggle. "I think people should stick together," says Saba's chief. "We must strengthen customary law again by gathering the adat

(customary) leaders to make a proposal that recognizes our law and control over the Padaidos."

### Powerful Allies

In addition to working hard to establish collaboration and trusted relations with the community headmen, Rumsram has also reached out to the navy and government. In the interest of building alliances, they invited navy staff to a BCN-sponsored meeting. Enthusiastic about what they saw, the naval officers offered to get involved. "We can help build bigger rumpons," they said. These FADs are being developed to take some fishing pressure off the reefs, but setting up large ones is a major undertaking, so the navy's offer to help was significant. "The rumpons," says Cliff, "are a starting point for the relationship. Maybe later the navy can help with the cyanide and other problems."

This relationship is definitely evolving. On one occasion, community members reported some Sulawesi shark fishers to the navy, and the navy confiscated their catch. But this is not yet common.

### Restaking their Claim

To protect itself against further encroachment by the hotel, Saba decided to reestablish "control" of the beach where the town formerly stood by making it a source of revenue. The villagers cleaned up the plastics and garbage, painted posts, planted flowers and shrubs, erected pondoks (shade huts), constructed public toilets with piped-in water, and set up traffic control gates and a booth at the entrance to two beach areas to collect user fees from beachwalkers, motorbikes and cars that come to the area. The result is a revenue-generating community business and an established presence on the beachfront. All the work was done by volunteer community labor.

The beachfront business, combined with the community mapping exercise, enabled the community to exercise active management over the area and helped convince local government officials to approve their claim. With help from

**P**roject staff is well aware that Indonesia's navy has been linked to destructive fishing practices and business in other parts of Indonesia. But they are willing to take a calculated risk of engaging this important "outside" stakeholder, looking to them for constructive engagement in their conservation efforts.

Rumsram, Saba village drafted a village law to allow for collection of beach fees that was accepted and validated by the head of Biak District. This move established "community ownership" of the beach. In its own way, it is quite astonishing. Rather than wait for government approvals and acknowledgment, Saba simply took effective control of the area. They just set the business up, then told the local governing authorities to agree or kick them out. The result is that they make a healthy income from local tourists.

This is, in part, due to necessity. The project's focus has had to change and adapt. "At the outset," project staff reminisce, "we hoped to be able to attract foreign and domestic tourists." Over the last three years, however, as Indonesia spiraled into economic crisis and political instability, the number of flights to Biak steadily decreased, and so did the number of foreign tourists. In response, Rumsram concentrated on the improvement of ecotourism facilities at Saba, and shifted their emphasis from taking foreign ecotourists snorkeling in the Padaidos to concentrating on collecting beach fees from local day users at Saba.

### Healthy Institutions

Organizations always have inner strife, but if there is a level of directness and honesty, things can be worked out. In some

projects, a lack of directness can be a problem particularly in the Javanese culture where directness is considered bad manners. But a shared commitment to a common goal goes a long way, especially if open communications are nurtured. In the Padaido Islands project, the relationships between local NGOs (Rumsram) and outside NGOs (Hualopu) have been very conducive to overcoming obstacles. This can be partially attributed to the fact the players have a long history of knowing each other, and can be direct about both good news and bad.

### Monitoring: Communities Keeping Watch

Soon after the tsunami, Dr. Irene Novaczek, a Canadian scientist working with Hualopu, trained the locals to simply and effectively monitor the biological impacts of the project. For example, she taught them to count along transects the number and diversity of butterfly fish, which are a coral eating species and, therefore, an indicator of coral diversity and health. Twice each year the community members monitor the percentage of live coral cover off the coasts of Saba, Wundi and Dawi, the presence and growth of young coral and garbage accumulation on the beaches.

Women too, are monitoring, analyzing their shellfish catches, and forming study groups on marine plant diversity and applications for family health, food and tourism. Fishers are monitoring their catches (e.g., types of fish, size and number) and those who use both natural reefs and the rumpon record catch data so that the degree of shift from reef to pelagic species can be evaluated. Apparently, some fishermen have requested payment for the counts they do, but Rumsram refuses, saying the work is for themselves and not Rumsram. The counts still happen.

The result of the monitoring is that the fishers are seeing recovery of the reefs and how the changes they are making—decreased bombing, banning



*Community members—in the water, monitoring the reefs.*

*Photo: John Parks*

The research was sponsored through a nationwide marine initiative that includes funding from an international lending institution and collaboration with the Indonesian government. In spite of this event (and without any prior knowledge of it) another branch of that same marine program returned to Biak and the Padaido Islands in March with a new, well-funded agenda for conservation and development, which local communities have partially rejected in favor of continued work with Hualopu and Rumsram.

anchors and building buoys—are all contributing. And while not everyone actively participates in the monitoring, all are aware of the project and what is going on. Monitoring results are now a common topic of discussion at any community gathering. Now that the community clearly sees the “cause and effect” relationship between their fishing practices and reef health, monitoring provides the data to enable them to adaptively manage both local fisheries and tourism.

### The Concrete Fiasco

The government-operated Indonesian Institute for Scientific Study (LIPI) sent several of its marine biologist and researchers to the reefs off Saba. Without consulting Saba’s villagers they placed 68 concrete blocks on the live coral to mark transects for research they wanted to do. While doing their own monitoring, the community members saw that the coral beneath the blocks had suffocated and died. Outraged, they wrested the blocks off the reef—a difficult and dangerous underwater task—and effectively destroyed LIPI’s baseline research effort. LIPI was incredulous and threatened to sue Hualopu (who leads the monitoring activities) for inciting the people to do this in “a government-owned area.”

In the end, LIPI backed-off and did not press charges. The event was an interesting study, however, in legal and effective ownership. The communities are exercising effective control, but it could still be taken away at any moment.

### Mapping

Toward the end of 1998, Rumsram taught community members mapping skills, using simple sketch drawings as well as Global Positioning System (GPS) to inventory their resources, to delineate the boundaries of their area, and to manage resource use. This process has stretched over many months with huge community involvement. “The mapping wasn’t part of the original idea,” says Cliff Marlessy. “This is a defensive move to regulate resource use between various stakeholders. More and more people are coming to Irian to try to start a business. If we don’t do this, we will lose what we have. So we are mapping the land as well as the social, political and economic situation. Based on that, we will have the information we need to deal with conflict resolution.” Cliff points out that the people creating the maps are the community members, not the experts. “If they fight, they are fighting with themselves so they have to resolve it.”

When asked the purpose of the mapping, one community member responds, “To protect our collective rights. Through mapping, we see and we know for sure the boundaries of our village—the agricultural and ancestral rights. Before



Getting the maps out in Saba.

Photo: Bernd Cordes

## THE STORY OF SEFNAT

**S**efnat Rumbiak is a powerful looking man of 46. His mustache and soul-patch are flecked with grey and his eyes look seared by years of staring at the sea. A fisherman since childhood, Sefnat is a natural leader within his community. "Sefnat has a good heart and a very clear vision," says Isaac. When the tsunami struck, Sefnat headed out alone to rescue survivors from the outer islands, despite his own fears.

Sefnat and Isaac have formed a powerful alliance. Their bond is born of a common desire to do good for the community which, they both realize, means doing good for the environment, too. Now vehemently opposed to the bombing he once practiced, Sefnat polices the reefs as he goes about his fishing, "If anyone hears 'Sefnat' they know what it means," he states. "If they see me coming, they are out of there. They will be afraid."

Conserving resources and getting the greatest possible return from what is taken is even more important now, because the tsunami swept away so many fish. As Sefnat explains, "Before the tsunami, fish were plentiful. Everyday I could get 100-150 kg of fish and easily 500 kg in a week. But now it takes three days to fish 150 kg, so we need ice to keep the fish preserved." The men fish until they collect 150-200 kg of fish, and then they go to market. But this is inefficient and expensive. So Sefnat and Isaac came up with a better idea—a fishing cooperative.

Using a "cool box" filled with ice from the cooperative, Sefnat buys fish at a fair price from his fellow community members. When he has a good harvest on ice, he takes the fish to Biak, where he sells them to local Chinese (historically, the middlemen in community



*Sefnat Rumbiak.*  
*Photo: Nancy Baron*

businesses and transactions), to mainland Irian Jaya, or to other commercial fish buyers. If all else fails he sells them for a fixed price to another cooperative in Manokwari.

This division of labor frees the fishers to concentrate on their fishing and not have to travel back and forth. In his role as the middleman, Sefnat is good at making decisions about how to get the best price for the fish. And he pays his fellow community members the price decided collectively by the group up front. Community members rely on Sefnat to add value to their catch, because of his trading prowess.

In the past, outside people bought fish from the villagers and didn't pay them the money owed. "So I started to do the trading for them," says Sefnat. "I like doing this. Usually I go to fish, but the community says you are better to go to the land and trade for us because you are good with money." No one dares to double-cross Sefnat.

Rumsram staff has taught Sefnat the business and bookkeeping skills he needs. "That's what I learned from BCN—doing business," says Sefnat. "And I am trying to be a good person, buying the fish and being honest about giving the money. I have motivation to change the image that Irianese cannot work, to Irianese can work."

Isaac views Sefnat as his invaluable link with the community. "Sefnat has experience with the Chinese and possesses a sense of obligation. He already had a work ethic and a strong sense of responsibility as well as good contacts with people outside the community."

Sefnat is also the lead person who organizes ecotourists' visits to Dawi Island. "Yet, on a monthly basis, I might net Rp 75,000 for my ecotourism efforts and Rp 650,750 from fishing—roughly 10%." Unlike many of the community members who don't yet grasp the concept of ecotourism or its benefits, Sefnat understands its potential and is actively trying to promote the idea to other community members. Slowly but surely, it is happening.

"What I see is that we cannot depend on coconuts and fish. They will not be sufficient in the future. I am happy that Rumsram is offering an alternative—the cottage ecotours. This could be a help. But before we go towards ecotourism, we need to recognize our rights first—and have them recognized. So the ecotourism can go smoothly. When the fish are gone and the coconuts are not enough, the ecotourism will be there for us. But it is important to mark our rights so that the enterprise will be strong and go without problems."

this, knowledge was only passed on orally. Now we know we have the rights to the land and we will protect the resources, so we are very grateful to Rumsram."

The communities hope that by making maps of resource and village boundaries that a future decree based on the approved maps will secure resources and protect Saba's reefs. The villages have already issued local decrees based on terrestrial and marine maps, and have sent a letter to the Legal Aid Foundation in Jakarta to help legalize access and ownership based on customary law.

### Policy

National laws prohibiting reef bombing and the use of sodium cyanide have rarely been enforced. In the Padaido Islands, however, community members have taken it upon themselves to enforce the prohibition. And in 1997, Saba drafted a village law protecting reefs as a tourism resource. This "law"—as well as the other allowing the collection of beach user fees in Saba—was validated by the head of Biak District.

Locally, the project team has facilitated a system in which neighboring villages take on responsibility for reporting infringements of these laws to the appropriate village chief. Rumsram and Hualopu also introduced large mesh gill nets to replace small nets that scooped up too many small fish and bycatch. The villagers have wholeheartedly adopted their use. Finally, the communities have set up and encouraged the use of buoys at the various reefs and snorkeling sites to prevent anchors from dragging across the living coral.

These are all clear examples of community initiated policies that were born of increased awareness and capacity-building—facilitated by Rumsram and Hualopu as part of an increasingly comprehensive strategy.

## Challenges of Community Work

Rumsram's community development officers openly admit that cooperation and involvement do not always come easily. "The hardest thing about my job is the jealous mentality directed towards those who are successful," says Isaac, the community development officer for Pasi and Dawi Islands. Omi, the officer for Saba agrees, "It is very hard to encourage people to work together in a group. It may look like they are willing to work together, but most people cannot endure hard work without getting the money first. This is very hard when you are trying to do conservation work."

### Disaster Relief

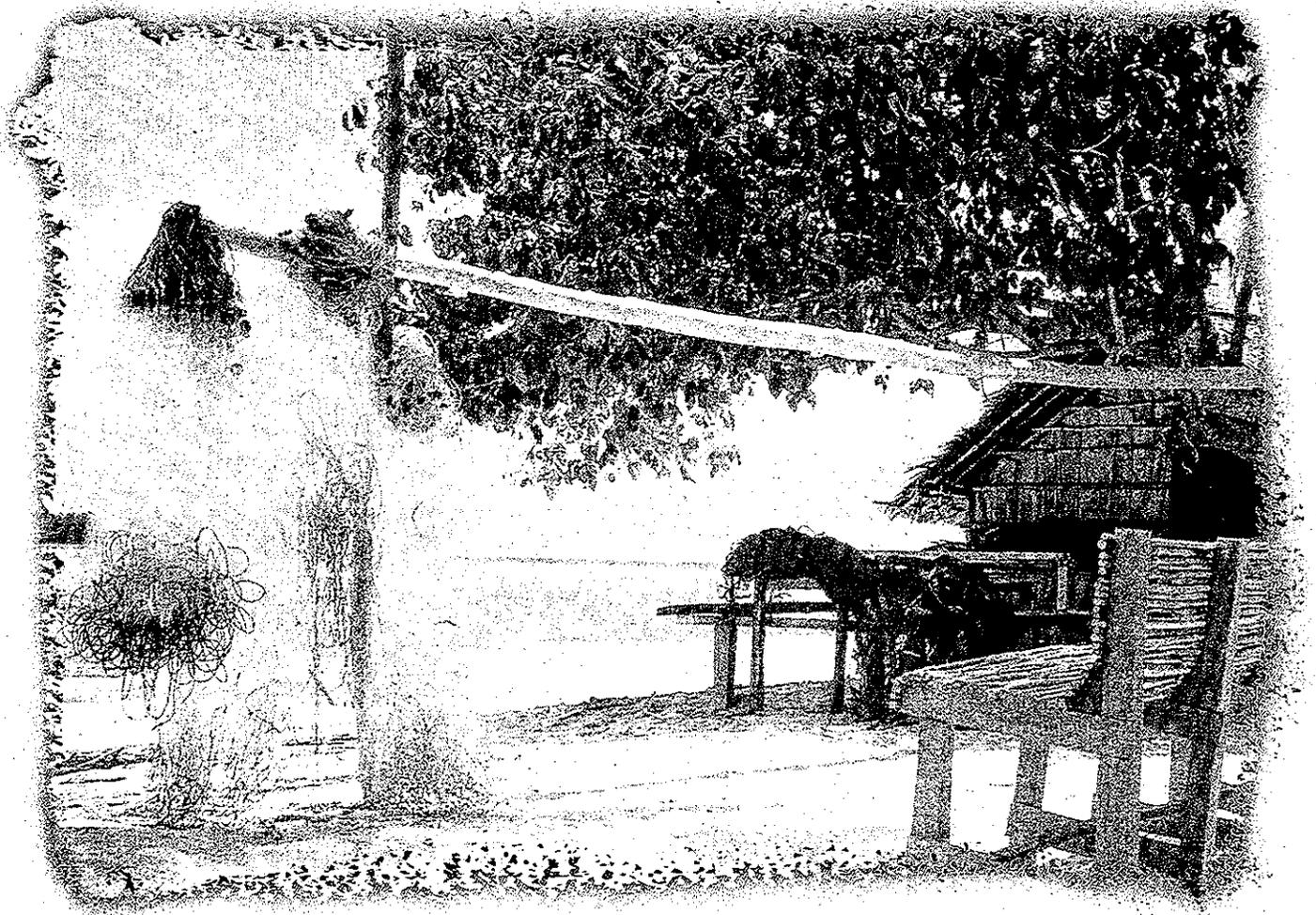
And, of course, if you are going to truly work with the community, you have to be flexible. For a time after the tsunami

hit, the project, and particularly the tourism enterprise, were non-issues—people were struggling simply to survive. Overnight, Rumsram's role changed from conservation and development assistance to disaster relief. Fundraising for a rehabilitation fund to help people rebuild their lives, they provided the basics—taro, sago, knives, clothes, gill nets and fishing lines, and assisted in the purchase of new fishing gear and agricultural tools.

