Biodiversity Support Program

Evaluating LINKAGES Between BUSINESS, the ENVIRONMENT, and Local COMMUNITIES

Final Analytical Results from the Biodiversity Conservation Network

Nick Salafsky, Bernd Cordes, John Parks, and Cheryl Hochman

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Biodiversity Support Program
Washington, D.C.

Acknowledgements

This report represents the final analytical output from the Biodiversity Conservation Network (BCN). It is the product of literally hundreds of peoples' work. We would particularly like to acknowledge and thank our partners from the twenty BCN-funded projects who did the work and collected the data that form the foundation for this report. We also thank Molly Kux, David Richards and the other visionary individuals who set up the BCN program. The BCN Analytical Framework underlying this report was developed with the assistance of many people including BSP and BCN staff: Ganesan Balachander, Chiranjeev Bedi, Seema Bhatt, Hank Cauley, Chuck Encarnacion, Frank Hicks, Richard Margoluis, Stacy Roberts, Diane Russell, and Kathy Saterson. Assistance in compiling the data for these analyses was provided by Minnie Ames, Chiranjeev Bedi, Seema Bhatt, Chuck Encarnacion, Avi Mahaningtyas, Jennifer McLean, Karina Quintans, and Jessica Stabile. Administrative support was provided by Chato Capili, Connie Carrol, Jennifer Jordan, Hazel Mascuñana, and Bek May. We would also like to thank our colleagues in BSP, WWF, TNC, WRI for their support. We thank Gabriel Wishik for conducting the qualitative analysis. We thank Hank Cauley for his comments on a draft of this report. Finally, we would like to acknowledge the major role that Richard Margoluis played in helping us to conduct our analyses and prepare this report.

This report was made possible through support provided by the Office of Development Resources, Bureau for Asia, USAID under the terms of Cooperative Agreement Number AEP-A-00-92-00043-00. The opinions expressed herein are those of the authors and do not necessarily reflect the views of USAID. For more information, to give us feedback, or to order copies, please contact:

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This report is available online at www.BCNet.org or www.BSPonline.org.

Please cite this report as:

Salafsky, Nick, Bernd Cordes, John Parks, and Cheryl Hochman (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.

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Contents

1. BCN: An Introduction

The Biodiversity Conservation Network. One core hypothesis. Seven years of work. Seven countries across Asia and the Pacific. Fifteen staff members. Twenty projects and thirty-nine sites. Forty-eight community-based enterprises. Hundreds of project staff. Thousands of community members. Twenty-million dollars of US taxpayer money. And now we are going to sum it all up in a few brief pages. What was it all about? What happened? What did we learn? Was it worth the investment? What practical lessons can you take away from this?

BCN's publications are designed to share what we learned along the way – both our successes and our failures. This report is no different. It presents an overview of our Analytical Framework, a summary of our data and results, and a discussion of the lessons we learned. As in other BCN publications, we tried here to retain our candor and objectivity by stating our assumptions, by describing where and why those assumptions held or were proven wrong, and by presenting some of the successes and frustrations we experienced – at both project and program levels.

This report is only the tip of the iceberg. Across the Network, we have collectively compiled files of data, drawers of photos and reports, volumes of stories, and years of experiences. Unfortunately, in this report we can only present a tiny fraction of this wealth of information – a brief introduction to BCN's analytical results and a guide to finding out more. In the main narrative, we present an overview of our core analyses. In the sidebars we present links to other sources where you can get more detail. Through this summary and links to our other data, reports, stories and experiences, we hope you will be able to see what lies below the surface.

Obtaining Additional Information: Most of the sources outlined in the sidebars can be obtained via the BCN web site at www.BCNet.org even after BCN ends. Specific web pages within the site are referenced using underlined text as above. A map of BCN's web site is at www.BCNet.org/sitemap.htm or in BCN 1997 (p. 3).

Printed copies of many documents are also available from the Biodiversity Support Program by mail or by ordering from www.BSPonline.org. A list of these publications is included at the end of this report.

Jumping to Conclusions

For those of you who don't want to wait for the answers, we will give you a preview of where we are heading. BCN was established to test a specific hypothesis about the conditions under which an enterprise-based strategy might help local communities conserve their biodiversity.

We found that:

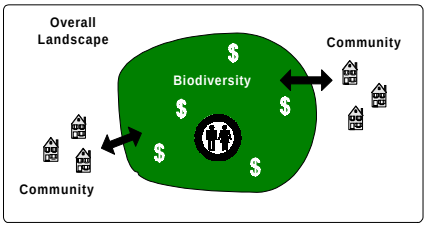
1. An enterprise strategy can lead to conservation, but only under limited conditions…and never on its own.
2. An enterprise strategy can be subsidized and yet still create a net gain for conservation, and
3. To determine how to optimally use an enterprise strategy (as well as any other conservation strategy), you need to use adaptive management at both project and program levels.

To find out how we arrived at these conclusions and the rich detail that lies behind them, we encourage you to read on…

1.1 The Basic BCN Concept

BCN was established in September 1992. At that time, a number of conservationists were excited about the prospects of using community-based, environmentally-friendly businesses to "save the rainforest" and "protect the coral reefs." As shown in the figure below, the basic concept was to avoid dividing the landscape into a core area for biodiversity and outside areas for human use, as is done under a protected area approach. Instead, conservationists began to look at the overall landscape as an integrated whole, using eco-enterprises to develop direct links between the biodiversity and surrounding human populations.

Comparing Different Strategies: The BCN enterprise strategy for conservation can best be understood in comparison to other conservation strategies like direct protection or economic substitution. A basic discussion of these strategies can be found at www.BCNet.org/about/paradigm.htm or in Salafsky (1998a). A more technical discussion of the models behind these strategies can be found in Salafsky and Wollenberg (in press).



The key hypothesis behind this enterprise-based conservation strategy is that if local people directly benefit from a business that depends on the biodiversity at a given site, then they should have the incentive to act to protect it against both internal and external threats to its destruction. There was some anecdotal evidence at the time that this strategy might work, but no one had systematically tested the idea. That's where BCN came in.

Perhaps the most important feature of the BCN program was that we did not say "this enterprise approach is a good idea, so we should try to replicate it everywhere." Instead, our approach was more cautious. We said, "This is an interesting idea. We should test it to see where it works, where it does not work, and why." BCN was thus set up as a large-scale experiment to look at three key questions:

- Can an enterprise strategy lead to conservation?
- Can an enterprise strategy pay for conservation?
- How can we implement more effective projects and learn from our experiences?

BCN's Institutional Structure: A more detailed discussion of BCN's institutional structure can be found at www.BCNet.org/about/overview.htm or in BCN's 1996 Annual Report (p. 69). Details about BSP can be found at www.BSPonline.org. Information about USAID is online at www.USAID.gov. Information about BSP's consortium partners is available at www.TNC.org, www.WorldWildlife.org, and www.WRI.org.

1.2 BCN's Goals and Program

BCN was specifically established to address these questions. We set out to fulfill two main programmatic goals, as well as a third that, though it was not part of the original BCN design, emerged over time:

1. *Conservation Impact* – Support the implementation of enterprise-based biodiversity conservation strategies with communities across Asia and the Pacific;
2. *Enhanced Knowledge* – Evaluate the effectiveness of these enterprise strategies and provide lessons and results to BCN's clients and audiences;
3. *Process Lessons* – Learn how to design, manage, and monitor both conservation projects and hypothesis-testing programs more effectively.

BCN's Conservation Impact: For an overview of BCN's impact, see the map in BCN's 1999 Annual Report (pp. 2-3) or online at www.BCNet.org/results/impact/index.htm.

Key Clients: BCN early on identified seven different types of clients. A complete list of these clients can be found at www.BCNet.org/learning/analytical/intro.htm.

To achieve these goals, BCN brought together organizations in Asia, the Pacific, and the United States in active collaboration with local and

indigenous communities. The program provided grants for projects that encouraged the development of enterprises dependent on sustained conservation of local biodiversity. Through a competitive review process, BCN funded 20 three-year Implementation Grants in seven countries. A key feature was that each project, with support from BCN staff, had to monitor the social, economic, and biological impacts of their interventions. These data are the basis for many of the analyses in this document.

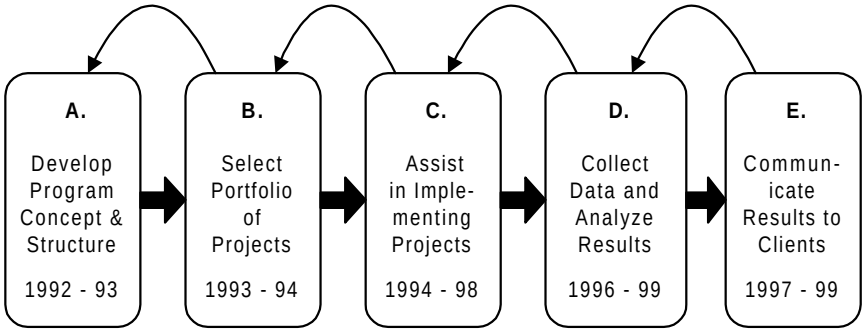
BCN Grants: A complete list of the grants that BCN made can be found at www.BCNet.org/learning/analytical/intro.htm or in BCN's annual reports.

The overall BCN program had five roughly sequential components, as outlined in the figure below.

Program Components: A detailed description of these steps can be found at www.BCNet.org/learning/analytical/intro.htm. Highlights of each year's program activities are presented in BCN's Annual Reports (1994, pp. 2-11; 1995, pp. 2-13; 1996; pp. 1-4; and 1997, pp. 1-4).

Overview of the BCN Program Components

These steps were generally undertaken in a sequential manner as indicated by the large arrows in the diagram going from left to right. A key premise behind this diagram, however, is that the activities and products of each step were highly interconnected. Furthermore, although the general flow of the program was sequential from left to right, there was also an iterative feedback process (represented by the curved arrows on top of the diagram) between the steps. Although we worked on all five components throughout the life of the BCN program, the diagram shows the years each component was a primary focus.



1.3 Structure of This Report

BCN's analytical efforts correspond directly to our three goals and involve 1) documenting our conservation impact, 2) testing an enterprise strategy, and 3) developing process lessons. In this report, we present our formal analyses related to testing an enterprise strategy. Section 2 presents an overview of our analytical framework. Section 3 shows some of our basic results. Section 4 discusses major lessons that we learned. Finally, Section 5 provides our overall conclusions, and Section 6 outlines recommendations for future work. The formal analyses presented in this report are only half the picture. The other half involves drawing upon the experiences of our project partners outlined in the *BCN Stories from the Field* series described in the sidebar.

Project Experiences: The analytical lessons developed by our project partners are presented in the three volumes of the *BCN Stories from the Field* series (in BCN's Annual Reports from 1996, 1997, and 1999), and are also available on-line at www.BCNet.org/learning/bcn/bcn.htm.

2. Overview of BCN's Analytical Framework

2.1 BCN's Core Hypothesis

BCN Analytical Framework: A more complete presentation of the Framework can be found at www.BCNet.org/learning/analytical/af_toc.htm.

BCN's Core Hypothesis is illustrated in the diagram below. It states that if an enterprise approach to community-based conservation is going to be effective, then there must be:

1. *Linkage Between a Viable Enterprise and Biodiversity:* The enterprise must be financially viable. But it also must directly depend on the *in-situ* biological resources of the region so that the enterprise will fail if this biodiversity is significantly degraded.
2. *Generation of Short and Long-Term Benefits:* The enterprise must generate benefits (economic, social, and/or environmental) for a community of stakeholders both in the short run and, with a high probability, in the long run, after BCN funding ends.
3. *Stakeholder Involvement:* The enterprise must involve members of the local community, who are stakeholders in the enterprises and biodiversity of the area, and who have the capacity to take action to counter threats to the biodiversity.