Since then, the project staff and their village partners have worked hard to put the project and its infrastructure back together. A major problem was the overwhelming feelings of despair and hopelessness felt by the communities. But the result of sharing this ordeal ultimately strengthened the relationship between Rumsram and the communities.

## Towards a Self-Determined Future

A key lesson from this project is the importance of allowing the communities to develop at their own pace, in their own directions, so that their momentum carries on after the project ends. The communities have embraced a new approach to non-destructive fishing practices because they now understand with greater clarity that their future depends on healthy coral reef ecosystems. Having developed business, mapping and monitoring skills, they are making better resource use decisions. They are using the enterprise to establish their property rights and to demonstrate their ability to monitor and manage their fisheries. And by actively working on these issues, they have developed closer relations with key local government officials, which puts them in a stronger position of influence. Step by



*Fisherman's tools drying in the sun on Dawi Island.*

*Photo: Bernd Cordes*

step, they are changing village policies and have had success with the government's acceptance of these "laws." The combined result of all these activities is the gradual assertion of their tenure.

The communities have decided to go slow with ecotourism. Instead, they are concentrating on rebuilding their lives after the tsunami and establishing their resource rights. From their perspective, the foremost value of ecotourism is to help them stake their claim. As Cliff Marlessy explains, the project's original plan missed the mark because it was not truly community-based. "The original plan was to establish an ecotourism management body and then a travel agency. But to do all this would mean hiring an outsider. We would have to centralize . . . but we are trying to decentralize. Most of the community development planning here has come from the bottom up. These communities are big on participatory work. We don't want to change their habits. Whatever happens, happens. Rumsram at anytime can die, but the community will always be there, so whatever happens has to belong to the community."

This project had active community participation every step of the way—through the project design, project adaptations, strategy-building, local policy-making and resource use monitoring. This has brought the communities together in a way that didn't exist before, and the fact that they can see progress towards gaining tenure empowers them and makes them hopeful for the future. As Saba's headman sums it up, "Now we have an increased awareness to take care of our own reefs and to get benefits out of them. And now the communities have more dignity because we know our rights."

In this project, conservation has occurred. But the path taken was much different than expected. Community members are far more conservation-minded than before—more organized, more aware, more skilled and consequently more confident in exercising their collective rights. But there is an important caveat. The communities' long-term commitment to conservation depends on greater control of their resources. If they do not have hope for controlling the future there is little incentive for them not to mine their resources

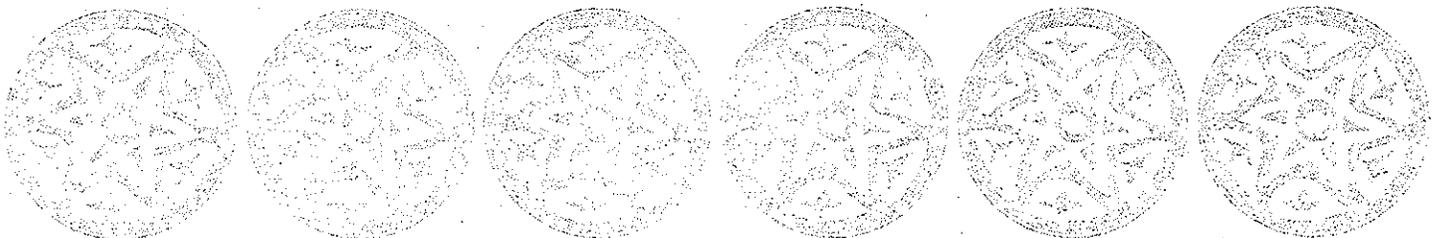


*Navigating the way through Padaidos' reefs.*

*Photo: Bernã Cordes*

like any other outsider. For now, they are committed to finding a balance between use and conservation because they see it as their investment in the future. Thus, from the point of view of conserving biodiversity, resource control and access is essential—because only those who are actively planning for their own futures, will actively conserve for it.

*BCN's funding ended 30 June 1999, but the communities, Rumsram and Hualopu are carrying on. They have an Islands' management plan in place for the next three-year period, as well as the technical and financial support needed to implement it. Charting their own course, the communities of the Padaidos are applying their new skills to face the challenges of managing their resources sustainably and strategically for the future—in the face of inevitable external pressures.*

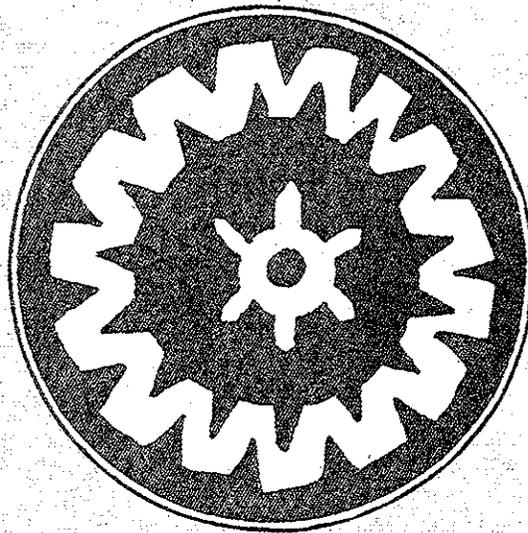


CHAPTER FIVE

# Eco-Enterprises and Indigenous Peoples

Two Case Studies of the BCNE Experience  
in the Philippine Uplands

*by Carlos Encarnacion*



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## Introduction

### The Critical Situation of the Philippine Uplands

The 7,100 islands of the Philippine Archipelago are estimated to have a total land area of 300,000 km<sup>2</sup>. Around 55% of this area (165,000 km<sup>2</sup>) is classified as uplands or lands with a gradient slope of 18° or more. It was estimated in 1995 that 11 million hectares or 66% of these uplands are degraded, and have been converted from forest into agricultural or grazing lands. Total remaining old growth forest stands only at 2.7% (8,100 km<sup>2</sup>) while secondary forest, sub-marginal, mossy and pine forest is at 15.5% (46,650 km<sup>2</sup>) (DENR, 1995).

The main causes for deforestation and land conversion in the Philippines have been commercial logging, large-scale mining and expansion of urban-industrialized areas. In the past decade however, additional strain to the environment has come from a rapidly increasing rural population that is directly dependent on the natural resources for agriculture, grazing, fuelwood and non-timber forest products (NTFPs).

By the year 2000, the Philippines is expected to have a total population of 70 million, 21 million of which will be upland dwellers. Of these, 12 million will be indigenous peoples (IPs). If current efforts to deter these trends of deforestation, exploitation of resources and population growth are not successful, then the Philippines face a very bleak future going into the next millennium.

### Community-Based Forest Management as a Strategy for Upland Forest Protection

Over the past few years, there has been a growing trend to promote local management of forests as a potential solution to these threats. The goal of community forestry is to transfer the direct management and stewardship of identified upland areas to the communities residing in those areas. The underlying philosophy is that these communities are best

suited to be "keepers of the forest" since they are dependent on the protection of these resources for their very own social, economic and political survival. This strategy is also designed to augment the limited resources of the government, specifically the Department of Environment and Natural Resources (DENR) in handling the task of administering over half the country's land.

In the mid-1990s, thanks in large part to the efforts of numerous private organizations, funding institutions and upland communities themselves, the DENR launched what is known in the Philippines today as the Community-Based Forestry Management Program. Commonly referred to as CBFM, its goal is to consolidate the different government laws, policies and programs into a workable strategy. Executive Order No. 263 was signed in 1995 formalizing the CBFM Strategy as the national strategy that aims to ensure the sustainable development of the country's forestland (upland) resources by recognizing, involving and empowering local communities as indispensable partners for development. The numerous government policies and programs which fall under CBFM involves providing upland communities with stewardship rights, technical support, and economic incentives to manage their land.

### Objectives of this Paper

The Biodiversity Conservation Network (BCN) was established to fulfill two main programmatic goals:

1. **Conservation Impact**—Support enterprise-based approaches to biodiversity conservation at a number of sites across the Asia/Pacific region, and
2. **Enhanced Knowledge**—Evaluate the effectiveness of these enterprise-based approaches and provide lessons and results to BCN's audiences.

BCN's core hypothesis is that if the community-based enterprise approach to conservation is going to be effective, it must (a) have a direct link with biodiversity, (b) generate benefits

for a community of stakeholders, and (c) involve these stakeholders in the process. In this paper, I examine this hypothesis in the context of two BCN-funded projects in the Philippines.

- **NTFPs in Palawan**—The project sites of Cayasan (in Puerto Princesa), Campung Ulay and Punta Baja (in Rizal) are all located in Palawan, which has been described as “the last frontier” of the Philippines. The Bataks, Tagbanuas and Pala’wans tribes of these areas have all just recently completed their resource management plans and are in the process of implementing them.
- **Jam and Jelly in Northern Luzon**—The Kalahan Reserve, which is located at the boundaries of Nueva Vizcaya and Pangasinan in the northern part of the Philippines, is technically the first CBFM project in the Philippines. Established in 1973, the Ikalahans are protecting 13,894-ha of forest in the Caraballo and Cordillera mountain ranges.

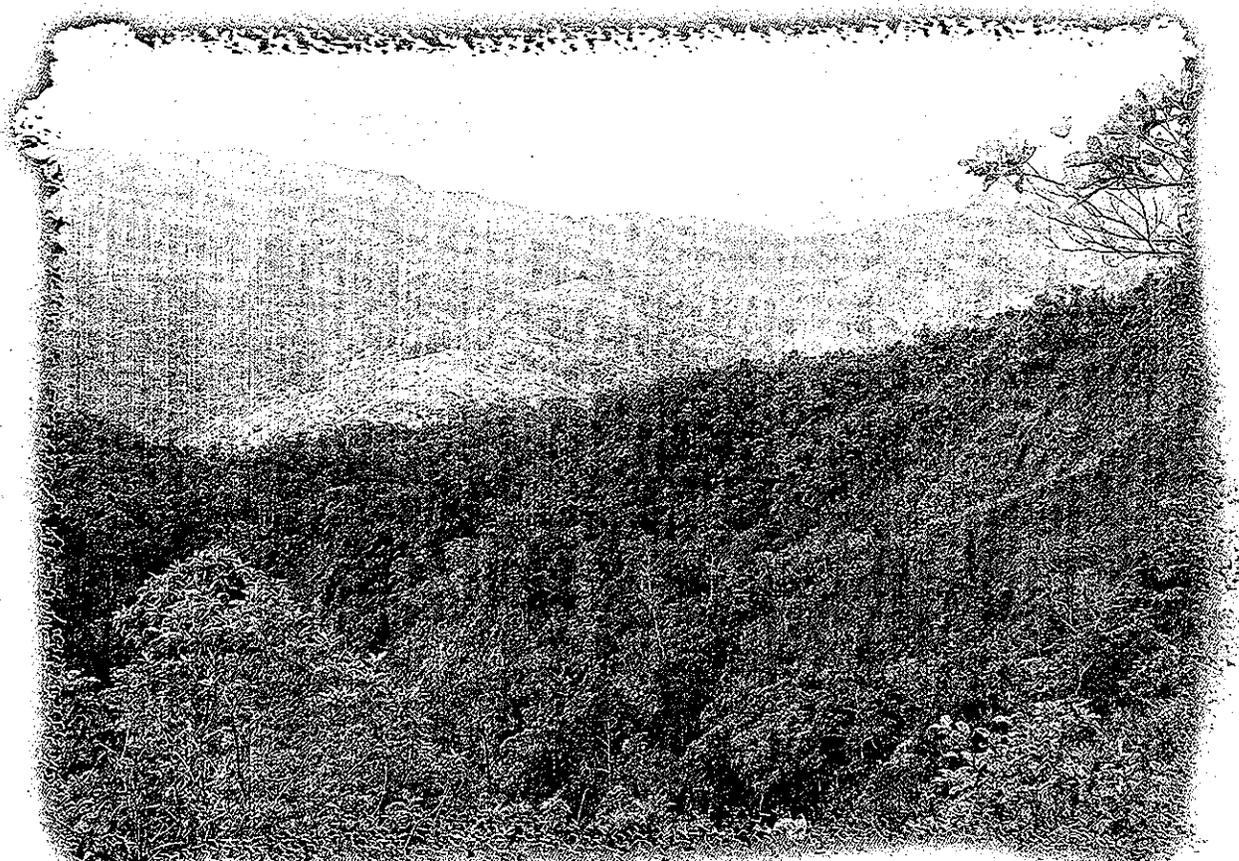
Both of these project sites are located within the vital upland areas in the Philippines, and typify the basic issues present in these areas.

## The Palawan Experience in Community-Based Enterprises

### *Project Background*

The “Community-based Conservation and Enterprise Program for Indigenous Communities in Palawan, Philippines” was one of the most ambitious of the BCN projects. Not only did the project aim to achieve conservation by developing NTFP enterprises at four identified sites, but it also intended to do extensive institutional development.

The reason for launching such a comprehensive program was that when the proposal was conceptualized in 1993, the implementing agency, Nagkakaisang mga Tribu ng Palawan (United Tribes of Palawan or NATRIPAL), was only in its first year of existence. Though it had other proposals in the pipeline, it had little experience in actual project implementation. In addition to this, the Batak, Pala’wan and Tagbanua beneficiary communities were not yet at a level of organizational development required to successfully implement a



## ECO-ENTERPRISES AND INDIGENOUS PEOPLES

community-based enterprise. As a result, much of the proposed U.S. \$628 three-year project budget was directed at activities that were vital but not necessarily directly linked to the enterprises.

### Site Definition

Palawan originally had four project sites. This was later reduced to three with the exit of the Cabayugan due to internal conflicts with NATRIPAL in 1996 (Pinto, 1997). The sites that remained were:

#### 1. Cayasan

7,503 hectares located in Puerto Princesa at the boundary of the St. Paul's Subterranean Park. Inhabited by Tagbanua and Bataks (48 HH) and migrants (10 HH). The IPs are organized under SATRIKA which was formed in the early 1990s.

#### 2. Campung Ulay\*

7,000 hectares located in the Municipality of Rizal. Inhabited by Pala'wan (118 HH), Tagbanua (36 HH), migrants (60 HH) and other (26 HH). The IP community is organized under CAMPAL which was formed in the early 1990s.

#### 3. Punta Baja\*

8,092 hectares located in the Municipality of Rizal. Inhabited by Pala'wans (371 HH), Tagbanua / mixed (143 HH) and non-IP migrants (276 HH). The IP community is organized under PINPAL which was formed in the early 1990s.

\*Note: These two sites are adjacent to each other and are located around the Mt. Mantalingahan, Rizal which is the highest peak in the province.

### Community Enterprise Structure

Aside from swidden agriculture and home gardening, NTFP gathering has long been one of the main sources of economic livelihood for the IPs in Palawan. Practically all IP households in Cayasan collect honey and almaciga while almost

all households in Campung Ulay collect almaciga and rattan. In Punta Baja, around half the households collect almaciga and rattan. On average, the IPs of Palawan have a PHP 10,000 annual household cash income of around (U.S. \$ 250), 50-90% of which comes from NTFP trading and the bulk of the remainder from swidden agriculture.

As illustrated in Figure 1, honey, rattan and almaciga (resin) are gathered from the wild and are sold to financiers, who, up until 1997, held all the legal permits for NTFP extraction at the three sites. These traders then transport the products to Puerto Princesa where the goods are processed or shipped directly to larger trading centers such as Metro Manila. To facilitate this mechanism, each community has a kapatas, or local foreman. The kapatas manages the loans and advances made to the community and consolidates the products on behalf of the financiers. Although this arrangement is based on economics, the community-kapatas-trader relationship is not purely a business one. The kapatas is also looked up to as a leader and is usually a very influential person in the community.

Though the traditional arrangement provides the IPs with a steady source of income, this arrangement is nevertheless disadvantageous to the community for several reasons. The community members are generally not paid for the true worth of their labor and goods, resulting in continued debt bondage and wanton resource exploitation. Nor do they have the capacity as small traders to dictate the price that they want. Also, going against the system is risky as one may risk losing the only source of capital for NTFP trading.

### Project Structure

The project was initially set up with the WWF-Philippines Program acting as lead agency and serving as a bridge between NATRIPAL and BCN. In 1997, project oversight

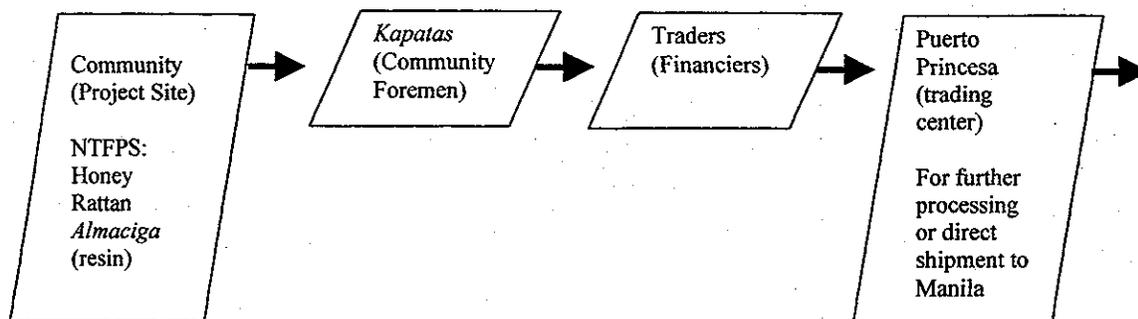


Figure 1. Palawan NTFP Enterprise Structure Prior to the Project

## PATTERNS IN CONSERVATION

was transferred to a management committee composed of representatives from the NATRIPAL Board of Directors, PANLIPI, an NGO that provides legal services for the federation, and the Indigenous Peoples Apostolate (IPA), which is a church-based program that provides development services to indigenous peoples.

Project implementation was assigned to the project team including a project manager and technical advisor who were hired in lieu of the fact that NATRIPAL still did not have sufficient management capabilities. Their responsibilities included overseeing the office-based administrative staff, and coordinating the activities of the five intervention components, namely the Community Organizing Component (CO), Enterprise Development Unit (EDU), the Resource Management Unit (RMU), the Legal Services Unit (LSU) and the Monitoring and Evaluation Unit (M&E).

### Major Project Activities

#### *Revitalization of the People's Organizations*

One key activity involved strengthening of the People's Organizations (POs) at each site. This was crucial to the project because it is with the leadership of the PO that all other organizing, enterprise and resource management activities were anchored. The PO also offered an alternative to the kapatras-based system. To achieve this, a series of capacity building trainings were carried out to enhance the capabilities of both the PO and the community as a whole. These trainings included workshops on basic reading and math skills, leadership, paralegal training, biological monitoring, and credit and savings development. The venue for conducting these activities was the Area Servicing Unit (ASU). Though intended by the project to act as a warehouse for consolidating the NTFPs, it likewise served as the center of community organizing activities at the three areas.

#### *Securing of Land Tenure*

Helping the local communities secure land tenure was one of the prime objectives of the project. In 1997, all three sites were finally able to secure their Certificate of Ancestral Domain Claim (CADC), which were awarded to them by the DENR. This certificate grants the communities legal stewardship rights to live and exploit the resources within their identified ancestral domain. Though the CADC is revocable under certain conditions of "national interest," it enables the IPs to exercise the right to disallow commercial exploitation operations, such as mining. As a result, all NTFP licenses held by the concessionaires were cancelled and legal control over NTFPs was transferred to the IPs.

#### *NTFP Enterprise Development*

As illustrated in Figure 2, the project attempted to set up a new NTFP harvesting enterprise that would parallel the old structure. This strategy involved attracting harvesters to market their products through the ASUs and NATRIPAL rather than the kapatras and financiers. In this way, the POs could control the rate and methods of NTFP harvest, thereby empowering them to protect the uplands.

Given the importance of NTFPs, the project enterprise employed the several tactics across the project sites in order to "win over" the IPs from the financiers and kapatras. In Punta Baja and Campung Ulay, the ASUs bought almaciga at PPhp 10 per kg instead of the standard PPhp 7 being offered by the traders. Rattan was purchased at PPhp 3.5, or PPhp .5 higher than the going forest gate price. In Cayasan though the ASU continued to purchase honey and almaciga at the same price as the traders, it provided free containers to the honey gatherers as a way to lure their participation. It is estimated that since this scheme began in 1997, a total of 30% of all IPs selling NTFPs coursed their goods through the ASUs. This figure could have actually increased, but a dip in prices in late 1997 and the ongoing struggle of the community

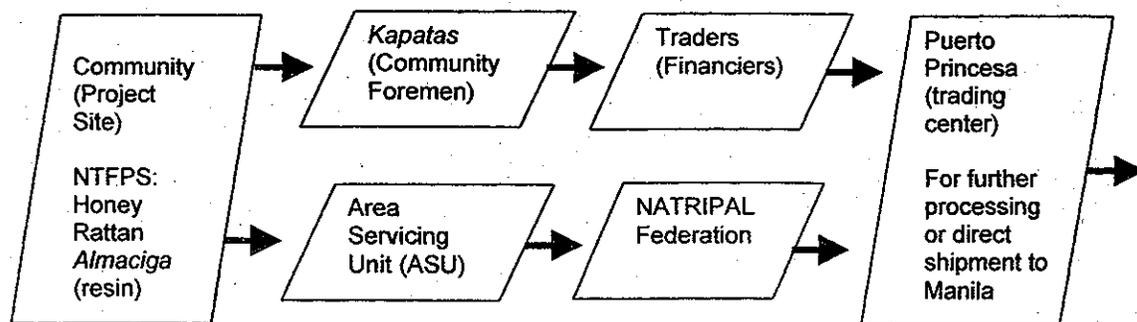


Figure 2: Palawan NTFP Enterprise Structure During the Project

leaders facing other threats such as encroachment prevented the expansion of enterprise activities. In Punta Baja, at the project's end, the ASU had yet to start NTFP trading. The community was, however, able to make some sales after the 1st Quarter of 1998.

During the project, each ASU center incurred a yearly overhead cost of around PPhp 70,000 a year, while generating gross sales of around PPhp 80,000-100,000 a year. PPhp 55,000 of this went to the salaries of IP ASU staff. The reason for this was to provide incentive for potential IP entrepreneurs to invest their time in the development of the ASU and later on carry out the activities themselves once the project ends. It should thus be possible for the Cayasan, Punta Baja, and Campung Ulay ASUs to increase profits by 1999 since it is hoped that by this time, the units will be managed by the IPs. Questions still remain, however, as to who will shoulder the ASU maintenance, marketing and bio-monitoring costs now that the BCN funding for the project is over. This brings forth the issues of how sustainable the ASUs are and whether NATRIPAL can sustain the assistance it is providing to these communities.

**Development of Ancestral Domain Management Plans**

In connection with the CADC, all three sites have also submitted Ancestral Domain Management Plans (ADMPs) to the DENR for implementation. Contained in these documents are the communities' policies on NTFP gathering, conflict resolution and community structure for governance of the CADC. Examples of these policies are:

- a. The People's Organization will oversee the overall management of the domain.
- b. The ancestral land will be used in accordance with its classification of agricultural and settlement areas, protection, and production forest.
- c. IPs will follow the quotas and approve methods for NTFP extraction.
- d. Outside individuals and companies will not be allowed to use the resources of the domain without the approval of the PO/community.
- e. There will be set fines and penalties for those who do not abide by the ADMP policies.

At present, all POs at the different sites are still at the early stages of further refining and implementing their ADMPs.

**Project Results**

Following the BCN Analytical Framework (1998), project results can be considered in terms of the factors that affect conservation (independent variables) and measurements of overall conservation (dependent variables).

**Factors Affecting Conservation: Independent Variables**

Table 1 illustrates the different Linked-Enterprise, Generation of Benefits and Stakeholder variables that were addressed and monitored from Time-Zero (1995) of the Palawan Project to Time-Final (1998). As can be seen from the different factors, the project addressed many issues and needs that were not directly linked to the enterprise, but that were necessary for the success of the community-based enterprise. This "checklist" provides important insights to future programs that are looking at the feasibility of enterprise intervention approaches.

**Measurements of Overall Conservation**

Measurements of overall conservation success include looking at the sustainability of the resource harvesting and the reduction of identified threats.

**Resource Sustainability**—Initial analysis has revealed that NTFP stocks are at a critical level, and might not be able to sustain current NTFP gathering rates for long. As an example, we consider rattan harvesting in Campung Ulay (this analysis was conducted with the help of Forester Vergel Medina). This analysis is based on sampling 231 hectares out of a total of 8818 hectares. Extrapolating from this sample, we can make the following calculations for Campung Ulay:

Factor	No. of Poles
Initial stock of poles	386,013
Poles maturing per year	102,631
Total rattan harvested per year	168,960
<i>Note: Though the Campung Ulay CADC is 7001 hectares, computations for the initial estimates used an area of 8,817 hectares.</i>	

The maturation rate is based on the growth rate of average rattan species before it reaches 3 meters long, the standard length in rattan trading. Using these factors, we can make the following calculations.

Based on these figures, it is estimated that the supply of rattan will only suffice for four years and nine months of continuous harvest. As a result, of these calculations, the IPs at the three sites and NATRIPAL need to strategize ways to improve the standing stock of their resources. These may include methods such as establishment of nurseries, development and stock piling of seedlings, reforestation and the implementation of zoning strategies. There is also a need to undertake education and information activities to let all those involved in extraction and utilization of the NTFPs

## PATTERNS IN CONSERVATION

**TABLE 1. Factors Affecting Conservation**

	<b>CAYASAN</b>	<b>CAMPUNG ULAY</b>	<b>PUNTA BAJA</b>
<b>Enterprise Structure</b>	<p>95-Financiers through the kaptas dictated the sale prices of NTFPs.</p> <p>98-Financier-kaptas structure still exists. Community members though through the ASU have started initial trading with outside buyers. They also determine the price at which they want to buy.</p>	<p>95-Financiers through the kaptas dictated the sale prices of NTFPs.</p> <p>98-Financier-kaptas structure still exists. Community members though through the ASU have started initial trading with outside buyers.</p>	<p>95-Financiers through the kaptas dictated the sale prices of NTFPs.</p> <p>98-Financier-kaptas structure still exists. Community members though through the ASU have started initial trading with outside buyers.</p>
<b>Enterprise Ownership</b>	<p>95-IPs possessed no legal instrument of rights to extract NTFP. A total 6 outside individuals/groups held rattan and almaciga concessions.</p> <p>98-With the CADC, the IPs get full stewardship, exploitation and trading rights of the resources within the domain.</p>	<p>95-Before the project, CAMPAL was actually able to acquire a rattan license, which they "rented" to an outside trader.</p> <p>98-With the CADC, the IPs get full stewardship, exploitation and trading rights of the resources within the domain.</p>	<p>95-IPs possessed no legal instrument for rights to extract NTFP.</p> <p>98-With the CADC, the IPs get full stewardship, exploitation and trading rights of the resources within the domain.</p>
<b>Capital Invested</b>	<p>95-minimal</p> <p>98-Building of the ASU center. Revolving capital of PPhp 150,000 (around U.S. \$4,000).</p>	<p>95-minimal</p> <p>98-Building of the ASU center. Revolving capital of PPhp 150,000 (around U.S. \$4,000).</p>	<p>95-minimal</p> <p>98-Building of the ASU center. Revolving capital of PPhp 150,000 (around U.S. \$4,000).</p>
<b>NTFP Sales and Marketing</b>	<p>95-NTFPs were traded solely through the outside financiers.</p> <p>98-IPs are now able to establish their own links to buyers through the ASUs/POs and NATRIPAL.</p>	<p>95-NTFPs were traded solely through the outside financiers.</p> <p>98-IPs are now able to establish their own links to buyers through the ASUs/POs and NATRIPAL.</p>	<p>95-NTFPs were traded solely through the outside financiers.</p> <p>98-IPs are now able to establish their own links to buyers through the ASUs/POs and NATRIPAL.</p>
<b>Enterprise Management</b>	<p>95-NTFP trade managed by the kaptas.</p> <p>98-SATRIKA still unable to manage the enterprise activities w/out project staff support.</p>	<p>95-NTFP trade managed by the kaptas.</p> <p>98-CAMPAL still unable to manage the enterprise activities w/out project staff support.</p>	<p>95-NTFP trade managed by the kaptas.</p> <p>98-PINPAL still unable to manage the enterprise activities w/out project staff support.</p>
<b>Enterprise Participation</b>	<p>95-All major NTFP trading activities were done under the financier-kaptas structure.</p> <p>98-Around 30% of IPs trade their NTFPs through the ASUs.</p>	<p>95-All major NTFP trading activities were done under the financier-kaptas structure.</p> <p>98-Around 30% of IPs trade their NTFPs through the ASUs.</p>	<p>95-All major NTFP trading activities were done under the financier-kaptas structure.</p> <p>98-Around 30% of IPs trade their NTFPs through the ASUs.</p>
<b>Land Tenure</b>	<p>95-No legal security of tenure.</p> <p>98-Achieved stewardship through awarding of CADC.</p>	<p>95-No legal security of tenure.</p> <p>98-Achieved stewardship through awarding of CADC.</p>	<p>95-No legal security of tenure.</p> <p>98-Achieved stewardship through awarding of CADC.</p>
<b>Community Control and Policing</b>	<p>95-IP community aware of threats and illegal activities but is unable to respond.</p> <p>98-IP SATRIKA forest guards/monitoring teams able to apprehend illegal gatherers.</p>	<p>95-IP community aware of threats and illegal activities but is unable to respond.</p> <p>98-Community via CAMPAL fighting PCA plantation threat w/ local gov't assistance.</p>	<p>95-IP community aware of threats and illegal activities but is unable to respond.</p> <p>98-IP community and PINPAL able to monitor threats but unable to apprehend.</p>