In effect, the hypothesis is that if local communities receive sufficient benefits from a viable enterprise that depends on biodiversity, then they will act to counter internal and external threats to that biodiversity.

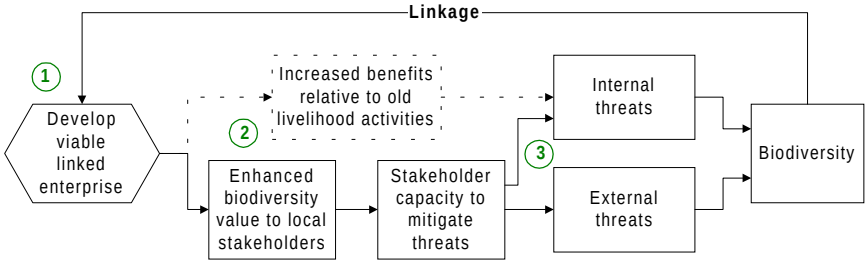
Background Literature: Over the past decade, there has been an explosion of interest in enterprise-based strategies to conservation.

Jason Clay and others working at Cultural Survival did some of the pioneering work in this field. An early product that defined an enterprise approach to conservation and sparked interest in the concept was the Rainforest Crunch candy marketed by Ben & Jerry's.

Since those early days, there have been many other examples where different groups have tried an enterprise strategy for conservation. In 1998, BCN commissioned a study of different examples of this enterprise strategy. The results of this survey are available at www.BCNet.org/learning/biblio/bib.htm. A key feature of this web site is that it enables users to add other examples to the list. As of late 1999, the list contains 63 examples from 31 countries.

A Conceptual Model of the BCN Core Hypothesis

The solid lines represent the BCN Core Hypothesis, with the colored numbers corresponding to the elements of the hypothesis stated above. The dashed lines represent an alternative pathway (technically, an economic substitution strategy) by which the enterprise can also help mitigate internal threats. The enterprise provides alternative sources of income to residents who are currently engaged in livelihood activities that damage biodiversity, such as swidden agriculture or overharvesting of marine resources.



Source: Adapted from Salafsky and Wollenberg (in press)

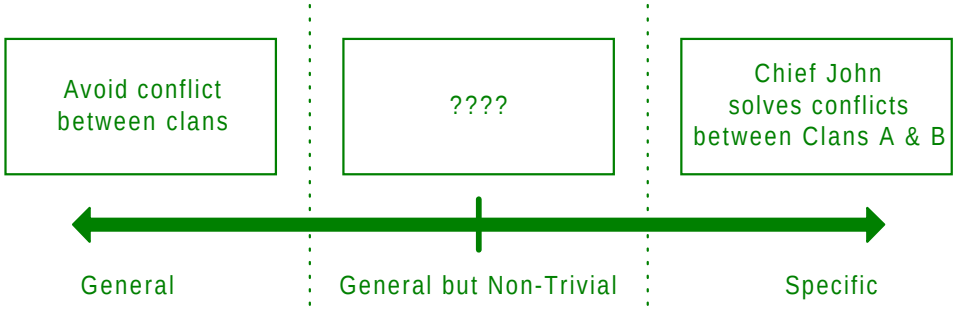
A Tough Standard: Developing principles that meet this standard of being general and yet non-trivial actually proved to be fairly difficult to do. As you read through our principles, you can best judge whether or not we succeeded in this regard.

We are not interested in testing this hypothesis as an academic exercise. Instead, we'd like to inform conservation practitioners and managers about the specific conditions under which it might make sense to adopt an enterprise strategy – and, just as importantly, the specific conditions under which it might not. To this end, as outlined in the following box, our analysis is focused on developing *general and yet non-trivial guiding principles* for using an enterprise strategy.

What Are General and Yet Non-Trivial Guiding Principles?

In navigating the conservation and development landscape, there is no single path – no magic formula – that will lead a group to success. There are no guarantees that an intervention that works at one site in Indonesia will work equally well at another site in Brazil – or even at the same site in Indonesia the next year. On the other hand, it seems likely that there also is not an infinite number of paths leading to success. To be sure, the exact path that any group needs to follow depends on its starting point, its goals, the changing conditions at the site, and the conditions in the broader social, political, and economic context in which it is operating. But to say that there are no common aspects – that everything is site-specific – implies that there is no need for any kind of systematic science.

Between the endpoints of this spectrum of possible paths is a vast middle ground in which there is some finite number of paths through the landscape. It is impossible to advise a project team exactly when and where it will encounter a given obstacle or catalyst, or what it should do upon encountering them. But is it possible to provide advice about commonly occurring catalysts and obstacles? Can we develop general knowledge about the obstacles groups are likely to run into – how to avoid them if possible and how to deal with them if they must? And can we discover catalysts that help groups to move towards their goal in a more efficient manner? If this middle ground exists, it is most likely to take the form of general and yet non-trivial guiding principles.



As shown in the right side of the diagram, at any given site there are *specific* principles that are of great use to people working at that site. For example, project team members working at a site in Papua New Guinea might develop a principle such as:

P – Use Chief John to help settle any conflicts that arise between different clans.

Unfortunately, site-specific principles do not really help a person working at the next site over, let alone at a site halfway around the world.

On the far-left side of the diagram are *general* principles that apply to most or all sites as illustrated by the example:

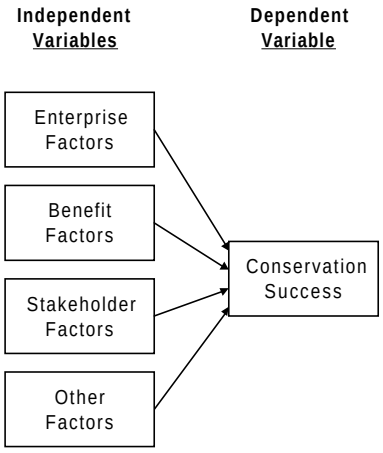
P – Avoid conflict between clans.

Unfortunately, most of these principles tend to be trivial – they are true but not very helpful to practitioners.

The question thus becomes, "Are there *general and yet non-trivial* guiding principles" as shown in the center of the diagram? It is most likely that, if these general and yet non-trivial principles exist, they will take the form of conditional probability statements. For example, we might develop the principle:

P – In Melanesian type social systems, it is generally better to work with the big man to solve conflicts, unless he is corrupt.

This principle applies in more than one place (throughout Melanesia) but not everywhere. Furthermore, it is not guaranteed to work in all instances. The user has to be smart enough to apply it to his or her own situation – for example, to determine if the big man is corrupt or not. Our job thus becomes determining not just what the principles are, but also under what conditions and with what probability of success each principle is likely to work.



Analytical Timeline: As discussed in Salafsky and Margoluis (1999b), the BCN Analytical Framework was developed over a series of steps.

1992 Initial program design

1993 Monitoring matrices *(Most BCN staff hired)*

1994 Comprehensive guidelines for potential monitoring questions

1995 Common sets of questions; M&E workshops *(Final Implementation Grants awarded)*

1996 Projects develop M&E plans; BCN staff develop framework for key variables

1997 BCN framework completed; T-mid data collected

1998 T-final data collected *(Grants completed)*

1999 Analyses completed

2.2 Analytical Approach

The BCN did not begin work with a pre-determined analytical framework. Instead, we developed our approach over the first few years of the program. We started by thinking about what we might ideally do, and then scaling our work back to what we could feasibly accomplish. The compromises that we made to ensure feasibility lead to some important caveats to our overall findings as outlined below.

Research Design

Testing the BCN Core Hypothesis involved examining the conditions under which projects can use an enterprise strategy to achieve biodiversity conservation. In effect, as shown in the diagram in the sidebar, we looked at the relationship between a series of *independent variables* or *predictors* on conservation success, our *dependent variable* or *outcome*.

- *Model Specification* – Ideally, we would have specified a complete model that contains all relevant factors. Owing to data and resource constraints, we could only select key factors shown in the table at the bottom of the page.
- *Quantitative vs. Qualitative Multi-Variate Analyses* – Ideally, we would have liked to run a quantitative multi-variate analysis so as to be able to systematically examine the interactions between different variables. Owing to data constraints discussed below, however, we could not do this quantitatively. Instead, we conducted a series of bivariate analyses and qualitatively examined the interactions between factors.
- *Prospective vs. Cross-Sectional Analyses* – Ideally, we would have liked to specify our working sub-hypothesis about the relationship of each variable to conservation success at the start of the program and then collect baseline and follow-up data to test these predictions. Since the analysis was only initiated after the program started, we were only able to specify our sub-hypotheses midway through the program. The lack of true baseline data meant that we conducted a cross-sectional and historical prospective analysis rather than a true prospective analysis, limiting our ability to make inferences about true causality.

Variables That We Considered in Our Analyses

	INDEPENDENT VARIABLES			
DEPENDENT VARIABLES	**Linked Enterprises**	**Generation of Benefits**	**Community of Stakeholders**	**Process Factors**
• State of Biodiversity • Threats to Biodiversity * • Process • Institutional Development * *This is the primary measure we used*	• Enterprise Linkage • Profitability & Future Success • Ownership & Management - Local participation - Enterprise complexity - Technical skills - Enterprise skills • Market Demand - Market competitiveness - Distance to market	• Cash Benefits - Distribution - Absolute amount - Relative amount - Variance • Non-Cash Benefits • Timing of Benefits • Frequency of Benefits	• Stakeholder Group - Existence and strength - Representativeness - Population homogeneity • Leadership of Group • Resource Governance • Community Policing	• Chaos • Project Effectiveness

Data Collection

As outlined in the sidebar, data for this analysis came from many sources. An initial list of key variables and potential methods was developed at a series of workshops with BCN project partners. This list was boiled down over time by BCN staff in consultation with our partners. The BCN Analytical Framework was then sent to all project partners who used it to varying degrees in writing their six-month technical reports. In 1997, BCN program officers also began meeting with each project team during site visits to fill in the data for the framework. The final rounds of data collection were made in 1998.

- *A Range of Methods* – Ideally, all projects would have collected data for each variable using identical methods. Since, however, we wanted to make sure that projects first and foremost collected data that would meet their management needs, projects ended up using a range of methods. Furthermore, since some projects did not collect data for all variables, we had to work with BCN program officers to collect additional data for some variables.
- *Quantitative vs. Qualitative Data* – Ideally, we would have collected a complementary mixture of quantitative and qualitative data. As it proved to be difficult to collect quantitative data for many variables, we had to rely on expert rankings made by BCN program officers, often in consultation with the project teams. Rankings were made according to strictly defined criteria and efforts were made to apply them in a standardized fashion across all sites.
- *Researcher Objectivity* – Ideally, from a scientific perspective, we would have liked to have had data collected by impartial observers. Given, however, that this was action research, the data were collected by people involved in the projects and the BCN program. As discussed in the sidebar, this action research also had some major benefits.

Data Analysis

We analyzed our data using a combination of quantitative and qualitative techniques supplemented with anecdotal evidence and our experiences.