## ECO-ENTERPRISES AND INDIGENOUS PEOPLES

**TABLE 1. Factors Affecting Conservation (Continued)**

	CAYASAN	CAMPUNG ULAY	PUNTA BAJA
<b>Resource Governance</b>	<p>95 -No formal management plan. Wanton exploitation of resources by insiders and outsiders.</p> <p>98-Construction of ADMP. Sustainability of NTFP practices yet to be verified.</p>	<p>95-No formal management plan; Wanton exploitation of resources by insiders and outsiders.</p> <p>98-Construction of ADMP. Sustainability of NTFP practices yet to be verified.</p>	<p>95-Existence of IP demarcation of almaciga tree ownership. Continued exploitation of resources.</p> <p>98-Construction of ADMP. Sustainability of NTFP practices yet to be verified.</p>
<b>Formal Community Monitoring</b>	<p>95-No formal community monitoring.</p> <p>98-One time bio-inventory; community however still lacks capacity to continue.</p>	<p>95-No formal community monitoring.</p> <p>98-One time bio-inventory; community however still lacks capacity to continue.</p>	<p>95-No formal community monitoring.</p> <p>98-One time bio-inventory; community however still lacks capacity to continue.</p>
<b>Stakeholder Dynamics</b>	<p>95-IPs under the leadership of an influential kapatas family.</p> <p>98-Power struggle ongoing between kapatas and SATRIKA.</p>	<p>95-IPs with little community cohesion and collective effort.</p> <p>98-Improved collective efforts through PO activities and project objectives.</p>	<p>95-IP presence of traditional, elder and young leadership.</p> <p>98-Very good; No conflict reported among the IPs. Good rapport with other groups.</p>
<b>Leadership</b>	<p>95-SATRIKA established and is able to carry out limited community activities.</p> <p>98-SATRIKA has young-dynamic leadership; but still with limited organizing influence.</p>	<p>95-CAMPAL established and is able to carry out community activities.</p> <p>98-Slight improvement of leadership with the advent of elections and more collective participation.</p>	<p>95-No existing PO. Activities carried out through individual influence.</p> <p>98-PINPAL formed and functioning. Set of elected officers with good young charismatic leadership.</p>
<b>Community Organizing Process</b>	<p>95-Identified set of leaders with established PO.</p> <p>98-In transition from traditional leadership to formal democratic leadership.</p>	<p>95-Identified set of leaders with established PO.</p> <p>98-In transition of formalizing democratic systems of governance and leadership.</p>	<p>95-Identified leaders but with no formal organizing yet.</p> <p>98-Formal CO started only in 1997 through the efforts of NATRIPAL.</p>
<b>Participation in Project Activities</b>	<p>95-Existence of PO but with little community participation.</p> <p>98-Very Good; 30 adult IPs or 20% attend project activities.</p>	<p>95-Existence of PO but with little community participation.</p> <p>98-Very good; 176 or 35% of adult IPs participate in monitoring.</p>	<p>95-Limited community participation.</p> <p>98-Very good and enthusiastic participation. Average of 100 IPs in ADMP making.</p>
<b>NATRIPAL Development</b>	<p>95-Newly organized IP federation. Limited experience and management capabilities. Managing three projects with funds coming from VIDC, NOVIB and BCN.</p> <p>98-NATRIPAL still lacking sufficient management capabilities. Able to get IUCN funding to continue activities at the three sites.</p>		

## PATTERNS IN CONSERVATION

Year	Existing rattan standing stock	Addition of stock (regeneration)	Available rattan stock for the yr	Less harvested quantities	Rattan standing stock for next yr
1) 1997	386,013 poles			168,960 poles	217,053 poles
2) 1998	217,053 poles	102,631 poles	319,684 poles	168,960 poles	150,724 poles
3) 1999	150,724 poles	102,631 poles	253,355 poles	168,960 poles	84,395 poles
4) 2000	84,395 poles	102,631 poles	187,026 poles	168,960 poles	18,066 poles
5) 2001	18,066 poles	102,631 poles	120,697 poles	168,960 poles	(48,263)

become aware of the urgency to rehabilitate, monitor and protect the biodiversity of the project sites.

**Threat Reduction Assessment (TRA)**—A second measure of conservation success involves examining reduction of identified threats using a threat reduction assessment (TRA) index (Salafsky and Margoluis 1999). For the Palawan Project, the TRA exercises were conducted with IP leaders and project staff of the three different sites. The direct major threats that were identified and how reduction were defined as follows:

- Over Harvesting: 100% threat met means the regulation of sustainable NTFP harvesting
- Land Conversion: 100% threat met means the prevention of further conversion of forestlands
- Illegal Logging: 100% threat met means being able to stop unregulated lumber harvesting
- Hunting/Fishing: 100% threat met means stopping of all illegal or unregulated hunting/fishing activities

The TRA ranking exercises reveal that the project staff and IP leaders from across the three Palawan sites feel that they have achieved a 40-50% reduction of threats. These reductions are due not only to the enterprise, but also the other project activities.

However, despite positive gains such as the apprehension of illegal gatherers and initial sales of NTFPs by the IPs, the implementation of the Ancestral Domain Management Plans and conservation at the Palawan sites still have question marks. The main issue here is the sustainability of the current efforts of the NATRIPAL Federation and the IP organizations to continue to provide the community development and enterprise leadership needed. In terms of the enterprise itself, initial findings show, for example, that rattan resources will only last four more years given the present rate of extraction. The IPs, with the aid of NATRIPAL thus

need to adjust accordingly and include formal monitoring as part of their priorities.

### Conclusions

#### *Assessing the Enterprise Approach*

In retrospect, rattan, *almaciga* and honey NTFP gathering was an appropriate target enterprise for biodiversity conservation in Palawan. The factors that contributed to this were:

- It was/is a major cash enterprise for the IPs in Palawan. As a result, the IPs were more than willing to participate in the project activities and fight for the assertion of their rights. They had many complains about the kapatas-trader relations, but until the project began, had no real opportunity to engage in trade of their own.
- It made use of a traditional livelihood activity that the IPs were familiar with. It is also a common activity that can enable the different IP groups in Palawan to linkup with each other. In fact, it is NATRIPAL's plan to eventually act as a wholesaler by consolidating the NTFPs from different sites around Palawan.
- It necessitated the securing of the upland areas and the acquisition of legal user rights by the IPs. This made the CADC and ADMP more meaningful since the incentive was not just about ancestral rights, but about economic survival as well.

However, downsides of the enterprise were:

- It was very capital intensive. In order to accommodate all the IP gatherers, each ASU needed at least PHp 500,000 of revolving capital. Considering that the allotted revolving fund by the project for each ASU was PHp 150,000, the IP leaders were naturally unable to capture the intended number of gatherers. This budget also does not take into account the cost of monitoring and additional community organizing activities.

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- There is a risk in challenging existing kaptas-community relations. It is easy for any project staff to say that it will get rid of the "middlemen" so that the community can realize more profits. But middlemen, for better or worse, perform many important functions that the people rely upon for survival. More often than not, they are the community's only avenue for credit and are a more lasting source of cash than externally funded projects.
- There is a need to run the enterprise like a business instead of a project. In the effort to attract IPs, the project employed several strategies like offering higher prices and buying NTFPs even when there were no identified buyers or when the market prices were low. In hindsight, this was not very sustainable as a long-term strategy.

### *Looking at the Conservation Process*

Although the project has not been able to set up sustainable enterprises, it has been able to establish a foundation by which the community organizing and conservation process can build upon. Unfortunately, because of the lack of management capabilities and conflicts within the project

management team, only a year instead of the needed three years was fully devoted to developing this process. The communities as a result are not yet at a level where they can carry on the activities by themselves. They are still heavily dependent on NATRIPAL, which in turn is still grappling with internal issues—such as its own future direction and developing its financial and management capabilities. Conservation at this point is still a question mark alongside the components of enterprise, bio-monitoring and ADMP Implementation.

It is encouraging news that NATRIPAL has just recently been awarded a grant from IUCN to continue the development of the communities' NTFP enterprises. In addition, the project staff are starting to trade with private individuals in an attempt to expand the communities' NTFP market. Now in its sixth year, the NATRIPAL federation must now demonstrate to outside agencies and organizations that it is capable of successfully implementing projects on its own. It must draw valuable lessons from its previous experiences and must be able to rise above its internal organizational weaknesses and infancy.





### The Kalahan Forest Farms Development Project

#### Project Setting

##### *Project Background*

The project works with indigenous people called the Ikalahans, whose name means "people of the broad leaf forest" and who have lived here for centuries relying mainly on hunting, gathering and traditional swidden agriculture to survive. The natural resources in these areas remained relatively intact until the 1950s, when the Philippine government started to actively enforce the doctrine that all forested uplands were government lands and proclaimed that all uplanders/indigenous peoples were "squatters" in their own land. Realizing the futility of challenging the Philippine government and military over control of their land, their attitude changed from that of protection to full utilization. "They decided to get as much as they could for today and forget about tomorrow." As a result, several traditional and dependable technologies were ignored, and new destructive practices such as cattle raising were introduced.

As early as the late 1960s, negotiations began for the control of the Kalahan Reserve in order to counter numerous external and internal threats such as land grabbing and harmful agricultural practices. In 1970, the Ikalahans tried to organize a Producers Cooperative to address the rampant economic exploitation of the resources happening at that time. Unable to negotiate with the government for the formation of this cooperative, they decided in 1973 to form the Kalahan Educational Foundation Inc. (KEF) to give the community legal representation. The purpose of KEF is to "promote the education and development of the Ikalahan people." Since then, KEF has been the main stakeholder organization in the reserve, having taken the lead in implementing many activities such as land tenure, resource management, policy formation, sustainable agriculture, and education, among others.

By 1974, KEF was finally able to negotiate an agreement with the now defunct Department of Agriculture and Natural Resource and Management. This agreement, simply referred to as Memorandum of Agreement No. 1 (MOA1), gave the Ikalahans full and legal stewardship, management and utilization rights for 25 years in exchange for the protection and rehabilitation of the Kalahan Reserve. As the agreement was nearing its end, KEF secured three Certificate of Ancestral Domain Claims (CADCs) in the adjacent provinces of Nueva Ecija, Nueva Vizcaya and Pangasinan that would expand their stewardship rights and management activities to 45,000 hectares by 1999.

##### *Site Definition*

The official Kalahan Reserve is part of the larger Cordillera and Caraballo mountain ranges that comprise part of the major watersheds that supply water to the agricultural areas of Northern Luzon. The Reserve is 13,894-ha large and is composed mostly of Pine and Dipterocarp Forest. It is home to many endemic and endangered flora and fauna such as the Tarictic Hornbill.

The community of the Kalahan Reserve is highly homogeneous. Of the 550 households, 547 are Ikalahan and three are Ifugao. The largest barangays (towns) in order of population are Imugan, Malico, Baracbac, Bacneng and Unib. Historically the Ikalahans were scattered around the reserve. A large earthquake in 1990, however, forced the Ikalahans to settle in flat areas, a trend that continues today with development infrastructure, electricity and schools at these towns. Originally called the kalanguya, around 6% of the Ikalahans have immigrated from the adjacent town of Kayapa and 2% from Pangasinan province. The Ikalahans practice traditional swidden agriculture with kamote (sweet potato) as their staple crop. Other sources of income include small

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businesses and employment in KEF and the nearby town of Santa Fe.

### *Project Structure*

The main vision of the Forest Farms Development Project is "to establish an effective resource management to ensure a stable and bio-diverse forest system within the Kalahan Reserve." It is envisioned that the 550 local families will be able to source their (1) Food Needs, (2) Cash Needs, (3) Domestic Needs, and (4) Knowledge Needs from the 13,894-ha reserve. As outlined in Figure 3, the main objective of the Forest Farms Development Project is thus to identify and develop several niches from the forest that would satisfy these needs of the community and, in turn, encourage the Ikalahans to protect and cultivate the biodiversity at the Reserve.

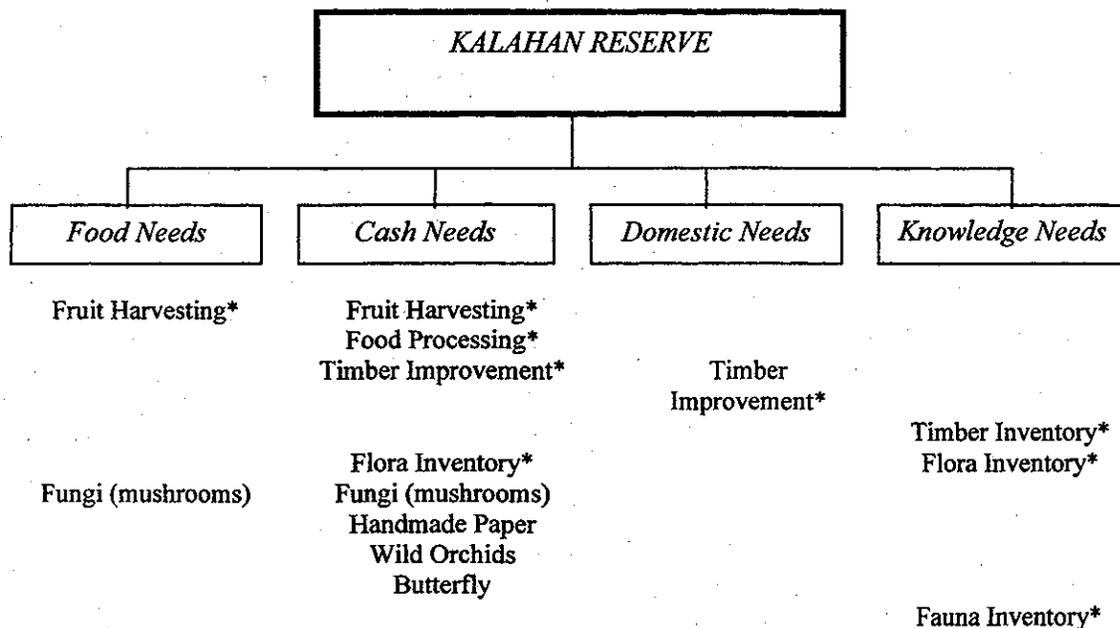
Underlying assumptions of the Forest Farm Development concept are:

- An understanding of ecological principles will produce environmental protection.
- The Modified Timber Stock Improvement (MTSI) will improve secondary growth.

- Forest-based industries in the community will generate new employment opportunities as well as value addition, which will reduce environmental degradation.
- Maintaining a "forest-based community" will provide opportunities for educated youth who will, in turn, provide appropriate leadership for future community development.

### **Major Project Activities**

Given the above framework, BCN support for the Kalahan Forest Farms Development Project, which started in 1994 and ended in 1998, had three major objectives. The first was to strengthen the existing KEF Mountain Fresh jams and jelly production. The second objective of the project was to explore other livelihood niches, the most notable of which is the ongoing Modified Timber Stock Improvement (MTSI) research. The last major objective of the project was to assist in KEF's various research activities in support of the conservation efforts within the Kalahan Reserve, including the documentation of existing flora and fauna, GIS mapping of the Reserve, and the development of KEF's institutional structure.



\*Major BCN-funded activities

Figure 3. Basic Structure of the Forest Farms Project



*Managing the Mountain Fresh Jams and Jellies Enterprise*

The main product of the KEF enterprise is the Mountain Fresh line of jams and jellies. This enterprise has been supplying products to major supermarkets in Manila since the late 1980s. BCN's objective was to strengthen the current operations

and examine its link and contribution to conservation in the area. Figure 4 shows sales over the past few years. Note that the large amount of sales generated in 1994 was due to a one-time export order from Germany. Gross revenue has tapered off to around 2,000 bottles or PHp 650,000 of sales annually in the last three years. At this level, the enterprise is able to cover its variable cost but has not yet been able to cover fully all of its fixed costs. According to Pastor Delbert Rice, KEF's Executive Director, "The biggest challenge is to bring the Food Processing Center to the point where its net profits can support the other activities of the KEF." To do this, KEF has been working with the Upland NGO Assistance Committee (UNAC) and the Philippine Business for Social Progress (PBSP) to increase Mountain Fresh sales. Aside from promotions and increased marketing efforts, KEF will soon be introducing a line of low-sugar jams and jellies, which they expect will substantially add to their gross sales. KEF is also looking at ways to lower the costs of production.

As part of the enterprise, the Ikalahans sell an average of around PHp 60,000 (U.S. \$1,500) or around 15,000 kilos worth of fruits to KEF each year. Sixty-five percent of this total is Guava, their best selling product. There are around 90-110 gatherers who sell fruits in any given year to the Food

Processing Unit. In 1996, the average revenues generated by each gatherer was roughly PHp 687 (U.S. \$18), which represents 2% of the Ikalahans individual annual cash income of PHp 33,147 (U.S. \$872). In 1997, the average revenues generated by each gatherer amounted to just 1% of their annual income or PHp 360 (U.S. \$ 9) out of PHp 37,861 (U.S. \$ 996). Though this may seem like an insignificant amount, KEF states that this is an important contribution to the Ikalahans cash accessibility. Since KEF's policy has been not to turn down anyone who comes to sell them fruits, selling to the Food Processing Unit has become a source of "instant cash." This policy also encourages the gatherers to have a part in the production of the jams and jellies, and to assist KEF with the monitoring of fruit supply and production. Ten to twenty percent of the gatherers are students, while less than 10 are classified as consolidators, or people who collect fruit from other gatherers and then sell them to KEF.