- *Sample Size* – Ideally, we would have had a sufficient sample size ("n") to have the power to resolve minor differences between variables. In reality, our sample size was restricted. As outlined in the following pages, we ended up with a sample of 20 projects that included 39 sites and 48 enterprises. The variation in the "n" in our analyses is because for some analyses we used the site as our basic unit, whereas for others we used projects or enterprises. In a few cases, we have reduced sample sizes where data are not complete. The small sample size also meant that it was hard to run statistical tests that involved dividing the sample into two or more groups.
- *Non-Parametric Tests* – Ideally, we would have normal data on which we could have used parametric statistical tests. In reality, we had to rely on chi-square analyses and other non-parametric tests.

Data Sources: We used a wide range of sources, which enabled us to triangulate our findings. Key sources included:

Quantitative Data
- Grantee reports
- Inspection of project records
- Interviews

Qualitative Data
- Grantee reports
- Staff trip reports
- Key informant interviews
- Grantee stories and publications
- Program officer rankings

Accuracy of Ranking Data: In assigning ranks to different variables, we used a combination of 5- and 10-point scales. Although the use of the 10-point scale may seem like false precision, in doing rankings, we often had long debates as to whether a given site should be ranked a "6" versus a "7." As a result, differences of three or four ranking points are probably meaningful.

Conservation Benefits from Action Research: Having the process of data collection influence projects is not all bad. The best example was the collection of the Threat Reduction Assessment rankings (p. 14), which forced project teams to think about the major threats to the biodiversity at the site and in some cases, caused them to modify project activities in response.

2.3 Selecting the Sample of Projects

BCN's Grants Competition: BCN received over 400 concept papers and proposals. Based on these proposals, 35 projects received Planning Grants and 4 projects received Implementation Grants. From these 35 Planning Grants, 16 projects went on to receive full Implementation Grants, giving a total of 20 projects.

Although BCN staff initially screened applications, a Peer Review Panel composed of people with expertise on the geographic regions made final decisions and various disciplines related to BCN.

A more detailed description of our proposal review process can be found in Salafsky and Margoluis (1999a) or on the web at www.BSPonline.org.

BCN was set up as a competitive grants program. Projects were eligible to apply from 18 countries in Asia and the Pacific. BCN published an initial request for proposals in 1993 and a modified version in 1994. Concept papers and proposals were first screened by BCN staff to see whether they met basic eligibility criteria and then other, secondary criteria outlined in the Request for Proposals. If a proposal met the second-screen criteria, it was brought before our Peer Review Panel. In selecting which projects would receive funding, BCN staff and the Review Panel deliberately set out to 1) fund the best possible projects, and 2) develop a portfolio of projects that covered a range of characteristics that BCN felt were needed to adequately test the BCN hypothesis (for example, a representative spread of countries, regions, habitats, enterprise-types and local, national and international organizations).

This selection process had three important implications for our analysis.

1. *Our sampling frame did not represent the complete universe of potential projects* – Our sampling frame was limited to those projects that chose to apply to us for funds. This limitation means that we must be careful in extrapolating our results to the universe of potential conservation and development projects. In particular, the restriction prohibiting BCN from funding for-profit entities meant that very few private sector firms played major roles in the projects

Table of BCN Project Sites

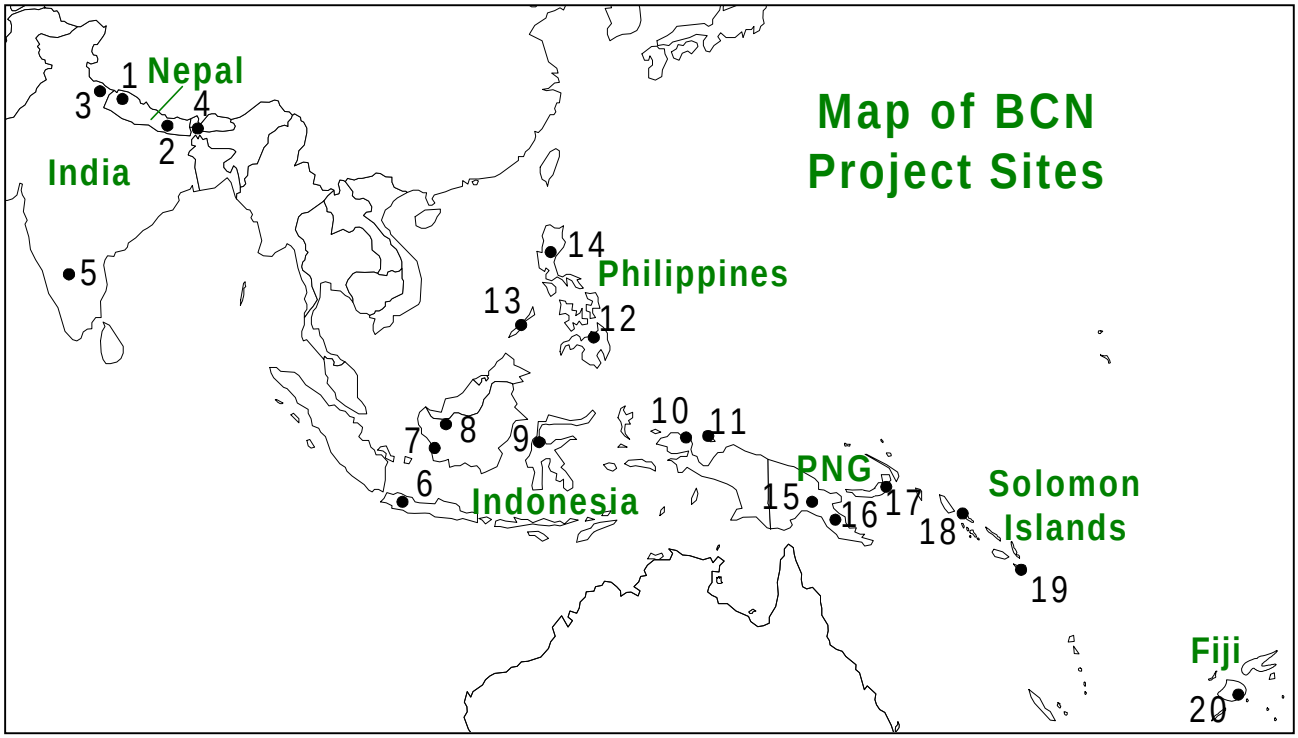
Project Name and Number	Sites	Habitat(s)	Enterprise Types
SOUTH ASIA			
HUMLA, NEPAL (#1)	1	alpine forest	essential oils
ROYAL CHITWAN, NEPAL (#2)	2	grassland/savanna	ecotourism
GARHWAL, INDIA (#3)	1	temperate and alpine forest	silk and honey
SIKKIM, INDIA (#4)	2	temperate forest	ecotourism
BILGIRI RANGAN HILLS, INDIA (#5)	1	sub-tropical/deciduous forest	fruit and herbal medicines
SOUTHEAST ASIA			
GUNUNG HALIMUN, INDONESIA (#6)	3	tropical forest	ecotourism
GUNUNG PALUNG, INDONESIA (#7)	1	tropical forest	timber
SANGGAU, INDONESIA (#8)	1	tropical forest	rattan and bamboo handicrafts
LORE LINDU, INDONESIA (#9)	3	tropical forest	butterfly farming, honey, and rafting
ARFAK MOUNTAINS, INDONESIA (#10)	1	tropical forest	butterfly ranching
PADAIDO ISLANDS, INDONESIA (#11)	3	marine	ecotourism and fishing
MINDANAO, PHILIPPINES (#12)	1	tropical forest	abaca fiber and handicrafts
PALAWAN, PHILIPPINES (#13)	3	tropical forest	non-timber forest products
KALAHAN, PHILIPPINES (#14)	1	tropical forest	jams and jellies
PACIFIC			
CRATER MOUNTAIN, PNG (#15)	3	tropical forest	research tourism and handicrafts
LAKEKAMU BASIN, PNG (#16)	2	tropical forest	research tourism and ecotourism
EAST NEW BRITAIN, PNG (#17)	6	tropical forest	timber
ARNAVON, SOLOMON ISLANDS (#18)	1	marine	fishing
MAKIRA, SOLOMON ISLANDS (#19)	2	tropical forest	ecotourism and nut oil
VERATA VILLAGES, FIJI (#20)	1	marine	biodiversity prospecting

we funded. In effect, we ended up testing the hypothesis, "Can conservation and development NGOs implement an enterprise strategy for conservation?" and not the broader hypothesis, "Can any organization implement an enterprise strategy for conservation?"

2. *Our sample of projects was not randomly selected* – Our selection process was deliberately biased so as to 1) choose those projects that seemed most likely to achieve success and 2) enable us to develop a portfolio of projects that spanned the range of key criteria and characteristics. This deliberate bias towards what we thought were potentially successful projects means that, if we conclude that an enterprise strategy for conservation does work, then we cannot extrapolate this finding to the universe of all conservation projects. If, however, we conclude that an enterprise strategy does *not* work, then we can extrapolate this finding because, in this case, our test was conservative.
3. *We were unable to establish strict controls* – It was impractical (and unethical) for BCN to set up control projects that received no support for enterprise development. Nonetheless, despite our efforts to select only "good" projects, a number of them were ultimately not successful. Although these less successful projects are not controls in the strict sense, they provided important learning opportunities.

BCN Project Sites: In this document, we refer to each of the twenty BCN project sites by its geographic location as listed in the left-hand column of the table on the previous page. Each project site has its own "home page" on the BCNet web site at www.BCNet.org/projects.htm. These home pages also contain links to other web sites about the project. In addition, there are stories about each project in the BCN Annual Reports (refer to project number).

Map of BCN Project Sites

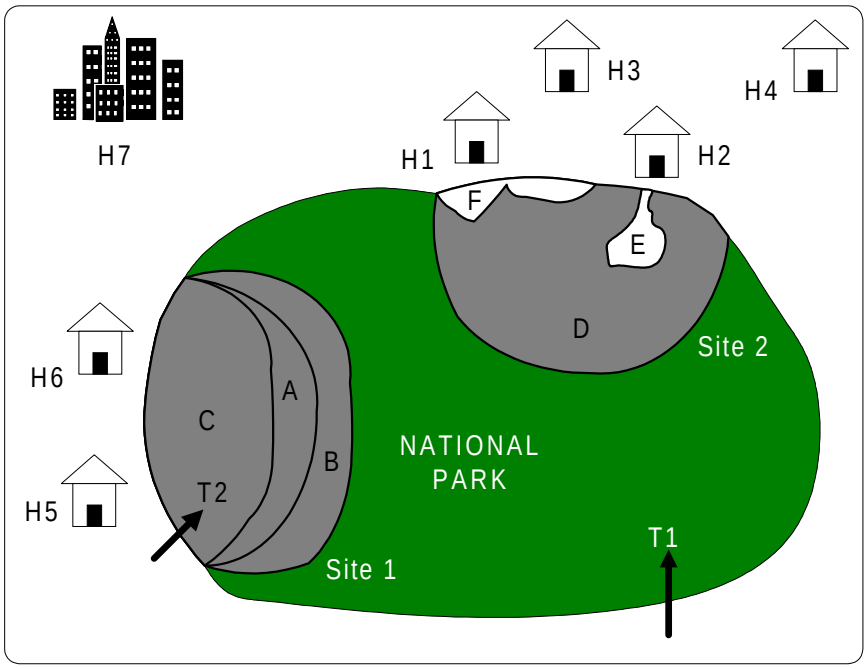


2.4 Defining Study Sites as Our Unit of Analysis

Our basic unit of analysis is a *project site*. Each project site was defined along four dimensions.

1. *Spatial Dimension* – What area should we consider as the project site? Given that BCN's primary goal is conservation, we defined the core site as the area of biodiversity habitat that the project is attempting to conserve. It is generally functionally equivalent to the area the stakeholders have the ability to manage or influence (either positively or negatively). Most projects initially attempted to claim a large site area. Over time, however, they began to realize that the actual area they were able to affect was much smaller. For example, as shown in the diagram below, it makes little sense for a project to claim they are affecting an entire National Park if their interventions cannot realistically expect to affect Threat 1 (T1 in the diagram), which occurs at the far side of the park. Instead, it makes more sense to claim a smaller area, such as that affected by Threat 2 (T2), as the actual project site.

2. *Stakeholder Dimension* – Who should we count as a *stakeholder* when analyzing participation, benefit distribution, and other social factors? At most sites, the definition of stakeholder was limited to those local residents who have a direct, actual or potential impact on the core biodiversity of the site.



3. *Temporal Dimension* – Over what time period should we consider the effects of the enterprise? While some of the projects were operating for many years prior to receiving BCN funds, others got underway only after. To deal with these differences, projects were defined as starting at the onset of the BCN Implementation Grant. We then tried to collect data for the project's start, middle, and end. Most of our analyses were conducted using data from the final

Selecting Project Sites: Each BCN project has at least one site. However, many projects have multiple sites. In most cases, identifying the specific sites within a project was fairly straightforward. In a few cases, however, we chose to exclude potential sites that were included in the original project proposal because either 1) the project was not active in these areas, or 2) the project did not collect sufficient data on these sites. For example, although the CRATER MOUNTAIN (#15) team in PNG originally planned to work with six different villages across the Wildlife Management Area, they ended up only working with four.

We also had to adjust many sites based on our site definition criteria. For example, at LORE LINDU, INDONESIA (#9) the original, single project "site" constituting all of Lore Lindu National Park, was later split into three separate sites, which is a much more accurate measurement. Conversely, two initially separate sites at BILGIRI RANGAN HILLS, INDIA (#5) were combined into one site.

Drawing Black Lines on Gray Areas: The process of defining study sites turned out to be both far more complex and far more interesting than we had initially imagined. In particular, we found that defining study sites involved trying to find standardized ways of drawing "black lines" on "gray areas."

For example, in defining the spatial dimension for Site 1 in the drawing, we might choose Area A even though arguments could be made for a site as large as Area B or as small as Area C. Likewise, in defining the stakeholder dimension, we might include Houses 1, 2, and 3, but not 4, which is located further away from the site. We might also include H7, which is an urban resident, especially if the family plays a major role in deciding how the natural resources of the site are used.

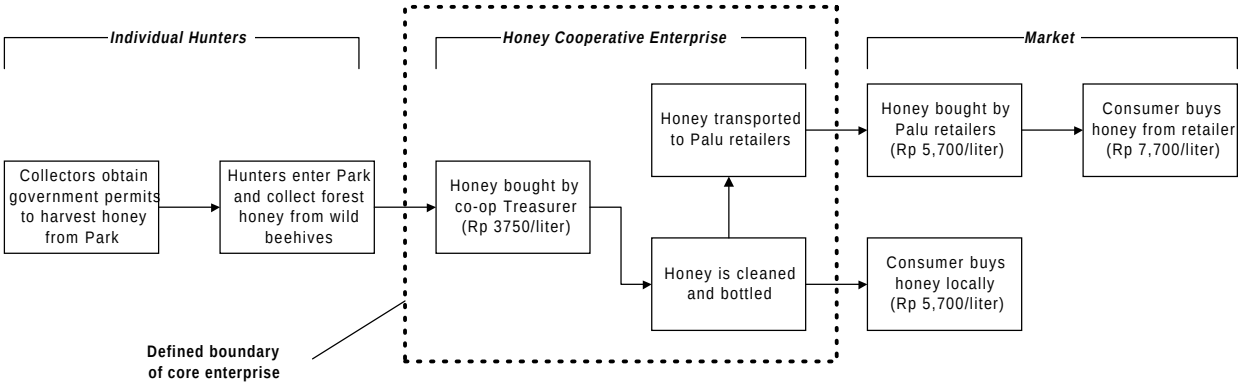
In any of these definitions, good arguments can be made for positioning the line in any number of places. Ultimately, researchers need to pick one and go with it. The key here is to be consistent across the portfolio.

period. We also, however, tracked as separate variables the length of time that the project and enterprise had been active at the study site.

4. *Enterprise Dimension* – What activities are included under the definition of an enterprise? In most BCN-funded projects, there is an overlap between "enterprise activities" (setting up production systems, marketing products, monitoring the impact of harvesting) and "project activities" (organizing stakeholders, capacity building, monitoring social effects) that is sometimes difficult to separate. We thus carefully defined for each site what constitutes the *core enterprise* and what constitutes, more generally, the supporting *project*. This was most easily done through the use of an enterprise chain, as shown below, that outlines the steps in the production process and defines which steps we considered to be part of the core enterprise.

Analyzing Projects With Multiple Sites: An important analytical consideration is how to treat projects with multiple sites. An extreme example is EAST NEW BRITAIN (#17) with six sites. If these six sites are not independent of one another, then including them as separate data points in any given analysis could bias the conclusions that we draw. We decided, however, since there were different conditions at each of these sites as well as different outcomes, that they were sufficiently independent to warrant inclusion in most analyses. Indeed, in some ways these multiple site projects are interesting mini-BCN experiments.

The Value-Added Chain for the LORE LINDU, INDONESIA (#9) Honey Hunting Enterprise
All values in Indonesian Rupiah.

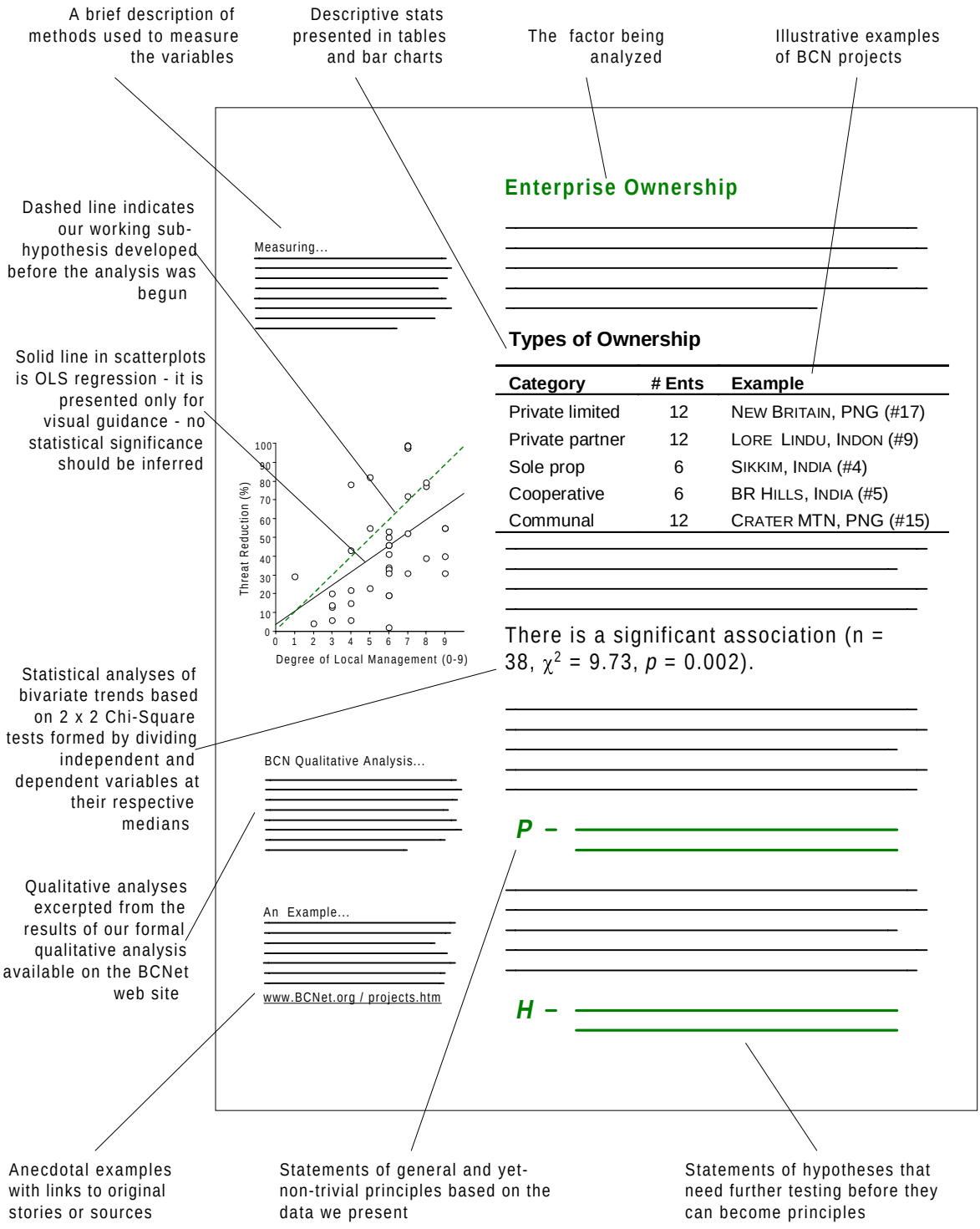


Summary of BCN Project Sites by Region

Dimension	South Asia	SE Asia	Pacific	All Sites
Number of Sites (total number)	7	13	19	39
Area (avg ± std dev hectares)	12,674 ± 17,666	11,064 ± 9356	20,645 ± 16,796	16,719 ± 15,624
Stakeholders (avg ± std dev individuals)	4739 ± 3877	3164 ± 2413	1008 ± 1514	2477 ± 2865
- major stakeholder sub-groups	castes	ethnicity	clans	-
- tenure system	state control	state control	local control	-
Project Length (avg ± std dev years)	4.00 ± 0.71	3.71 ± 0.76	3.88 ± 0.64	3.85 ± 0.67
Enterprises (total number)	9	14	25	48
- minimal value-added	0	4	3	7
- some value-added	2	2	8	12
- finished product or service	7	8	14	29
BCN Funding (% total)	31	35	34	100

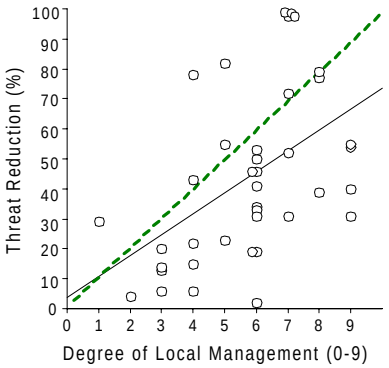
3. Results of Testing BCN's Core Hypothesis

In the following pages, we present our results for some of the key sets of factors that we identified. We present each of those factors using the format shown below.



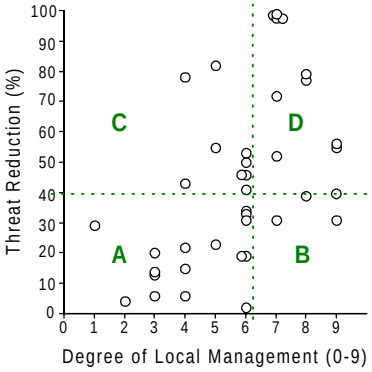
A Guide to Our Basic Statistical Procedure

The basic statistical procedure that we use in this document is to test a specific sub-hypothesis about the association between two variables. For example, we might be interested in the association between the degree of local management of an enterprise and conservation success. To test this sub-hypothesis, we first create a scatterplot showing the relationship between the two variables as shown in the diagram on the left. The dashed green line represents our prediction as to the direction of the association.