*Exploring the Potential of Timber Stock Improvement as a Cash-Generating Alternative*

KEF is now in the process of examining timber growth and harvest information from around eighty-six different Modified Timber Stock Improvement (MTSI) sample plots scattered around the Kalahan Reserve. KEF has placed the sustainable culling rates per forest type as 10% of the Annual Volume of Timber Produce. At present, the forestry team estimates that fewer than 10% of the growth increments are extracted for forest improvement, which is used by the local population.

As mentioned, MTSI research also serves as a feasibility study for the cash generating capability of the activity. As of now, extraction is only permitted for local use; commercial sale of lumber is prohibited. If studies show timber logging as a sustainable and profitable enterprise, then the TSI can be replicated in other areas both within and outside the reserve.

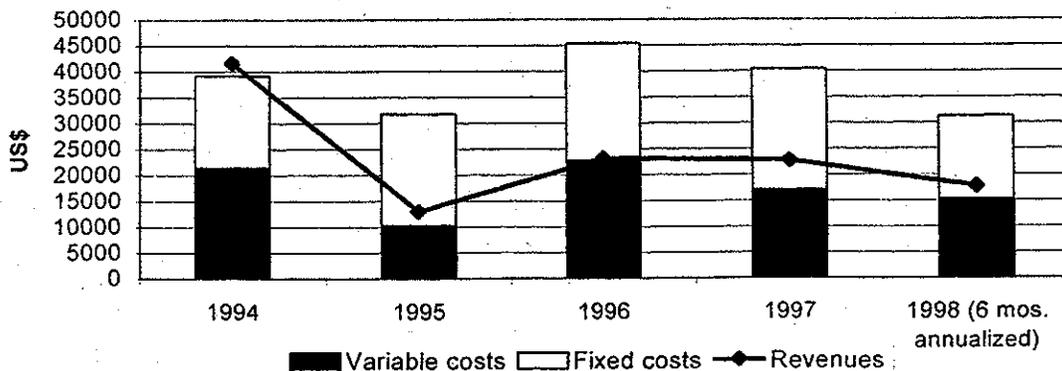


Figure 4. Mountain Fresh Jams & Jellies from the Kalahan Reserve, Nueva Vizcaya Philippines



Such monitoring and regulation can lessen "illegal timber cutting" for local use, as the scheme allows the community to cut provided the regulations for doing so are followed.

**Using Biological Inventory Research to Combat Threats to Biodiversity**

The Convention of International Trade on Endangered Species (CITES), to which the Philippine government is a signatory, aims "to protect important tree and wildlife species against overexploitation and promote their aesthetic, scientific cultural, recreational and economic values." The biodiversity research component of the project has been able to identify, within the project site, several species of flora and fauna listed by CITES as endangered. This was one of the

major arguments used by KEF when it recently won its case in having the proposed national highway linking Nueva Vizcaya and Pangasinan rerouted away from the Kalahan Reserve. This research and monitoring definitely played a big role in this victory. As KEF wrote in one of their Technical Reports to BCN: "It is very fortunate that this BCN project in biodiversity is ongoing because the discovery of the endangered species within the Reserve will be the strongest protection of the area from the proposed road. A total of four bird species were identified in the report to the Department of Public Works and Highway. One of them, the Tarictic Hornbill, is on the critical list" (KEF 1996). In a related move, KEF is also in the process of filing a legal suit against the contractors who conducted the EIA of the proposed national

**(Modified) Timber Stock Improvement Production and Extraction Analysis**

Forest Class	Total Volume Produced 94-97 (Vol. Increments) (A)	Gross Volume of Extraction 94-97 (B)	Actual Recovered Volume* (C)	Rate of Extraction (A / B)	Recovery Rate (C / B)
All types within the Kalahan Reserve	8,716 cubic meters	863.00 cubic meters	616.43 cubic meters	863 / 8,716 = 9.9%	616.43 / 863 = 71.4%

\*This is less the wastage from cutting

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highway, on the grounds that it severely understated the negative impacts of the road.

### *Developing KEF as a Stakeholder Organization*

There are three components that make KEF an effective stakeholder including (a) structure, (b) leadership, and (c) local government relations.

**KEF Structure**—As outlined in Figure 5, KEF is governed by a Board of Trustees (BOT) that consists of 11 members elected from the different communities within the reserve. The BOT has two basic functions: Management of KEF wherein they have the sole authority to make management decisions regarding issues like the hiring and firing of staff, and management of the Kalahan Reserve itself. BOT members are required to regularly consult with their communities and personally make their "monitoring rounds," such as the updating of farming activities in their areas in order to allow them to make and re-enforce the necessary resource management policies. In terms of the project activities themselves, these are implemented by designated staff that are organized into project teams. There is an Administrative Team that is headed by an Executive Director that oversees the implementation of such activities.

**Strength of the Leadership**—There are three basic leadership requirements in an undertaking such as the Forest Farms

Development Project. First is leadership to spearhead the community development-organizing process. KEF certainly ranks high in this regard, not only because of its achievements, but with its ability to integrate traditional leadership and with newer democratic processes such as elections and policy enforcement. Its organizational structure also allows for a high representativeness that has resulted in establishing KEF as the main stakeholder organization in the area. KEF reports that around thirty years ago, there were only two high school graduates out of the entire population of 2,000. Now there are three Ikalahans with Master of Science degrees, and 95% of the present population is able to attain at least seven years of formal schooling.

The main issue with KEF, however, has to do with project administration and enterprise management. Here there are mixed reviews concerning KEF's performance. The main issue here is the question of the development of "second liners." Pastor Rice, the current KEF Executive Director, is an American who has lived in the reserve area for nearly 40 years, and has been recognized as a great influence in the organizing of the Ikalahans. At the same time however, there are those who point out the dependence of the Ikalahans on Pastor and that there exists a question as to who would replace him when he retires. KEF has recognized this and, in response, they are taking steps to address this issue.

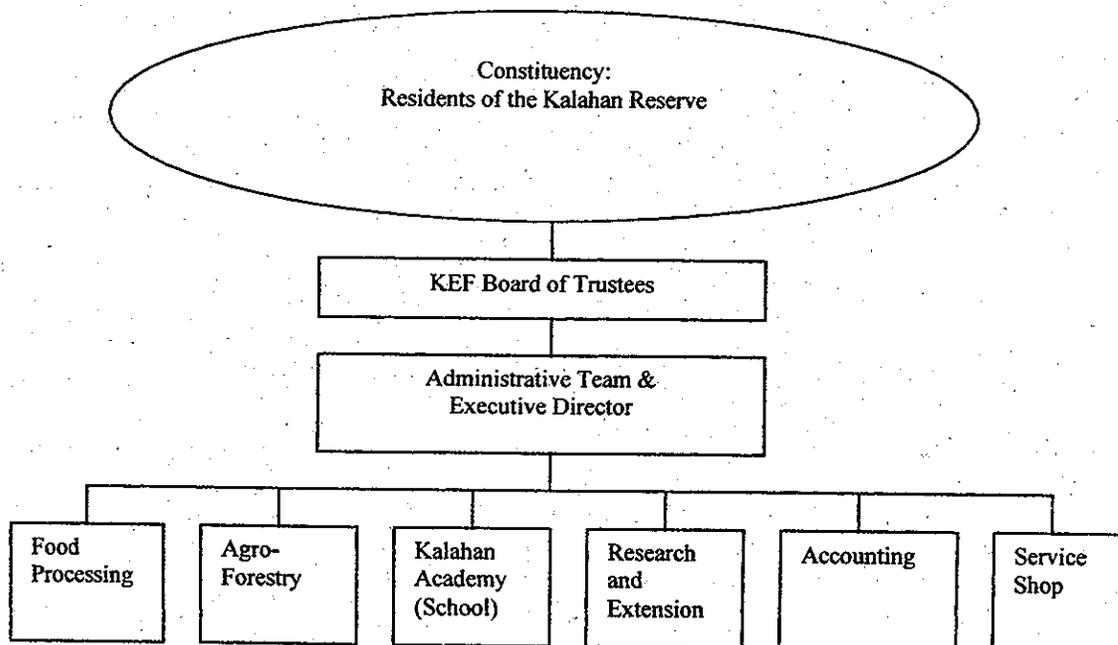


Figure 5. Structure of the Kalahan Education Foundation

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**KEF and Local Government Cooperation**—Another important aspect of KEF's influence has been its relation with the local government. The barangay is the smallest political unit of the country. Several barangays make up a municipality, and in turn, several municipalities make up a province. Each barangay has a set of elected local government leaders as do the municipality and the province. KEF therefore is not the only stakeholder organization in existence in and directly influencing the reserve.

There is a strong relationship between KEF and the local government. For example, the Barangays, Municipal Government and KEF took a united stance against the National Government on the proposed highway. Also, because the Local Government Code devolves a considerable amount of authority to the municipal government for the protection and rehabilitation of their resources, KEF closely coordinates its management activities with the local government officials—indeed, several elected town officials are also KEF members. This arrangement has greatly strengthened the existing conservation efforts, not just at the Kalahan Reserve, but in the adjacent areas as well.

### Project Results

Project results include both the ability to implement resource management policies as well as more direct biological evidence of conservation.

### *Implementation and Efficacy of Resource Management Policies*

Table 2 illustrates the different resource policies and guidelines that were written and are being implemented by the KEF. As reported in the BCN Stakeholder Organization Study (Mahanty 1998), "These rules are enforced by KEF

staff, including forest guards and agroforestry (AF) staff, barangay officials, and BOT members themselves. As an incentive for strong enforcement by barangays, a system has been developed between KEF and barangays where 75% of the fine goes to the apprehending body and 25% to the other. For example if a barangay official catches an offender, the barangay receives 75% of the fine and 25% goes to the KEF. A number of respondents (25%), some of whom were barangay officials, spontaneously commented on the effectiveness of this system and the active role barangays now play in implementing KEF's resource policies. The BOT gets an overview of the implementation of resource rules during their annual monitoring visits to all the barangays in the reserve. Rewards may be presented to barangays where policies have been well implemented, for example where there have been no illegal fires during the year. This provides a further incentive for strong enforcement of resource policies by barangays."

### *Biological Monitoring*

**Sustainability of Resource Harvest**—Though the food processing of the jams and jellies was considered as the project's major enterprise activity, examining the fruit gathering activities of the Ikalahans was also important. The key question being addressed here was whether there was enough fruits and regeneration of species to supply the needs of Mountain Fresh. There are basically eight "ingredients" that are being sold by Ikalahan fruit gatherers to the KEF Food Processing Unit for the production of Mountain Fresh jams and jellies. The table below outlines their relative abundance in each of the habitat types in which they are found.

Studies from the forestry teams reveal that the quantity of fruits that are sold by harvesters to the food processing plant

	Fruit Type	Dagwey	Guava	Passion Fruit	Dikay	Citrus	Santol	Ginger	Bignay
Habitat Type	Mossy Primary								
	Mossy Secondary	ample		few	ample			Ample	
	Pine Primary	few		few					
	Pine Secondary	few		few		few			
	Dipterocarp Primary			few					
	Dipterocarp Secondary	abundant	ample	Abundant	ample	ample	ample	abundant	
	Open/Grasslands		abundant	Abundant	ample	abundant	ample	few	
	Outside Reserve			Abundant			ample		ample

Note: The KEF also buys fruits from outside the Reserve in order to assure the Food Processing of a continuous supply.

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**TABLE 2. Resource Policies in the Kalahan Education Reserve**

*Source: KEF, 1995, Development Plan: Ancestral Domain Kalahan Reserve Phase 2.*

Resource Use/Issue	Nature of Restriction	Fine/Penalty
<b>use rights</b>	<ul style="list-style-type: none"> <li>• Kalahan residents only</li> <li>• Access to resources in secondary forest areas only, not primary forest, subject to resource guidelines below</li> <li>• New residents to get permits for resource use</li> </ul>	<ul style="list-style-type: none"> <li>• non-residents reported to DENR for prosecution</li> </ul>
<b>firewood and lumber</b>	<ul style="list-style-type: none"> <li>• on-reserve use only, not for outside sale</li> <li>• harvesting restrictions—marked trees only to be cut</li> <li>• cutting permit required</li> <li>• registration of chainsaws with Agro-Forestry (AF) office</li> </ul>	<ul style="list-style-type: none"> <li>• PHp 400 per tree cut</li> <li>• Confiscation of all produce</li> <li>• PHp 500 for unregistered chainsaws and reported to DENR for prosecution</li> </ul>
<b>swidden farming</b>	<ul style="list-style-type: none"> <li>• New clearings must have permit from AF office</li> <li>• Cultivated lands to be interspersed with forest and not on land susceptible to slides</li> </ul>	<ul style="list-style-type: none"> <li>• PHp 500 in dedicated watershed or sanctuary (primary forest) areas and required to cover cost of reforestation area</li> <li>• PHp 100 anywhere else</li> </ul>
<b>forest fires</b>	<ul style="list-style-type: none"> <li>• no burning except for 'proper agricultural development' (see swidden farming above)</li> <li>• guidelines re: firelines and burning times</li> </ul>	<ul style="list-style-type: none"> <li>• PHp 500, plus payment for damages and reforestation area plus remuneration of people involved in putting out fire.</li> </ul>
<b>fishing</b>	<ul style="list-style-type: none"> <li>• bona fide residents only allowed</li> <li>• no use of chemicals or electric current allowed</li> </ul>	<ul style="list-style-type: none"> <li>• PHp 200 for fishing with chemicals or electrical current</li> <li>• Confiscation of electrical equipment for second offence by residents</li> </ul>
<b>orchid collection</b>	<ul style="list-style-type: none"> <li>• strict guidelines on methods for orchid collection</li> <li>• complete ban on collection of endangered orchid species</li> </ul>	<ul style="list-style-type: none"> <li>• see below</li> </ul>
<b>wildlife and flora</b>	<ul style="list-style-type: none"> <li>• in sanctuary areas: no harvesting of trees, orchids, rattan, bamboo, birds or other animals</li> <li>• outside sanctuaries: hunting of animals permitted from July-August; birds from September-October</li> </ul>	<ul style="list-style-type: none"> <li>• 1st offence: PHp 1,000 + confiscation</li> <li>• 2nd offence: PHp 2,000 + confiscation</li> <li>• 3rd offence: PHp 3,000 + confiscate resources (this fine also applies for hunting wild pig and other big animals in sanctuary areas on the 1st offence)</li> </ul>



does not limit production nor threaten the regeneration of fruit tree/fruits within the Kalahan Reserve. To give an example of this, research in samples sites show that a hectare of dagwey fruit trees can produce up to 891 kilos of fruits per year. This already takes into consideration the population structure and fruit bearing capacity of each class at the sample sites. There are an estimated 509 hectares of dagwey fruit trees within the reserve which produce an estimated total of 45,387 kilos a year. At present, the KEF food processing plant processes not more than 5,000 kilos a year, or just 11% of the total dagwey fruits produced each year. By comparison, it is estimated that the Ikalahan population eats around 50% of the fruits. This research is important as the regeneration of fruit trees and the production of fruit also serves as an indicator of biodiversity quality within the Kalahan Reserve.