If both variables were normally distributed and continuous, we could conduct a regression analysis that plots the line that minimizes the distance between all points on the graph as shown by the black line. In cases where either variable contains ranking data, then technically we are violating the assumptions required to conduct a regression analysis. In these cases, the regression line should only be used as an indication of the direction of the association that we are testing. No inference can be made about the slope of the line.

To look at whether this association is statistically significant, we first state a *null hypothesis* that there is no association between the variables. We then divide the graph into four quadrants, positioning the dividing lines between the quadrants so that there are roughly equal numbers of points on each side of the lines (splitting variables at their median value). If there are roughly equal numbers of points in all four quadrants, than there is no association between the variables. If there are more points in quadrants A and D, then we have a positive association. If there are more points in quadrants B and C, then we have a negative association.



Threat Reduction	**Degree Local Management** Low		High	*Totals*
Low	O: 16 E: 12.8	**A**	**B** O: 4 E: 7.2	*20*
High	O: 9 E: 12.2	**C**	**D** O: 10 E: 6.8	*19*
Totals	*25*		*14*	*39*

n = 39, χ^2 = 4.51, *p* = 0.034

To test the statistical significance of this association (determine the probability that we can reject our null hypothesis and say this association is "true"), we first create a frequency table as shown on the above right. The cells of the table correspond to the quadrants of the graph as shown by the green letters. The number after the "O" represents our observed results for each quadrant. The number after the "E" represents the expected values for the quadrant if there was a completely random distribution (our null hypothesis). This expected number is calculated by multiplying the row total by the column total and dividing by the total number of data points.

The chi-square test statistic (χ^2) is calculated following the standard formula and then a probability value (*p*) is computed to measure the chance we are making an error in rejecting the null hypothesis. For the purposes of this analysis, we term *p*-values between .1 and .05 as being marginally significant (there is less than a 10% chance that we are making an error in rejecting the null hypothesis), and *p*-values between .05 and 0 as being significant (there is less than a 5% chance that we are making an error).

3.1 Assessing Success

To test our Core Hypothesis, we needed to develop yardsticks by which we could judge the relative success or failure of a given project. In scientific terms, these are our *dependent* or *outcome variables*.

Measuring Conservation Success

At the most fundamental level, the BCN Hypothesis is an examination of the effects of an enterprise strategy on biodiversity conservation. Biodiversity conservation was thus the most critical variable that we had to monitor at each of our sites. If we have learned anything over the past few years, however, it is that conservation success is extremely difficult to define, let alone measure, in biological terms, especially over the brief three- to four-year time period within which we were working.

As discussed in the sidebars, we initially attempted to develop indicators for each of the four areas in the model below. There were, however, problems in developing practical indicators, particularly for the state of the biodiversity and the process of implementing intervention strategies. This left us with two primary indicators of conservation success.

Measuring Conservation: As presented in the BCN Analytical Framework, (www.BCNet.org/learning/analytical/appendB.htm) we wanted to measure four variables related to conservation success:

State of the Biodiversity – We first tried to measure this variable by looking at changes in: 1) area of key habitats at the project site, 2) densities of key indicator species, and 3) ecosystem functioning. When these indicators proved difficult to operationalize, we tried to simplify things by only looking at changes in habitat area and changes in stock of the key resource used by the enterprise. Despite strong encouragement and extensive technical support, however, most of our project partners did not collect the baseline data required to make even these most basic assessments. Furthermore, in the few cases where these biological data were collected, they proved to be insensitive to changes in the state of the system.

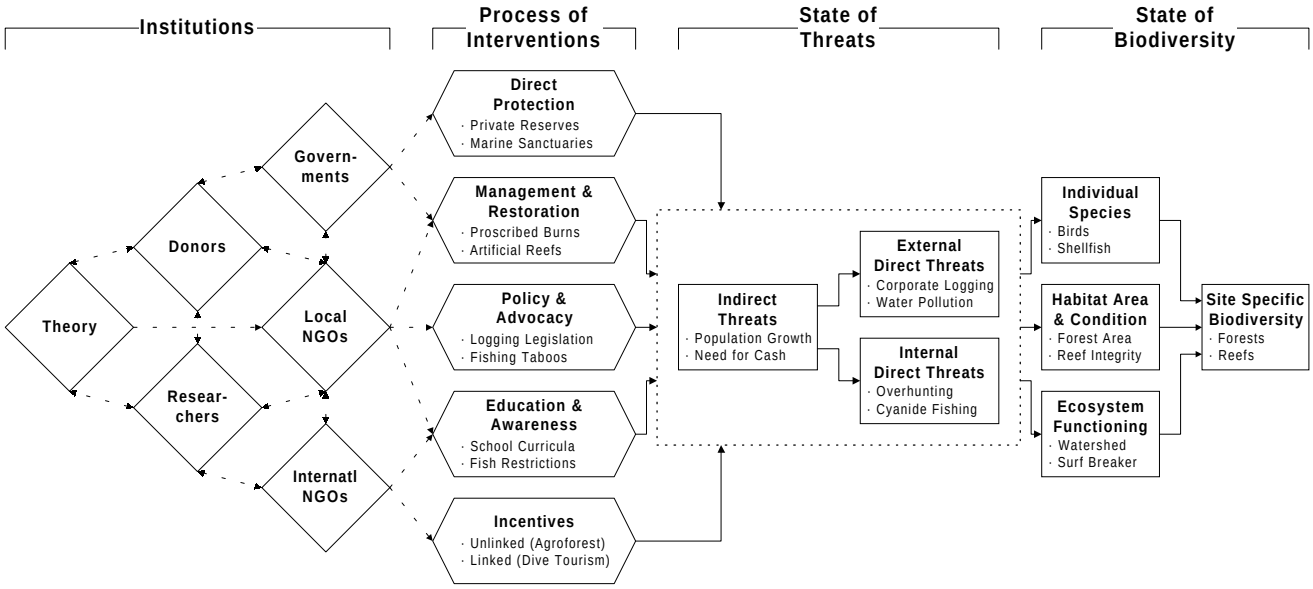
State of the Threats to the Biodiversity – We measured this variable by using the Threat Reduction Assessment (TRA) Index described by Salafsky and Margoluis (1999c). The core principle behind TRA is that if a project team can accurately identify the threats to the biodiversity of a region, then the team can assess its progress in achieving conservation by measuring the degree to which these threats are reduced. The

(continued on next page)

A Model of a Typical Conservation Project

Source: Adapted from Salafsky & Margoluis (1999c)

A typical conservation project's success can be assessed in four areas: 1) state of the biodiversity at the project site, 2) state of the threats to the biodiversity, 3) process of implementing project intervention strategies, and 4) status of the institutions at the site. In theory, if we have a "perfect" conceptual model of a project, then we can assess its success by "measuring the system" at any one area of the model. In the real world, however, models are not perfect. As a result, it is actually better to assess a project in all four areas. This multiple assessment enables us to crosscheck the different measurements; if discrepancies are discovered, they can be used to calibrate the different measurements or to revise the underlying model.

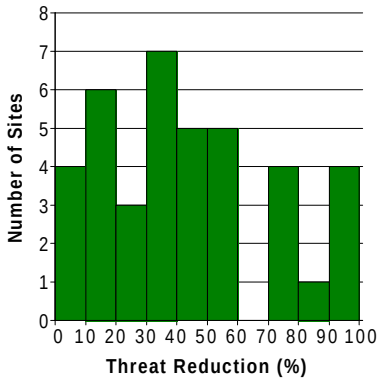


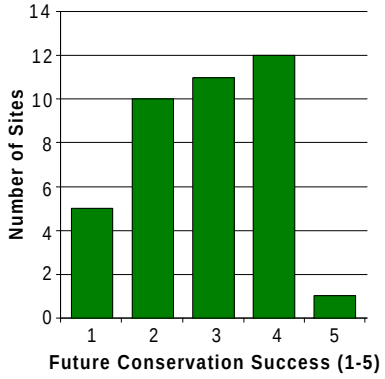
The *Threat Reduction Assessment (TRA) Index* provides a static assessment of the percentage of identified threats at each project site that were addressed over the life of the project. The average Threat Reduction Index for all our sites was 43.8 ± 28.4 % by the last year of the project. This means that, on average, projects met slightly less than half of all identified threats. The distribution of Threat Reduction Index rankings is shown in the bar graph on the left below. Threats can be further subdivided into *internal threats* that are caused by the local stakeholders themselves and *external threats* that are caused by outsiders. As shown in the table, the average Threat Reduction Index score was significantly higher for projects facing a majority of external as opposed to internal threats.

TRA Index Scores by Type of Threat

	Avg ± sd	n
All Threats	43.8 ± 28.4	39
Internal Threats	34.1 ± 21.5	23
External Threats	57.7 ± 31.9	16

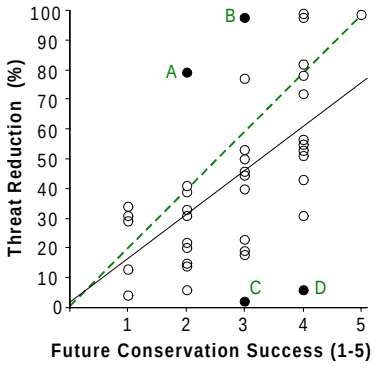
t = 2.77, d.f. = 37, p = 0.009





The *Future Conservation Success Ranking* assesses the ability of the institutions at the end of the BCN funding period to respond to future threats, and is thus a more dynamic measure of conservation. The average ranking for our sites was 2.9 ± 1.0. The distribution of these rankings is presented in the bar graph on the right above.

There is a general correlation between these two indicators, as shown in the graph. Even the few outlying points are instructive. Since these two indicators correlate with one another, we decided to use the Threat Reduction Index as our main indicator of conservation success, since it represents the incremental change over our study period. When we used a hybrid index of the Threat Reduction Index and Future Conservation Success rankings, however, our results were not substantially different.



Measuring Conservation (con't):

specific index we used involved identifying threats, ranking them according to their relative importance, assessing progress in meeting each of them, and then pooling the information to estimate the actual threat reduction as a percentage of total potential threat reduction.

Process of Implementing Project Interventions – We found that operationalizing this variable involved using an aggregate index of the independent variables described in the next section. As a result, it didn't make sense to use this as a dependent variable for this analysis since it would then create a circular chain of logic.

Status of the Institutions at the Site – We measured this variable by having BCN program officers rank each site. Rankings used a five-point scale ranging from (1) having no institution in place to make conservation happen to (5) having a solid institution that is regularly monitoring the site, analyzing data, and taking action.

As with the any ranking technique, both the Threat Reduction Index and, especially, the Future Conservation Success rankings, could be biased. However, we made substantial efforts to ensure that the assessments were undertaken in a standardized manner. A comparison of rankings made by different program officers shows that their average Threat Reduction Index rankings are comparable.

Explaining the Outlying Points: Points A and B represent two sites at EAST NEW BRITAIN, PNG (#17), where the threat is primarily from foreign-owned logging companies. Although the project has so far succeeded in fending off the loggers, thus earning a high TRA score, it is doubtful the community will be able to stave off this threat in the future, resulting in low future success rankings. Points C and D represent two sites at CRATER MOUNTAIN, PNG (#15), where the threat is primarily from local stakeholders overharvesting resources. Here, the project teams have not yet succeeded in slowing down the resource harvesting, thus earning a low TRA score. However, the project has made substantial progress in developing community institutions that will be able to continue conservation work, therefore justifying the higher future rankings.

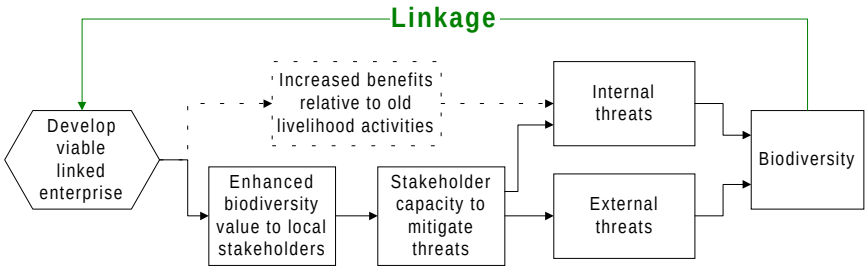
3.2 Linked Enterprise Factors

The first condition of the BCN Core Hypothesis states that there must be a viable enterprise that is linked to the core biodiversity of the site.

Enterprise Linkage With Biodiversity

One of the most fundamental concepts behind the BCN program is the idea of linkage between an enterprise and the biodiversity of the project site. As shown by the dashed green line in the following diagram, linkage is the factor that "closes the loop" in the hypothesis, providing the stakeholders with incentives to protect the biodiversity.

A Conceptual Model of the BCN Core Hypothesis



Source: Adapted from Salafsky and Wollenberg (in press)

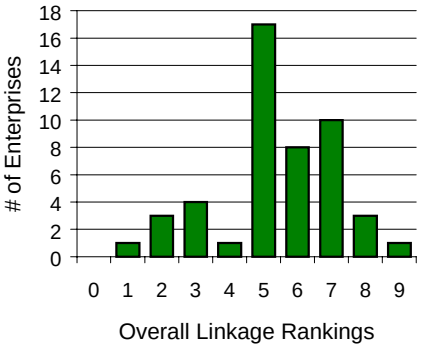
When we look across the BCN sites, there is a wide range in the linkage rankings of the enterprises, as shown in the table below. However, most have at least a moderate linkage ranking. Given that we deliberately tried to select highly linked projects when developing our portfolio of projects, the fact that more than half the projects had a ranking of five or less is a bit surprising. This observation illustrates how difficult it can be to develop linked enterprises and how BCN's own thinking of what constitutes a "linked" enterprise became more accurate over time.

Some types of enterprises tend to be more linked than others. Most notably, *service* businesses such as ecotourism were significantly associated with higher linkage when compared with *product* businesses such as forest product harvesting ($n = 39$, $\chi^2 = 7.50$, $p = 0.006$).

Measuring Linkage: As presented in the BCN Analytical Framework, (www.BCNet.org/learning/analytical/appendC.htm), BCN staff initially assessed whether a given enterprise is linked by asking the question, "If the biodiversity of the site were to be damaged, what would happen to the enterprise?" If the enterprise were to continue, then the enterprise would not be linked to the biodiversity. If the enterprise were disrupted, however, then it would be linked to the biodiversity. Assessing linkage was not easy, but it was crucial to our analysis. As described in greater detail in Salafsky & Wollenberg (In Press), we subsequently developed a more detailed 10-point ranking of linkage looking at:

1. *Species Dependence* – Dependence of enterprise on maintaining species at site.
2. *Habitat Dependence* – Dependence of enterprise on maintaining habitats at site.
3. *Spatial Dependence* – Percent of site area on which enterprise depends.
4. *Temporal Dependence* – Period and frequency of biodiversity use on which enterprise depends.
5. *Conservation Value Dependence* – Dependence of enterprise on externally created incentives, such as green marketing.

Rankings presented in this analysis are based on an *overall linkage ranking* calculated by taking the average of the five rankings above.



Overall Linkage Rankings for 48 BCN Enterprises

Ranking	# Sites	Example (Enterprise and Site)
0 (no linkage)	0	–
1	1	Abaca Harvesting, MINDANAO, PHILIPPINES (#12)
2 (limited links)	3	Demersal Fishing, ARNAVONS, SOLOMON IS. (#18)
3	4	Ngali Nut Oil, MAKIRA, SOLOMON IS. (#19)
4 (moderate linkage)	1	White Water Rafting, LORE LINDU, INDONESIA (#9)
5	17	Tasar Silk, GARHWAL, INDIA (#3)
6 (strong linkage)	8	Ecotimber, EAST NEW BRITAIN, PNG (#17)
7	10	Butterfly Ranching, ARFAK MTS, INDONESIA (#10)
8	3	Dive Tourism , PADAIDO ISLANDS, INDONESIA (#11)
9 (complete linkage)	1	Ecotourism, MAKIRA , SOLOMON IS. (#19)

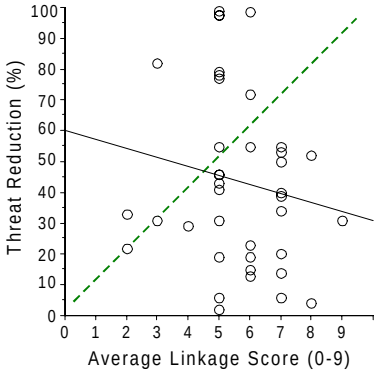
When looking at the relationship between linkage and overall conservation success, as shown by the dashed green line in the sidebar, our working sub-hypothesis was that an increase in linkage should result in an increase in conservation success. When we plotted the average ranking across all sites, however, we found that, if anything, the relationship seems to be in the opposite direction. A chi-square analysis shows no significant association between linkage and conservation (n = 39, $\chi^2 = 2.09$, $p = 0.148$).

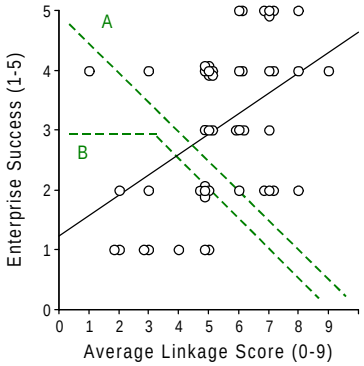
If, however, we plot linkage against enterprise success (see p. 20), our working sub-hypothesis states that we might expect either a steady decrease in enterprise success as linkage increases (Line A) or a decrease at higher levels of linkage (Line B). This is because we assumed that developing viable linked enterprises would be much more difficult than developing unlinked ones. For example, it is presumably much harder, from a strict business perspective, to develop an ecotourism business than a regular tourism business. Much to our surprise, the results actually suggest a weakly significant positive association between linkage and enterprise success (n = 48, $\chi^2 = 2.88$, $p = 0.090$). This finding could be due to the fact that our initial site selection was biased in favor of linked enterprises. As a result, our sample of low linkage enterprises is not truly representative of the universe of possible low linkage enterprises, which technically includes most businesses in the world from village stores to large multinational corporations.

The lack of a relationship between linkage and conservation success can in part be attributed to the fact that, based on the BCN Core Hypothesis shown in the model presented on the previous page, linkage is a necessary but not sufficient condition for conservation to take place. Thus, even if linkage is high, there still might be many other factors, such as the ability of the stakeholders to mitigate threats that keep conservation from occurring. This is one of the cases where our data set may be too small to parse out any real effects.

In addition, if we carefully think about the logic of the BCN Core Hypothesis, ultimately the "true" degree of linkage defined by a researcher does not really matter. Instead, it is the stakeholders "perceived" degree of linkage that is critical. If the community thinks an enterprise is linked to biodiversity, then they will take action to protect the biodiversity. If they do not see or believe in the linkage, then they will not take action. This concept of perceived linkage is difficult to test quantitatively. However, for a number of our project sites, we conducted key informant interviews with selected community members in which we asked them about enterprise linkage. The results are summarized in our formal qualitative analysis, which found that perceptions of linkage are important. Based on these results, we propose the hypothesis:

H – More than actual linkage, it is important to have a strong local perception of linkage, perhaps developed through environmental education efforts.





Environmental Education and Perceptions of Linkage: A good example of the importance of community perceptions of linkage is the story told by the KALAHAN, PHILIPPINES (#14) project team, in which they discuss the need to do training and environmental education. They developed "ecological webs," to help community members understand links between plant and animal life and human activities in the forest they manage. See BCN 1997 (p. 77) or www.BCNet.org/projects/kalahan97_2.htm.

Qualitative Analysis: BCN's qualitative analysis concluded: "Enterprises that appeared to have a good perceived linkage in the minds of the community tended to score higher TRAs than the ones that were less linked."

For the full text of the qualitative analysis, see www.BCNet.org/qual.htm.

Enterprise Profitability & Bookkeeping

When talking about an enterprise, the first question that comes to most people's mind is, "Is it profitable?" As we learned, however, defining profitability is not an easy task. Strictly speaking, profits are simply defined as total revenues less total expenses. As a practitioner, the challenge comes, however, in deciding what specific line items your should include in your definition of revenues or expenses.

One important finding was that most enterprises had a very difficult time just tracking financial data. Despite substantial input from BCN staff, few enterprises were able to keep even simple accounting books. This seems to be due to a combination of NGO staff members not having the necessary business expertise and being too busy putting out day-to-day fires to worry about keeping good records.

As an example, the Reported Data column in the following table shows the budget sent to BCN by the CRATER MOUNTAIN, PNG (#15) project team for its research tourism enterprise. Although the enterprise had declining revenues over time, it seemed to be consistently profitable. The Estimated True Costs column shows BCN's estimates of the actual costs of the enterprise, adding the costs of the research station infrastructure (depreciated over 10 years) and management costs. Even though these estimates were made conservatively (using the low end of the range of possible costs) the enterprise was consistently, in reality, losing money.

P&L Summary Statements for Wara Sera Research Station
All values in PNG Kina as reported for that year. 1995 data are for six months only.

	REPORTED DATA			ESTIMATED TRUE COSTS		
YEAR	1995	1996	1997	1995	1996	1997
REVENUES						
Total	15,165	8,989	1,247	15,165	8,989	1,247
COSTS						
Variable costs	14,400	7,674	850	14,400	7,674	850
Fixed costs	40	289	100	5,740	11,689	11,500
Management costs	-	-	-	8,750	17,500	17,500
TOTAL COSTS	*14,440*	*7,963*	*950*	*28,890*	*36,863*	*29,850*
NET PROFIT	725	1,026	297	(13,725)	(27,874)	(28,603)

The project shown in this example is typical of the BCN enterprises. The table below shows the rankings that the project teams reported compared with the estimated actual rankings that BCN staff calculated. For the 37 projects for which BCN was able to calculate estimated true cost figures, the bar graph on the next page shows the number of projects in each of our profitability categories, using both the reported figures and BCN staff estimates. Based on this analysis, it is clear that project teams are not accounting for all their costs, including, in particular, fixed infrastructure and management and monitoring costs.