**Changes in Vegetation Cover**—Table 3 indicates the changes in vegetation cover from 1994 to 1997 in the Kalahan Reserve. Despite the slight decrease in Mossy Forest (.04%), Pine Forest (1.03%) and Dipterocarp Forest (.35%), the status quo in Lowland Agriculture and decrease in Grasslands (.69%) show the maintenance of the Kalahan Reserve over the last four years. The slight increases in Upland Agriculture (8.24%) can be understood in the light of the Forest Farm Concept that the Ikalahans should be able to get at

least 50% of their food needs from their land-forest resources. It is then natural that swidden activities should increase as population needs rise. One must note however that the 67-ha addition of upland/swidden agriculture affects only 0.48% of the Reserve.

From a larger perspective, KEF estimates that when the Ikalahans assumed responsibility for the management of the reserve in the 1960s, around 35% of the upper half was grass and thinly scattered pine, while several areas around Imugan, Malico and Baracbac were grass. Now these areas are mostly covered with secondary pine and dipterocarp forest.

**Changes in Land Use Classification**—One of the first things that the Ikalahans did after attaining land security through MOA1 was to establish rules and regulations for protecting the forest. One of these was the classification of their forest and agricultural lands as shown in Table 4.

Since the Ikalahans recognized the importance of watershed protection and biodiversity preservation early on, they immediately decided to classify a 3,159-ha portion of the reserve as a "Sanctuary Area" where extraction, hunting or agriculture of any kind is not permitted. The vegetative cover in this area was composed of mostly Mossy Forest, some Primary Dipterocarp Forest and a small portion of

## PATTERNS IN CONSERVATION

Grasslands w/Scattered Dipterocarp Forest. Realizing the importance of having a "reserve" within the Reserve, the Sanctuary Area by 1997 was expanded to 4,224 hectares to include some Primary Pine Forest and Secondary Mossy Forest. The Ikalahans and KEF also decided to designate parts of the reserve (Secondary Mossy, Pine and Dipterocarp Forest) as Protection Forest. This is more of a bureaucratic classification since the steep slopes of these areas have rendered them out of reach to any form of exploitation. Production Forests on the other hand are designated for livelihood use and are open to regulated exploitation.

### Conclusions

The ongoing efforts for the preservation of the Kalahan Reserve and its people and biodiversity are part of the struggle for conservation that started some 30 years ago. Aside from land tenure, strong stakeholder organization and implementation of resource policies, another key factor worth stating was the stabilization of the Ikalahans' resource usage and food supply. This was achieved by several means. The Ikalahans were first and foremost able to maintain the size and homogeneity of its population by being able to

**TABLE 3. Changes in Vegetation Cover from 1994 - 1997**

Vegetation Cover	1994 Cover Ha	% of Class Cover	1997 Cover Ha	% of Class Cover	Hectare Change	Percent Change
Mossy Forest	2,403	17.19%	2,404	17.30%	+1	+0.04%
Primary Pine Forest	476	3.42%	439	3.16%	-37	-7.8%
Secondary Pine Forest	241	1.73%	241	1.73%		
Scattered Pine Thick Stand	370	2.66%	370	2.66%		
Scattered Pine Medium Stand	1,871	13.47%	1,873	13.48%	+2	+0.11%
Scattered Pine Few Stand	434	3.12%	434	3.12%		
<b>Classification Sub-Total</b>	<b>3,392</b>	<b>24.41%</b>	<b>3,357</b>	<b>24.16%</b>	<b>-35</b>	<b>-1.03%</b>
Mixed Dipterocarp Pine Forest	640	4.60%	640	4.60%		
Primary Dipterocarp Forest	709	5.10%	707	5.09%	-2	-0.28%
Secondary Dipterocarp Forest	1,322	9.51%	1,305	9.39%	-17	-1.29%
Scattered Dipt. Thick Stand	291	2.09%	291	2.09%		
Scattered Dipt. Medium Stand	1,230	8.85%	1,230	8.85%		
Scattered Dipt. Few Stand	722	5.20%	724	5.21%	+2	+0.28%
<b>Sub-Total Hectares</b>	<b>4,914</b>	<b>35.37%</b>	<b>4,897</b>	<b>35.24%</b>	<b>-17</b>	<b>-0.35%</b>
Scattered Swidden w/Dipt.	678	4.88%	732	5.27%	+54	+7.38%
Upland Agriculture	68	0.49%	81	0.58%	+13	+16.05%
<b>Classification Sub-Total</b>	<b>746</b>	<b>5.37%</b>	<b>813</b>	<b>5.85%</b>	<b>+67</b>	<b>+8.24%</b>
<b>Lowland Agriculture</b>	<b>115</b>	<b>0.83%</b>	<b>115</b>	<b>0.83%</b>	<b>0</b>	<b>0.0%</b>
Grasslands w/Scattered Pine	133	0.96%	133	0.96%		
Grasslands w/Scattered Dipt.	1,887	13.58%	1,886	13.57%	-1	-0.05%
Grasslands	304	2.19%	289	2.08%	-15	-4.93%
<b>Classification Sub-Total</b>	<b>2,324</b>	<b>16.73%</b>	<b>2,308</b>	<b>16.61%</b>	<b>-16</b>	<b>-0.69%</b>
<b>Kalahan Reserve Total Ha</b>	<b>13,894</b>		<b>13,894</b>			

*Note: The 67-ha addition of upland/swidden agriculture affects only 0.48% of the Reserve*

## ECO-ENTERPRISES AND INDIGENOUS PEOPLES

**TABLE 4. Changes in Vegetation Cover from 1994 - 1997**

Land Use Classification	1994 Area Ha	% of Class	1997 Area Ha	% of Class	Class Change	Percent Change
Sanctuary Area	3,159	22.73%	4,224	30.40%	+ 1,065	+ 25.21%
Protection Forest	N.A.		2,481	17.86%	N.A.	N.A.
Production Forest	9,316	67.05%	5,515	39.69%	- 3,801	- 40.80%
Upland Agriculture	466	3.21%	386	2.78%	- 80	+ 17.17%
Pasture Land	468	3.37%	804	5.79%	+ 336	+ 41.79%
Titled Land	485	3.49%	484	3.48%	- 1	- 0.21%
<b>Kalahan Reserve Total Ha</b>	<b>13,894</b>		<b>13,894</b>			

effectively address the threat of encroachment or immigration. They were then able to reverse the destructive land use practices within the reserve and reintroduce traditional land use practices that aided in the rehabilitation of the area. Examples of these are: (a) Gengen—a system of contour composting which returns nutrients and protects the soil; (b) Balkah—a system of making vegetative terraces to lessen the slopes by 5°-10°; (c) Day-og—a system of composting dung on a soil level to rebuild fertility and (d) Pomy-omis—a system of planting nitrogen fixing plants. This allowed them to continue to engage in upland agriculture thereby stabilizing their main source of livelihood.

In terms of the enterprise itself, NTFP gathering at this stage is purely a supplementary form of livelihood. Fruit gathering, food processing and Modified TSI has not yet reached a level where direct cash benefits to the community can significantly affect conservation. What it has done, though, is allow KEF to solicit substantial external funding and support, that in turn has benefited both the Foundation and the community. The Ikalahans, however, are optimistic that these secondary enterprises will become major sources of cash income in the future.

The last significant impact of the project was the implementation of formal monitoring. At the start, the KEF staff and those involved in the project did not really see the need for such rigorous monitoring. By the end, they realized its value

and role in conservation. Formal monitoring has made the feasibility assessment of their NTFP-Food Processing enterprise, the countering of threats, and documentation of conservation impact and changes possible. As Pastor Rice has stated, "Much of the work happened before BCN. But what BCN has been able to do is to make us realize how much work has been done." KEF plans to take the lessons learned from the project and apply them to nearby areas in the future.

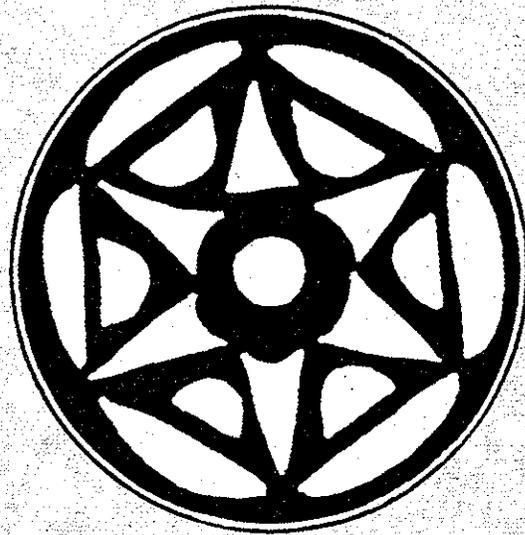


CHAPTER SIX

The Beauty and Danger  
of Ecotourism

Trekking the Highlands  
of Makira Island, Solomon Islands

*by Diane Russell*





Ecotourism is often viewed as an ideal solution to the conservation and development dilemma—how to balance human use of biological resources with the protection of critical habitats and species. The concept is particularly attractive in the Pacific islands where tourism is a dominant industry and local communities control their land. But what is the reality? What are the risks to habitats and to the local communities involved? Does ecotourism bring tangible benefits to a community? Is it truly compatible with conservation goals?

I examine these questions through the lens of my experience on a guided trek through the highlands of Makira, Solomon Islands in April 1998. Makira's Bauro communities, Conservation International (CI) and the Solomon Islands Development Trust, (SIDT), working together as the Conservation in Development (CID) Program organize this trek. The program is dedicated to conservation of the biodiversity of this unique island and the well being of the communities. In addition to the ecotour, the program also helps to manage a ngali nut (*Canarium indicum*) oil enterprise, and sponsors health, community-based monitoring and environmental education activities.

The Makira trek brings together a superb natural environment, cultural enhancement, appropriate cash benefits, and strong links to conservation. At present, it is a beautiful experience. But I encountered danger at every turn. The difficulties of setting up a sustainable enterprise in a remote location such as Makira cannot be underestimated. And community-based conservation is a process of negotiation and learning that often shreds the patience of local staff and leadership.

## Highlights of the Trek

On 12 April 1998, my seven-year old daughter and I joined a group of six people on a trek across the riverbeds and up the steep hills of the central Bauro highlands. Our young guides met us at the end of the road that leads from the

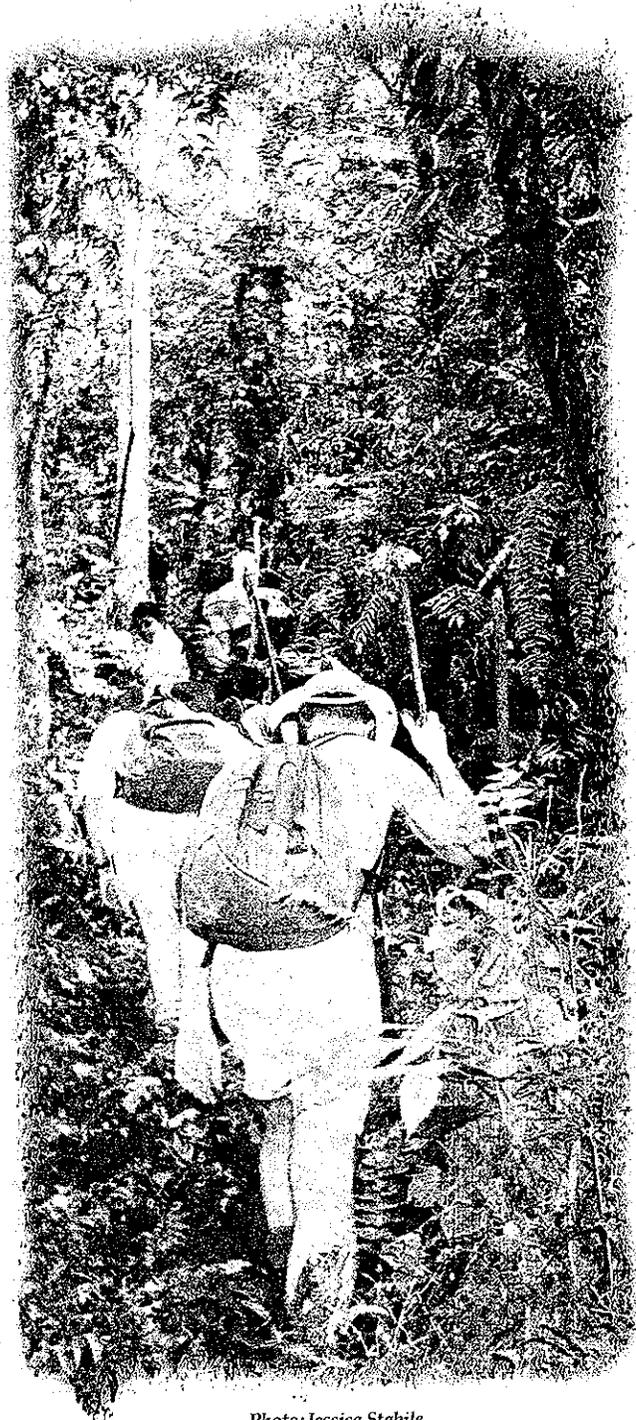


Photo: Jessica Stabile

## Background

**M**akira Island, also known as San Cristobal Island, is 3,090 km<sup>2</sup>: 139 km long by 40 km wide.

Mountains run like a spine down the island's center: the highest point reaches 1,040 meters, then falls steeply to the sea along its southern shore. Many rivers penetrate the island in roughly parallel lines every two to five kilometers. Makira has more inland swamps—and saltwater crocodiles—than any other island in the Solomon Islands. Its coast is the only part of the Solomons where the rare olive, or Pacific Ridley, turtle is known to visit and nest.

Because Makira Island was isolated for long stretches of time during periods of high sea level, a wide variety of unique plants and animals evolved. For example, 12 of its 70 resident species of birds are endemic, as are two tree species, both figs (*Ficus cristobalensis* and *Ficus illiberalis*). This uniqueness highlights the importance of preserving Makira's forest habitat.

In 1992, the Central Bank of Solomon Islands estimated that all reserves of lowland forest would be cut down within eight to ten years. This unsustainable rate of extraction stems on the government side mainly from the desperate need to garner foreign exchange and perceived lack of alternatives. The reasons for landowner agreement to logging concessions include the desire for cash and status on the part of "big men." Many Makira communities have already succumbed to the relatively large amounts of cash that the logging companies offer people in order to cut high-grade timber on their land.

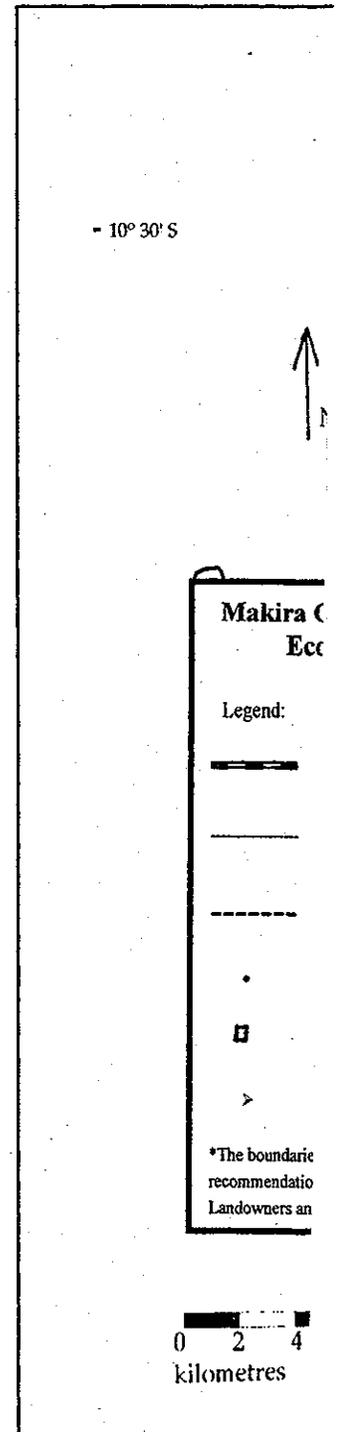
To resist these threats, the CID program established Makira's first conservation area, which consists of approximately 63,000 hectares of largely undisturbed indigenous vegetation, representing the second largest protected area in the South Pacific. Since the early 1990s, the program has been working with the Bauro communities to define the area and to identify enterprises whose viability is linked to the need to conserve the area's biodiversity.