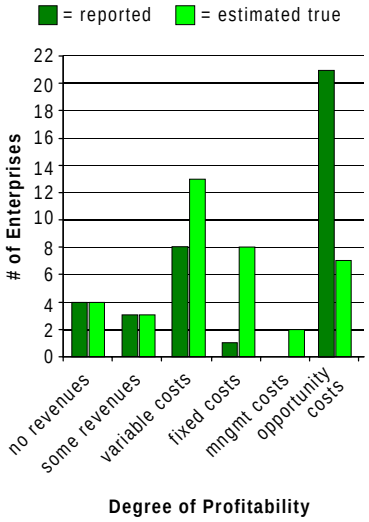
Measuring Profitability: As presented in the BCN Analytical Framework, (www.BCNet.org/learning/analytical/appendC.htm), each project team was asked to calculate a standard profit and loss (P&L) statement and balance sheet each year for each enterprise. This proved to be a difficult task for many project teams – despite our frequent encouragement and offers of technical assistance, we got complete data from only a few projects. Furthermore, owing to the wild fluctuations in currency exchange rates caused by the Asian economic crisis, it was very difficult to convert these figures into a common currency. As a result, we developed the following general rankings to compare projects based on the enterprise's status:

1. *No Revenues* – Did not sell any product.
2. *Some Sales Revenues* – Made some money from sales of product.
3. *Variable Costs* – Covered the costs of producing a unit of output.
4. *Fixed Costs* – Covered the costs of producing a unit of output plus its capital expenditures.
5. *Management and Monitoring Costs* – Covered the above plus the costs of the people hired to manage it and the costs of monitoring.
6. *Opportunity Cost of Capital* – Covered the above and paid a return on investment that is at least equal to a safe investment.

An additional methodological problem involves defining the interval over which you assess profitability. Should it be the last year? The best year? An average over several years? To give our enterprises the "benefit of the doubt," we generally ranked them on their best year.

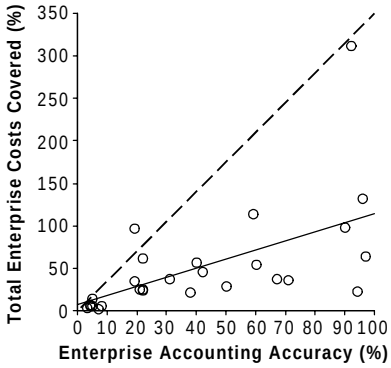
Profitability Scale for BCN Enterprises

Category	Reported Costs (# of enterprises)	Estimated Costs (# of enterprises)
No revenues	7	4
Some revenues	7	3
Variable costs covered	8	13
Fixed costs covered	1	8
Management costs covered	0	2
Opportunity costs covered	22	7
TOTAL	**45 (3 missing)**	**37 (11 missing)**



It is perhaps not that surprising that many BCN projects were not able to cover 100% of their total true costs. What is a bit surprising, however, is the number of businesses that did not even cover their variable costs (7 in the table above and probably a good fraction of the 11 for which no data were available). The problem here is that with a negative variable cost business, you lose money for every unit of output that you produce. You can't make up the difference on volume. This finding leads to the principle:

P – Avoid businesses that cannot cover their variable costs.



When we plotted enterprise accounting accuracy against profitability for the 28 enterprises for which BCN estimated true costs, we found that those enterprises with more accurate bookkeeping were significantly associated with higher profitability ($n = 28$, $\chi^2 = 7.04$, $p = 0.008$). Dividing projects into those that included a development organization in their alliance versus those that did not, we also found that the former were significantly associated with more accuracy in their reporting than the latter ($n = 28$, $\chi^2 = 6.30$, $p = 0.012$). These findings lead us to the principle:

P – Before starting a community enterprise, a project team (especially conservation groups) must have bookkeeping skills.

An Obvious Principle? This statement might seem trivial, but in fact, as discussed at a workshop in Papua New Guinea, the majority of the projects had difficulty recruiting and then keeping people with the required bookkeeping and accounting skills. Qualified people were often lured away by higher salaries in the private sector.

Broadly speaking, although our quantitative data do not show a significant association, we believe that conservation NGOs have a more difficult time implementing viable enterprises than development-oriented groups. As discussed earlier, one of the limitations of the BCN sample of projects is that we did not attract as many development NGOs and for-profit businesses as we would have liked. We therefore propose the hypothesis:

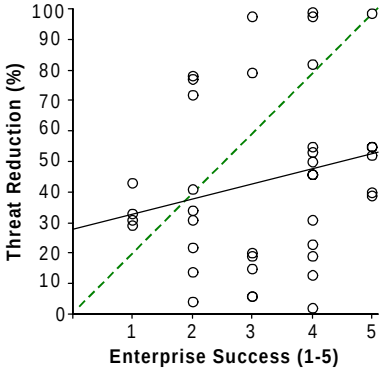
H – If conservation groups want to use an enterprise-based strategy, they should collaborate with groups that have experience doing enterprises.

Challenges in Collaboration: But see p. 36 for a discussion of the challenges inherent in collaborating with one or more other groups.

Measuring Enterprise Success: As presented in the BCN Analytical Framework, (www.BCNet.org/learning/analytical/appendC.htm), we measured enterprise success by having key informants (BCN program officers, often in conjunction with project team members) rank their perceptions of the enterprise's viability three years into the future. Rankings used a five-point scale ranging from (1) very little chance that the enterprise will survive to (5) the enterprise will survive and would be a good investment barring any major unforeseen catastrophe.

Qualitative Analysis: BCN's qualitative analysis concluded: "There appears to be no relationship between enterprise profitability and conservation outcome. However, profitability alone is too simple and crude a measure. We must devise a better definition of conservation success that looks to the future."

For the full text of the qualitative analysis, see www.BCNet.org/qual.htm.

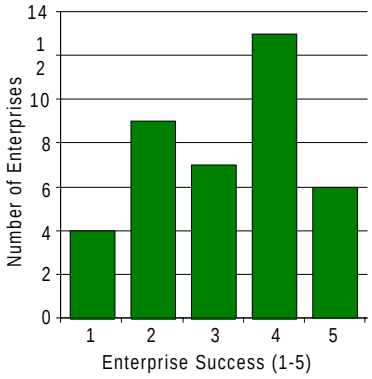


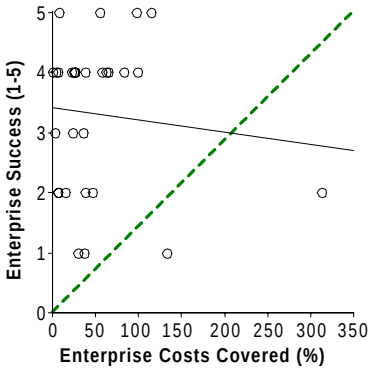
Qualitative Analysis: BCN's qualitative analyses concluded: "Taking into account the fact that most of the projects in the two groups with the greatest conservation 'success' were or will be financially successful, financial success is neither necessary nor sufficient, but it may have a weak association to conservation by catalyzing other more important factors."

For the full text of the qualitative analysis, see www.BCNet.org/qual.htm.

Enterprise Success

Since profitability turned out to be difficult to accurately assess, we also looked qualitatively at overall enterprise success. This future enterprise success ranking assessed the likelihood that an enterprise would be viable over the medium-term (defined as the next three years). As can be seen in the bar graph below, there was a wide range of potential successes with four enterprises seen as having very little chance and six being seen as very likely to succeed.





When we plot profitability (measured as the percentage of total enterprise costs covered for the 29 enterprises for which we have detailed data) against our enterprise success ranking, we expected a positive correlation as shown by the dashed green line. We found, however, that there is no association between the two variables (n = 29, $\chi^2 = 1.09$, $p = 0.296$). As a result, we have to choose one of these variables to be our primary measure of enterprise success. We have selected the ranking because we have a measurement for all 48 enterprises in our sample and because despite its qualitative nature, we feel it more accurately captures the enterprise's prospects.

The BCN Core Hypothesis states that there must be a viable enterprise. And, as shown in the scatterplot in the sidebar, when we plot the Threat Reduction Index in relation to enterprise success, we find that there is general correlation between the two, which supports our prediction, as represented by the dashed green line. There is a weakly significant positive association between the two variables (n = 39, $\chi^2 = 3.09$, $p = 0.079$). This result shows that, overall, projects that had more successful enterprises also had more conservation success.

Nonetheless, given the overall mixed success among the BCN enterprises, we might ask whether the three years of BCN funding is too short a time to assess viability since most enterprises need some start-up time. The graph in the sidebar on the next page plots enterprise profitability against the length of time the enterprise has existed, regardless of the period of BCN funding. When we divide the enterprises into those that have only existed a short time versus those that have existed a longer time, there is no significant relationship with regard to enterprise success (n = 37, $\chi^2 = 1.30$, p = 0.254). These data indicate that while it is certainly important to give businesses sufficient time to

develop, successful businesses can be developed in a short-term time frame if they are well designed.

Another question is whether some types of businesses are more profitable than others. Broadly speaking, the enterprises in the BCN portfolio can be divided into product harvesting businesses (for example, harvesting rattan, cutting timber, or making handicrafts) and service oriented businesses (for example, ecotourism, or scientific research). The following table shows the average profitability for each type of business. It shows that at least based on our sample, the service businesses were more profitable, but also had much greater variation at least in terms of the percentage of costs met.

Enterprise Profitability and Success by Enterprise Type

	% Costs Met		Success Rank		
	avg + sd	n	avg + sd	n	**Example**
All Enterprises	50.5 ± 61.5	29	3.1 ± 1.3	48	-
Products	46.7 ± 34.7	19	2.9 ± 1.3	29	Rattan (#13)
Services	57.7 ± 96.4	10	3.3 ± 1.4	19	Ecotourism (#4)

For the Success Rank, Mann-Whitney: U = 235.50, p = 0.3991

Enterprise Success and Degree of Value Added

Enterprise Type	Low Success	High Success	*Totals*
Minimal value-added	3	4	*7*
Some value-added	8	4	*12*
Final product	15	14	*29*
Totals	*26*	*22*	*48*

Finally, small business theory also holds that it is important to move up the value-added chain – in effect, performing more of the steps in the enterprise chain. As shown in the next table, we divided our enterprises into those that do little value-added processing, those do some value-added, and those that market final products to the retailer or end-user. Although the small sample size precludes statistical analysis, we found that there appears to be no relationship between the amount of processing and enterprise success. These finding taken together lead to the principle:

P – *There is no one type of business (product or service) or level of the value added chain that will automatically be profitable. Instead, you need to pick the business most appropriate to the conditions that you face.*

Finally, as outlined in the sidebar, an important caveat to the BCN results is that we only gave grants and not loans. This leads to the hypothesis:

H – *BCN type enterprises will be more viable if they are set up with a mixture of grants and loans.*

Grants versus Loans: In looking at our overall sample of businesses, we need to ask the question why BCN attracted so few entrepreneurs into our portfolio. In reality, we were not testing the question "Can enterprises lead to conservation?" so much as we were asking the question "Can non-profit organizations use an enterprise-based strategy for conservation?"

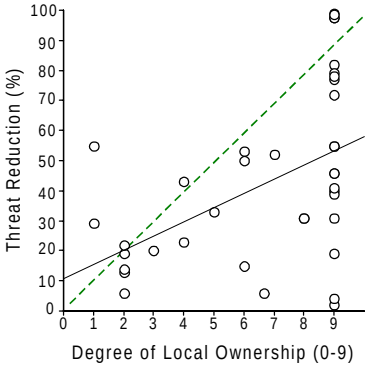
One reason for the limited number of entrepreneurs may be that owing to constraints imposed by USAID, BCN could only provide grant funds and not loans. Furthermore, these grants could only be given to registered non-profit groups. The generous grants may ironically have attracted groups who were not experienced in enterprises, but could write good conservation proposals.