In 1995, the CID consortium of CI, SIDT and the Maruia Society received a U.S. \$347,574 grant from the Biodiversity Conservation Network (BCN) to support these activities, particularly to assist in the enterprise and monitoring work.

### Community

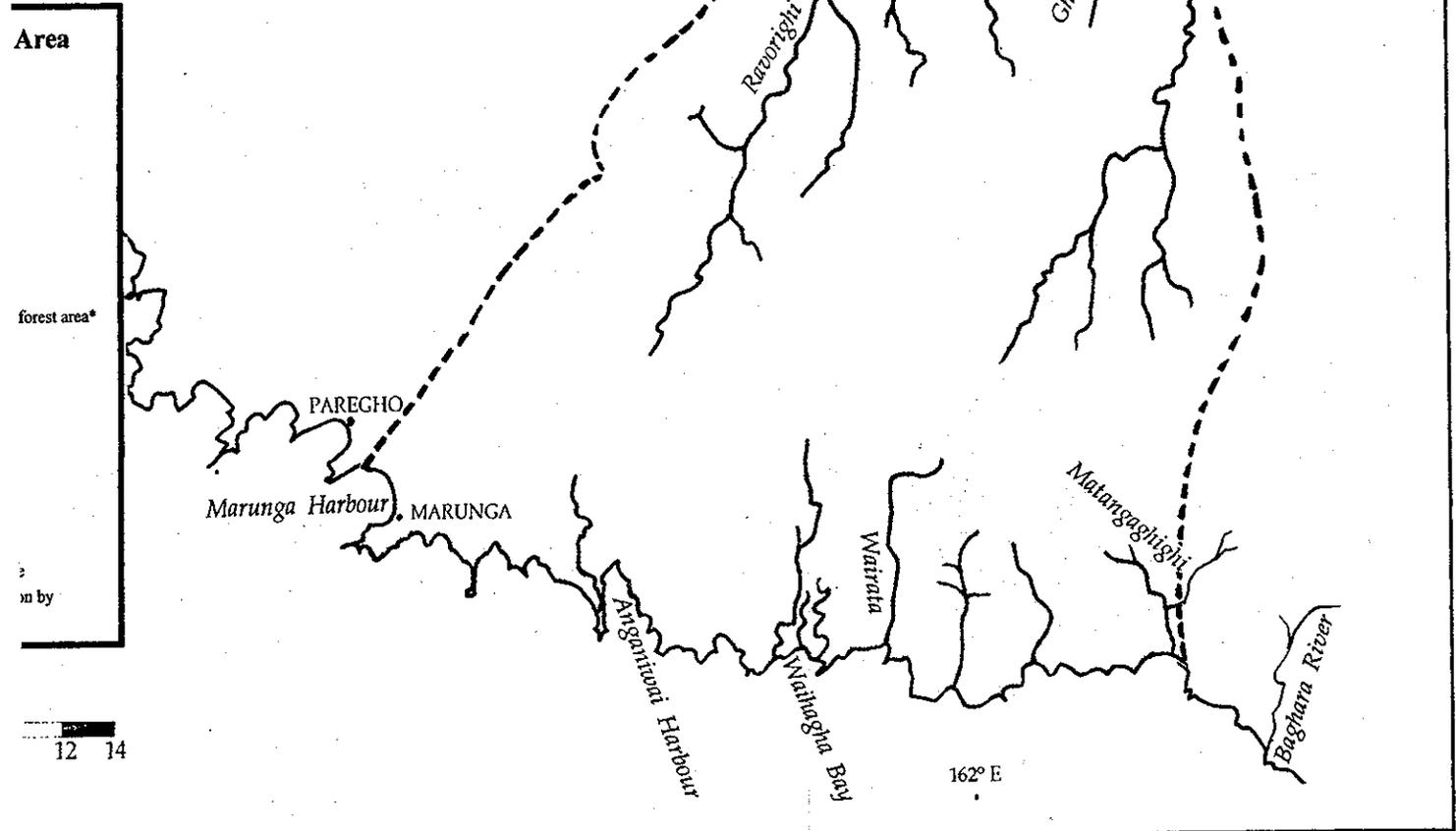
Makira has four main language groups. The eco-tour involves people from the coast up to the highlands of central Makira, all of whom are Bauro speakers. The Bauro have been considered to be the most isolated and conservative of the Makira groups.

In 1995, a CID survey found that the communities were cash poor and, though "isolated," experienced environmental problems due to more intensive use of resources. Seventy percent of households surveyed reported no cash income during the past month, and only 6 out of 320 households interviewed had access to salaried income. Few families (16%) had trade licenses and these involved petty trade only. The estimated 4-6% rate of population growth and use of destructive hunting and fishing techniques contribute

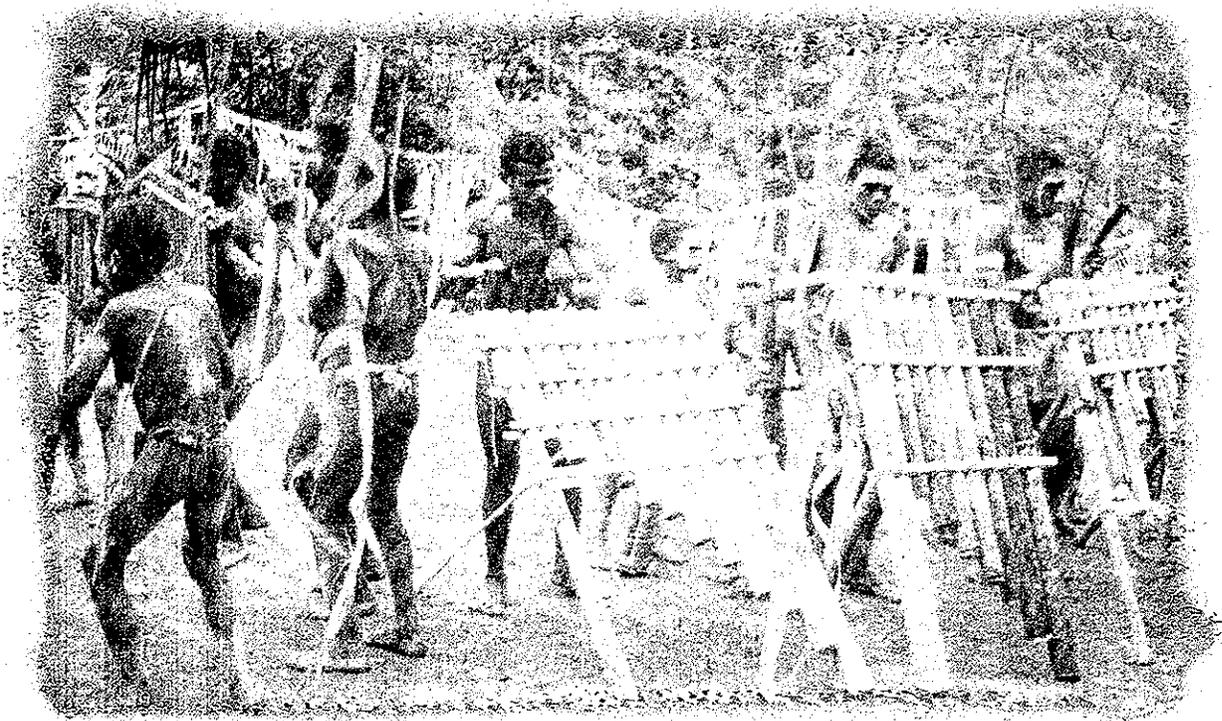


# Central Makira - Bauro Highlands

NOTE: Approximate location of trail and trekking villages only



to declining fertility of garden lands, and disappearance of river fish and some bird species.



*Photo: Jessica Stabile*

airport—the only road on Makira. Porters took the heavy packs and started off, so that they would be there when we got to our first stop. The guides immediately put us at ease by chatting and telling us what we would expect. Their training and experience with tourists was evident.

After a stop at the village of Mato, we climbed up and down two steep hills to get to a lovely bend in the western tributary of the Ravo river known as the Ravorighi, or “small Ravo.” A trail from the river led to a leaf house with a raised platform that served as our home for the night. The land for this rest house, in the area called Na’ara, is owned by ecotour manager John Waihuru’s family. John and his family came down to meet us, to cook food and give us information about what we would be doing in the days to come.

The following day, after climbing up and down another steep hill, we reached the entry of Hunama village. As fatigued and hungry as the group was, we became highly alert—astonished by our greeting. Upon entry into the village, which had been decorated in flowers and leaves, we were taken to a shaded reviewing stand to drink water and eat fruit. There we had our first serenade by the Hunama panpipers, led by Dominic, one of our guides. Later, Dominic told us that he borrowed some panpipe melodies from popular and religious songs, but other melodies came

from the songs of birds in the forest. We were delighted to hear about this link between the music and the forest.

Our layover day in Hunama was full of laughter, drama, music and feasting. The community had crafted a creative program designed to entertain and teach us about their culture and lifeways. We learned how, in a warrior’s education, boys attempt to match their elders in the art of throwing spears. Two lively custom skits concerned the relations between humans and spirits. The village children enjoyed the show as much as the visitors did—they screamed in anticipation and hilarity at the antics of their neighbors and relatives. In contrast to the boisterous acts of the men, the women’s groups singing Christian songs were shy and sweet. The visitors also introduced themselves one by one, sang a song or told a tale.

We watched demonstrations of traditional arts and crafts, including carving, food preparation, fire making and basket weaving. Villagers laid out the crafts and we purchased several items. A nice touch to the whole stay in Hunama was the presentation of handmade bowls to each of the visitors to use throughout their stay. These carved bowls were identified by the name of the sculptor, and John Waihuru, who hopes to encourage and improve the local artists, marked those chosen in a book. He asked us for detailed comments

## THE BEAUTY AND DANGER OF ECOTOURISM

on the design and construction of the bowls. Months later, when John came to my home in Fiji, he was pleased to see these crafts displayed.

As night fell, we gathered in the village commons again. A few kerosene lamps were lit. Beyond the circle of the lamps, the stars blazed with intensity rarely experienced by town dwellers. Seven-year old Eva gazed at a Milky Way she had never before seen so clearly. John Waihuru announced that we would have an evening of music, dance and sharing. He wanted to focus the discussion on conservation and the experiences of the visitors to the community.

But first the dance. Eva found a girl about her age and the two of them danced and ran through the crowd all evening. This freedom of village life—to be part of the festivities that have a role for all ages, to have the run of the village with a pack of children—has all but disappeared in the “developed” world. Virtually the whole village and all the visitors soon surrounded the circle of men and boys forming the panpipe band. The dancing turned carefree and experimental, mixing some pop and local styles.

Between the dances, our talk ranged over many topics. The Hunama people were above all concerned to understand more about conservation and the visitors’ experiences. They were anxious to correct any problems and to improve the quality of the tour. Because Eva was the first non-local child to visit the area, they wanted to know if the food was

adequate for her. Was the climate all right? What was it like in our place? Why do people want to come to Makira—to Hunama?

We pondered the relation between conservation and health. For one, the altitude of the intact forest in the Hunama area helps prevent the spread of mosquitoes. Hunama was delightfully free of those pests, and the highland dwellers do not contract malaria as frequently as their coastal cousins do. Second, the forest provides medicines. Our guides had pointed out some medicinal plants to us during the trek. The water source flowing from the forested hilltops provides clean water, thus keeping the people relatively free of parasites and other illness. Finally, the abundance of food crops could be attributed to the health of the forest because long garden cycles allow for regeneration of the soil.

On day four, we went up the hill and across to Maraone. The visitors’ first experience of Maraone began long before they actually saw the village. Where the terrain became extremely rugged, the community had built steps and banisters to guide the visitors. I felt that perhaps they knew I was coming! John Waihuru was surprised and pleased at the work that went into building this infrastructure—a spontaneous innovation on the part of the community.

During our two days in Maraone, we were treated to demonstrations of custom skills, and wonderful skits that had us whooping with laughter. The view from the village,

across the conservation area, was stunning. While shy, the people wanted to talk about our experience in their village, and to share stories. Maraone is the home village of some Bauro clans, a bit slower paced and more conservative than Hunama. The beauty of the place revealed itself in the details—the design of our gift beads and headdresses, the delicious ngali nut pudding, the village decorations, and the church service we were invited to attend.

Hauta was our final stop before returning to the coast. To assure a good journey, John and the guides decided to take us up across the ridge rather than down and up the ravines we had traversed to get to Maraone. We trekked through mossy forest



Photo: Jessica Stabile

with views of the southern "weather coast" of the island. We observed a flying fox, huge spiders perched on their webs across the path, an array of birds, flowers, caterpillars and butterflies.

The talk with John and the guides was as fascinating as the forest. I was amazed to find that, unlike my experience of African forests, there are no serious hazards in the forests of Makira—no dangerous snakes, insects or plants. Fire ants, which leave a burn when they land on the skin, are the worst hazards and they are relatively recent arrivals to the Highlands. It began to seem like Makira was a Garden of Eden.

In this Eden, however, I learned that there were similar social problems to those I had encountered in Africa. These problems centered on jealousy that can inhibit initiative, and the corollary of finding ways to control the greed of a few individuals that can damage the social fabric. As cash enters a society, and cash values are placed on land, labor and natural products, more aggressive people can take advantage of others to claim land, establish large plantations or overhunt valuable species. In Solomon Islands, the laws governing access to timber and minerals encourage the division of communities, as those who support companies to get access can receive large cash rewards.

Hauta, the small village that harbors John Waihuru and his late wife's vision of a primary school and clinic to serve the

## THE BENEFITS OF ECOTOURISM

An important source of cash income for men in the Highlands is processing copra (coconut meat) on the coast. This work means absences of up to six months from the village. Other sources of cash such as selling food require at least a day's walk down to the market and another day to return. Low prices and volumes discourage farmers from selling. The ecotour brings cash directly into the village and brings it to men, women and youth. Cash benefits go to guides, porters, hosts, food preparers, carvers, basket weavers, entertainers, builders and decorators. And, as John Waihuru noted, the benefit comes not only from cash but also from bringing the community together.

Highland communities, perches on a gently sloping hill. Only three families now live in Hauta: John's, Paul Wori, the headmaster of the school, and Ephrem Waraba, a "refugee" from Bagothane. The panpipes greeted us again on arrival, led by the indomitable Dominic, who quickly switched from guide clothes to loincloth.

John and I sat down to discuss the enterprise. The transparent distribution of benefits is highly important. John records every transaction and together with other community leaders decides upon wage rates and who should get training. The allocation of payments to individuals can involve over 400 transactions for each tour. John's level of involvement in the enterprise is obviously not sustainable and he is training others to take on the financial records. But for the



Photo: Diane Russell

moment, John's active participation is critical to the functioning of the enterprise. He said that even after the money is allocated, people still come to wake him up before the light to ask about money issues.

The fifth and final day of the ecotour saw us trekking down from Hauta to the coast. We spent the night right near the beach at Togori rest house, which had been decorated with flowers and paper mobiles. The ecotour was over but the memories remained vivid. All those who went on the tour felt that it was unique—almost magical. This ecotour experience seemed to be ideally suited to the level of economic development of the peoples of the Highlands, and had the potential to encourage conservation. In 1997, the community sent away a Malaysian logging company. Village Resource Management Planning, to begin this year, will help people to decide how best to manage their human, biological and financial resources to deal with the intensification trends.

John Waihuru has been thinking deeply about conservation in the Highlands:

"In my area, it is a bit complicated because I'm trying to do conservation on customary lands. There is a link with many tribes. If I say 'I want to conserve this area', I have to get agreement first from many different landowners. Conservation is not just one specific thing. It has to do with many things—water, land and air. When you talk about the land, it is complicated. Take a small piece of land like an island. One river starts from the north to the south. All rivers link up with this river. You might get one tribe that wants to conserve the river but on the other hand the other tribe might damage the river. You might want to try to conserve an endemic bird but it flies. Others might disagree. We still have a lot to do."

### Beauty

The beautiful aspects of this experience can teach others how to go about setting up a community-based ecotour:

- **A Vision for the Future: Local Ownership**—The program team has a vision and plan for local control over all aspects of the enterprise. This vision is reflected in every decision and activity. For example, local people without external assistance can maintain the infrastructure of the trek.
- **Planning and Wide Participation**—The planning that went into the tour, from the first germ of an idea, through training, testing and refining each segment, is responsible for the current success. Risks and benefits were carefully weighed, and wide participation encouraged. The

### John Waihuru

John is a teacher and a community leader. He was born in 1948 in the village of Maraone. He studied in mission schools in Makira and Honiara and graduated from Solomon Islands Teachers' College. Since 1971, he has been trying to improve the lives of his people. In 1983, he started the school in Hauta after having been a teacher in the central town of Kirakira. His late wife was a health worker and started the clinic at Hauta. He started working on the ecotourism project in 1994. He is still teaching, and trying to balance this role with the ecotourism work, as well as raising his family as a widower.



Photo: Jessica Stabile

## THE STORY OF BAGOHANE

The village of Bagohane originally formed part of the ecotour. It was the last stop on the tour, offering a few demonstrations and a lot of preaching. After two tours, however, Bagohane people decided not to participate further due to their involvement with the millenarian Rhema Church. The main goal of this congregation is to build a new church building. In fact, they want to build a very large and impressive building, and are using chainsaws to cut the planks for the church. We heard them buzzing on the way down from Hauta our last day on the trek.

Why did people join this church? What are the benefits? In the beginning, a trainee doctor and teacher from Bagohane brought back the church from Honiara in the hope that its emphasis on Western culture would change attitudes regarding jealousy and "big-headedness." But somehow this idea went wrong. Rather than messages of love and forgiveness, literalism was emphasized. We were told that the church members were encouraged to discard "custom" behavior, and as the ecotour emphasizes custom, some felt it was not appropriate for church members to be part of it.

community has taken the lead and not let the enterprise overwhelm them.

- **Cultural Pride**—Ecotourism has sparked a revival in local traditional knowledge, particularly by youth who now see the value of this knowledge. The pride in culture is a catalyst for conservation because of the emphasis on low-impact technology and use of forest products.
- **Appropriate Product Development and Training**—The community decided to strictly control the number of treks and tourists on each trek. The guides were given training appropriate to the type of trek and tourist. The enterprise created an important role for young people who might otherwise want to migrate.

- **Conservation Focus**—The program team has kept the focus on conservation. To help John Waihuru understand conservation and enterprise in a broader context, the program got a grant for him to visit New Zealand. His visit to conservation areas, particularly a Maori area, deeply impressed him and gave him a vision of the links between enterprise and conservation that he is transferring to the community.

## Danger

This ecotour faces dangers shared by similar ventures. When these dangers are anticipated, strategies can be developed to counter them.

- **Market Uncertainties**—Any community-based enterprise faces challenges of selling its product unless it links up immediately with a secure market outlet. In the case of the Makira ecotour, there has been relative success in getting tourists to the site due to the diligence of the project team. But the situation is delicate in three respects. One is that the number of tourists coming through needs to be limited and timed to the community's needs. Second, the type of tourist has to be at least somewhat controlled. The expectations of tourists have to be managed so that they are comfortable with what is being offered. Finally, the non-local tour operators need to be knowledgeable about both tourism and local community needs.

*Strategies Used:* Diversify tour operators, use a local inbound operator with knowledge of the area, and bring operators to the community to take the tour.

- **Misunderstandings and Conflicts**—The case of Bagohane illustrates how local misunderstandings can cut off one part of the community from participation in the enterprise. More severe conflicts are well known in community-based enterprises, particularly those using common-property resources.

*Strategies Used:* Continual discussion, inclusion of all parties, wide sharing of benefits.

- **Burnout**—We saw how John Waihuru faces enormous pressures in managing the ecotour at the local level—in part because of the emphasis on participation and benefit sharing. Even the guides and porters can be overloaded, literally and figuratively.

*Strategies Used:* Organize local committees to streamline reporting and benefit sharing, train others to do some of the work.

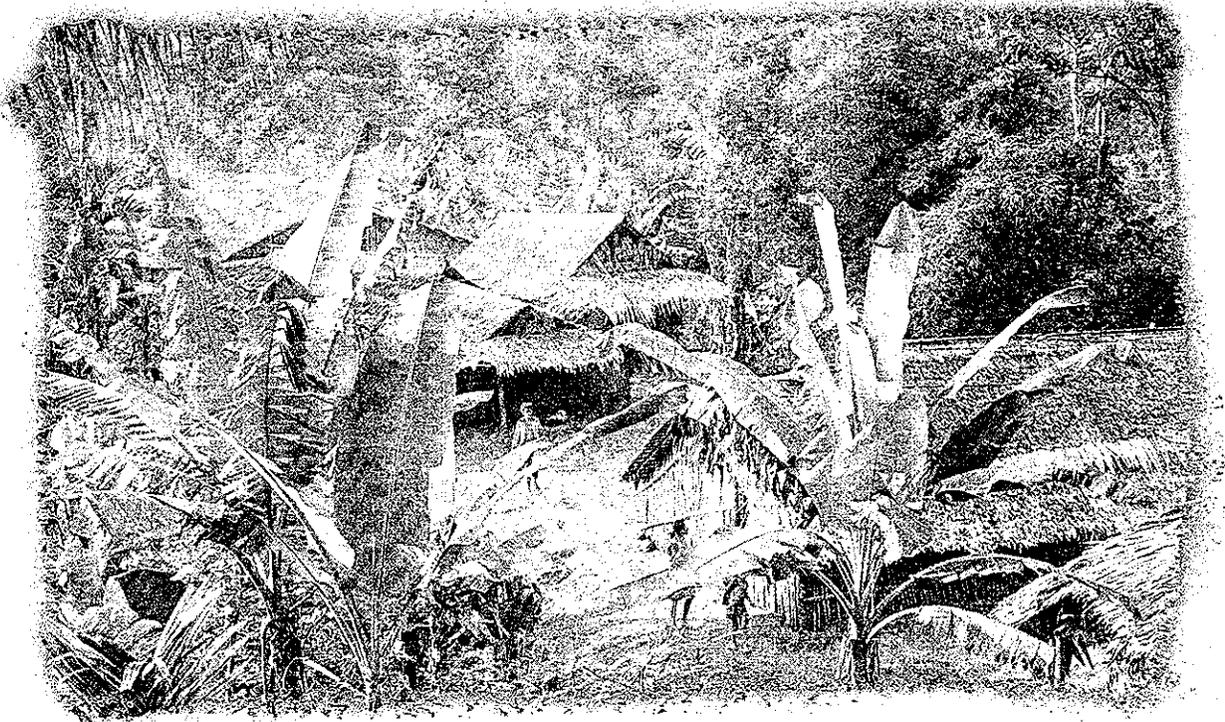


Photo: Diane Russell

- **Competition**—Other communities on Makira or other islands will certainly be attracted to the benefits from this type of enterprise. “Copy-catting” can lead to divisiveness, dilution of the quality of the product, health and safety hazards for tourists.

*Strategy Used:* Tourists who are not part of the ecotour are strongly discouraged on Makira, particularly in going to the Highlands; the program has sought ways to complement the trek with a visit to community-based lodges elsewhere in the Solomons.

- **Inadequate Benefits to Counter Threats**—Logging and mining tempt people with large cash payments that may seem on the surface to outweigh the benefits of ecotourism. National policies foster these choices.

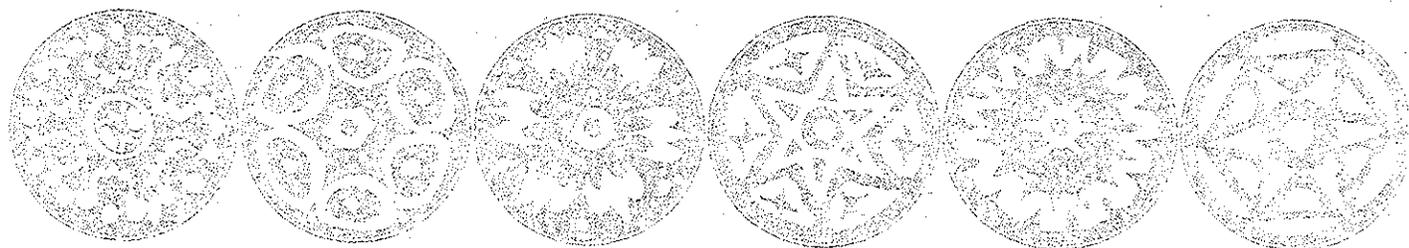
*Strategy Proposed:* Village resource management planning for landowners. CID staff is also passing on information about the real benefits and risks of logging and mining.

## Conclusion

Strong leadership, careful planning and a relatively undisturbed and homogenous community contribute to the beauty of the Makira ecotour. Keeping the focus on conservation is critical. But even in the best of circumstances, ecotourism is only a partial solution to the conservation and development dilemma. It is not a magic bullet. A conservation area needs a suite of viable enterprises, supported by strong institutions at the community and national levels. Communities should not be expected to face the dangers to their resources and their livelihoods alone. They need appropriate policies, markets for their products, and links to like-minded people.

For the visitors, the ecotour brings awareness of linkages between community and biodiversity. At its most profound, it is a rite of passage to a more ecologically oriented worldview. Each visitor comes away not only with an experience in a specific community, but a vision to transform global culture. In this way, ecotourism can be a powerful tool for building a more sustainable world.





APPENDIX

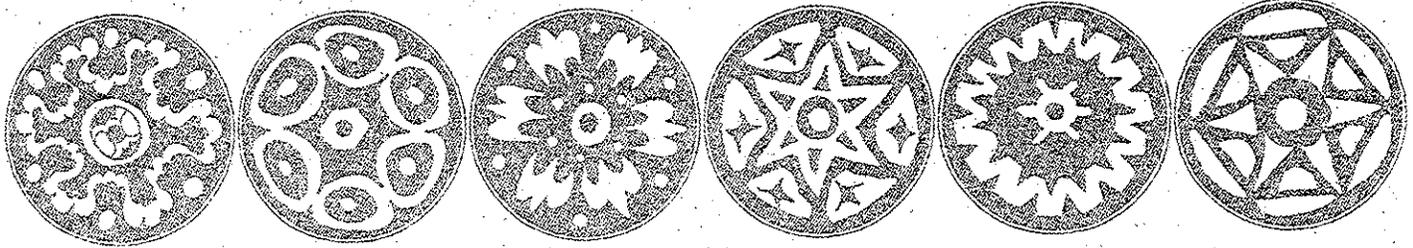
# OTHER BCN PUBLICATIONS

The following list includes key BCN-related publications and documents. Documents marked with an asterisk are still available from the Biodiversity Support Program as of September 1999. Many of these items are also available on-line at [www.BCNet.org](http://www.BCNet.org).

- Baron, Nancy. *Lessons from the Field*, Issue No. 1 (1998) Keeping Watch: Experiences from the Field in Community-based Monitoring. Biodiversity Support Program, Washington, DC, USA.
- Biodiversity Conservation Network (February 1998) *Analytical Framework & Communications Strategy*. Biodiversity Support Program, Washington, DC, USA.
- Biodiversity Conservation Network (1994) *Annual Report: January 1, 1994 - December 31, 1994*. Biodiversity Support Program, Washington, DC, USA.
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- Biodiversity Conservation Network (1996) *Annual Report: Stories from the Field and Lessons Learned*. Biodiversity Support Program, Washington, DC, USA.
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- Biodiversity Conservation Network (1999) *Final Stories from the Field*. Biodiversity Support Program, Washington, DC, USA.
- Biodiversity Conservation Network (1999) *Evaluating Linkages Between Business, the Environment, and Local Communities: Final Analytical Results from the Biodiversity Conservation Network*. Biodiversity Support Program, Washington, D.C., USA.
- Cordes, Bernd. *Lessons from the Field*, (1999) Doing Business in Borneo. Biodiversity Support Program, Washington, DC, USA.
- Johnson, Arlyne. (1999) *Measuring Our Success: One Team's Experience in Monitoring the Crater Mountain Wildlife Management Area Project in Papua New Guinea. BSP Lessons from the Field: Issue BCN-3*. Biodiversity Support Program, Washington, DC, USA.
- Margoluis, Richard and Nick Salafsky (1998) *Measures of Success: Designing, Managing, and Monitoring Conservation and Development Projects*. Island Press, Washington, DC, USA.
- Peters, Charles M. (1994) *Sustainable Harvest of Non-Timber Plant Resources in Tropical Moist Forest: An Ecological Primer*. Biodiversity Support Program, Washington, DC, USA.
- Salafsky, Nick. (1997) *Eleven Steps for Setting up Community-Based Timber Harvesting Enterprises: An overview of the IRECDP Experience in the Islands Region, Papua New Guinea. European Union—Islands Region Environmental & Community Development Programme (IRECDP)*.

## OTHER BCN PUBLICATIONS

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Salafsky, Nick (1998a) Community-Based Approaches for Combining Conservation and Development. Pages 132-135 in Linda Koebner and Jane Sokolow (eds.) *Scientists on Biodiversity*. American Museum of Natural History, New York, NY, USA.

Salafsky, Nick. *Lessons from the Field*, Issue No. 1, BCN 1 (1998b) If I Only Knew Then What I Know Now: An Honest Conversation about a Difficult Conservation and Development Project. Biodiversity Support Program, Washington, DC, USA.

Salafsky, Nick and Lini Wollenberg (In Press) Linking Livelihoods and Conservation: A Conceptual Framework for Assessing the Integration of Human Needs and Biodiversity. *World Development*.

Salafsky, Nick and Richard Margoluis (1999a) Greater Than the Sum of Their Parts: Designing Conservation Programs to Maximize Impact and Learning. Biodiversity Support Program, Washington, DC, USA.

Salafsky, Nick and Richard Margoluis (1999b) *Overview of a Systematic Approach to Designing, Managing, and Monitoring Conservation and Development Projects*. In Saterson et al, pp. 7-15.

Salafsky, Nick, and Richard Margoluis (1999c) Threat Reduction Assessment: A Practical and Cost-Effective Approach to Evaluating Conservation and Development Projects. *Conservation Biology* 13: 830-841.

Saterson, Kathy, Richard Margoluis and Nick Salafsky, eds. (1999) *Measuring Conservation Impact: An Interdisciplinary Approach to Project Monitoring and Evaluation*. Biodiversity Support Program, Washington, DC, USA.

Wollenberg, Eva and Andrew Ingles, eds. *Incomes from the Forest: Methods for the Development and Conservation of Forest Products for Local Communities* (1998). Center for International Forestry Research. Jakarta, Indonesia. (See especially chapters 1, 3, & 6).

Wagner, John, Victor Kohaia, and Francis Tarihao (1996) *The Collection of Size Class Structure and Recruitment Data of *Canarium indicum* by Local Communities in the Makira Conservation in Development Project Area, Solomon Islands; A Report on the Field Implementation of a Biological Survey*. Biodiversity Conservation Network, Washington, DC, USA.