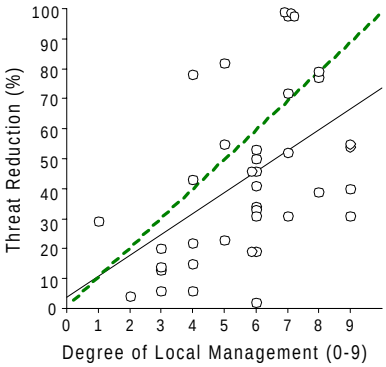
Enterprise Ownership and Management

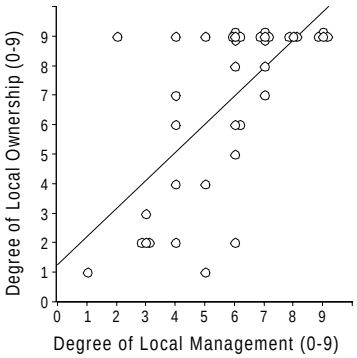
In developing an enterprise, you also have to ask who should own the business? Should the enterprise be owned by all the members in the community? By only a few members in the community? By some outside holding company or NGO? A second key question is who should manage the day-to-day operations of the business? Should the community members be trained to manage it? Or should an outside manager be brought in?

The different types of ownership structures across the BCN portfolio are shown in the first table below. There is no one structure that seems best in all situations. Indeed, most projects had a combination of individual and joint ownership in a "hub and spoke" system in which individuals contributed their products or services to a central production or marketing unit. The key was to find a structure within the context of cultural and economic constraints that provides incentives for people to do the work necessary to make the enterprise function. In addition to ownership, we considered the degrees of community participation in enterprise management, as shown in the next table.

Measuring Enterprise Ownership and Management: As presented in the BCN Analytical Framework, (www.BCNet.org/learning/analytical/appendC.htm), we defined owners as those individuals holding equity in the enterprise and having the right to vote for board members, hire and fire management, set major policies, and sell their equity. We defined managers as the people who make day-to-day decisions about how the enterprise operates. In both cases, we used a 10-point scale to assess the degree of local ownership and management of the enterprise, ranging from (0) no local participation to (9) complete local participation. In both cases, we had to carefully define which section of the overall "enterprise chain" we considered to be the business.







Types of Ownership Structure for 48 BCN Enterprises

Category	# Ents	Example (Enterprise and Site)
Public corporation	-	-
Private limited	12	Ecotimber, East New Britain, PNG (#17)
Private partnership	12	Butterfly farming, Lore Lindu, Indonesia (#9)
Sole proprietorship	6	Community ecotourism, Sikkim, India (#4)
Cooperative	6	Fruits & honey, Bilgiri Rangan Hills, India (#5)
Communal	12	Scientific tourism, Crater Mountain, PNG (#15)

Degree of Local Management of 48 BCN Enterprises
OM = Outside Manager, Comm = Community

Ranking	# Ents	Example (Enterprise and Site)
0-1 OM only	2	Whitewater rafting, Lore Lindu, Indonesia (#9)
2-3 OM consults Comm	6	Research station, Lakekamu Basin, PNG (#16)
4-5 Comm works w/ OM	12	Essential oil production, Humla, Nepal (#1)
6-7 Comm w/ OM's advice	19	NTFP harvesting, Palawan, Philippines (#13)
8-9 Comm only	9	Fishing, Padaido Islands, Indonesia (#11)

As shown by the dashed green lines in the two top diagrams in the sidebar, our working sub-hypotheses were that an increase in both local ownership and management should result in an increase in conservation success. And indeed, when we plotted both degree of local ownership and management against our Threat Reduction Index, we found a significant positive association for both ownership (n = 38, $\chi^2 = 6.76$, $p = 0.009$) and management (n = 39, $\chi^2 = 4.509$, $p = 0.034$). Since, as shown in the third graph, there is also a significant association between the degree of local ownership and the degree of local management

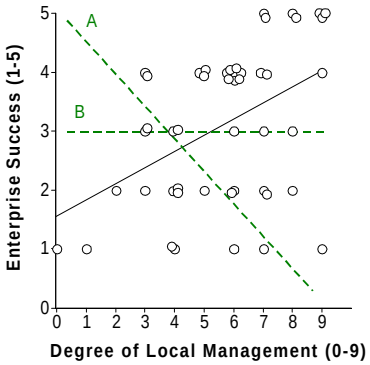
(n = 38, χ^2 = 9.73, p = 0.002), we should not treat these as separate results. Nonetheless, at a minimum, these results seem to argue for the principle:

P – *Promote local stakeholder involvement in the ownership and the management of the enterprise.*

We also predicted 1) that local management would lead to a less successful enterprise because local people might not have the necessary skills, and 2) more specifically, that for complex enterprises, an increase in local management would be associated with a decrease in enterprise success (Line A), whereas simple enterprises would show no effect (Line B). With regard to the first of these predictions, we found, contrary to what we expected, that there was a strong association between the degree of local management and enterprise success (n = 48, χ^2 = 5.38, p = 0.020). With regard to the second prediction, we obtained no significant results, perhaps due to our small sample size.

When, however, we divide enterprises into complex ones and simple ones and look at the association with the degree of local management as shown in the table on the right, we find a significant inverse association, indicating that projects brought in outside managers for the more complex enterprises. Furthermore, when we look at the association between complexity and enterprise success as shown in the table on the left, we find a significant positive association, indicating that complex enterprises are less likely to be successful. These findings perhaps explain the contradiction observed above, since outsiders tended to manage complex enterprises, which overall had less success than simple ones managed by locals. Taken together, these results support the principle:

P – *Focus on simple enterprises that use skills local people already have instead of complex enterprises that require new skills.*



Measuring Complexity: As presented in the BCN Analytical Framework, (www.BCNet.org/learning/analytical/appendC.htm), we defined enterprise complexity using a five-point scale based on the type of technology being used and the number of steps in the production process. Rankings ranged from (1) simple enterprises with few value-added steps, simple, existing technology, and few employees to (5) complex enterprises with many steps, sophisticated, introduced technology, and many employees. In general, simple enterprises made use of skills that local people already had. Examples of simple enterprises included harvesting timber at EAST NEW BRITAIN, PNG (#17) or honey at LORE LINDU, INDONESIA (#9). Examples of complex businesses included running a research station at LAKEKAMU BASIN, PNG (#16) or dive tourism enterprise at PADAIDO ISLANDS, INDONESIA (#11).

Enterprise Management	**Enterprise Complexity** Simple	Complex	*Totals*
Outsiders	11	12	*23*
Community	21	4	*25*
Totals	*32*	*16*	*48*

n = 48, χ^2 = 6.226, p = 0.013

Enterprise Success	**Enterprise Complexity** Simple	Complex	*Totals*
Low	14	12	*26*
High	18	4	*22*
Totals	*32*	*16*	*48*

n = 48, χ^2 = 4.196, p = 0.041

Finally, we can look at the relationship between complexity and the value-added chain discussed in the previous section. Interestingly, both simple and complex enterprises sold final products. These figures are, however, affected by the large number of tourism businesses that, by definition, sold their "product" directly to the consumer. Overall, these findings indicate that simple enterprises can still move up the value-added chain using appropriate technologies.

Enterprise Type	**Enterprise Complexity** Simple	Complex	*Totals*
Minimal value-added	5	2	*7*
Some value-added	9	3	*12*
Final product	18	11	*29*
Totals	*32*	*16*	*48*

n = 48, χ^2 = 0.722, p = 0.697

Enterprise Marketing and Logistics

In establishing a new enterprise, one of the most important decisions the managers will have to make is to decide to which market they will sell their products. In particular, is it better to produce products for which there is an existing market and substantial competition? Or is it better to enter new markets for which there is little competition? The enterprise must also consider the logistics involved in reaching the market. Does it matter if the market is far away? If the product is perishable? Finally, the enterprise needs to consider whether it is worthy trying to reach an international market or to tap into the "green market."

Our first set of analyses looks at the relationship between enterprise success and the existence of the market. Our working sub-hypothesis is shown by the dashed green line in the graph in the sidebar. We expected an inverted-U shaped curve in which enterprise success is reduced at low levels of market establishment, increases at moderate levels, and is then reduced again as the market becomes more competitive. Although it is difficult to statistically test an inverted-U shaped curve, based on these data and our qualitative analysis, the following principle emerges:

P – *It is better to develop enterprises in markets that are established, but not too competitive.*

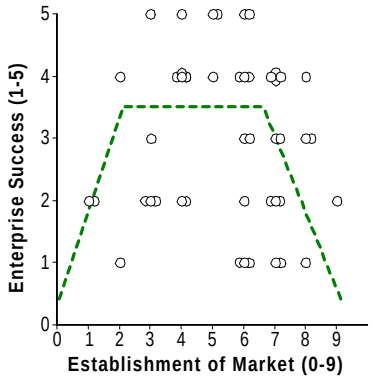
Project teams often made a number of assumptions about marketing that proved to be problematic. One of these assumptions was that marketing was of less importance than getting the basic enterprise production systems in place. The problems with this "If we build it, they will come" belief are perhaps best illustrated by the LAKEKAMU BASIN, PNG (#16) research tourism business in which substantial money was invested in building research facilities only to see no one show up. Similarly, the MAKIRA, SOLOMON ISLANDS (#19) project spent considerable effort trying to develop ngali nut oil production processes without first determining whether there was a market for the oil. This leads us to the principle:

P – *Do not start a business without first being certain there will be sufficient demand for your product or service.*

Another common assumption had to do with overlooking the difficulties in physically transporting products from the project site to the market or, in the case of tourism, tourists to the project site. We found no association between the distance to market and the success of the enterprise ($n = 48$, $\chi^2 = 0.109$, $p = 0.7409$). This may be due to the fact we had a very difficult time in quantifying this measurement. Certainly, talking to enterprise managers revealed that transport from remote project sites was often problematic and, in some cases, a major limitation on the enterprise.

Measuring Market Demand and Logistics: As presented in the BCN Analytical Framework, (www.BCNet.org/learning/analytical/appendC.htm), we used a ten-point scale to rank the degree to which there was existing market demand for the product or service ranging from (0) no market demand to (9) established, competitive market.

To look at the logistics involved in getting products to market, we counted the number of days it took to get a shipment from the production site to the next point along the value chain. We also estimated the percentage of the final cost of the product or service that this transport entailed. Both these measures were hard to apply in a consistent and meaningful way. Finally, we used a five-point scale to assess the perishability of the product or service and a five-point scale to assess the potential green-market.



Is There a Market? Although this principle may seem trivial, many projects seemed to ignore this point. Even if violating this principle does not cause the business to fail, it can create false expectations among community members. A classic example can be found in the MAKIRA, SOLOMON ISLANDS (#19) oil-nut enterprise in which the enterprise early on paid community members a high price per kg of raw nuts. After the managers realized they were pricing themselves out of the market, they had to reduce the price they offered for nuts. This caused suspicion among community members who felt they were now being cheated (BCN 1999, p. 204).

Another logistical concern is the perishability of the product. Overall, the degree of perishability had no significant association with enterprise success (n = 48, χ^2 = 0.099, p = 0.753). However, if we split the enterprises into products and services, we see that only one product with a perishability ranking of greater than three was successful. This exception was the PADAIDO ISLANDS, INDONESIA (#11) fisheries enterprise that was located only a short distance from its market. By contrast, the ARNAVON, SOLOMON ISLANDS (#18) fisheries enterprise was a much more typical example, where profitability suffered as a result of having problems getting fish to market before they spoiled. These and other examples lead to the principle:

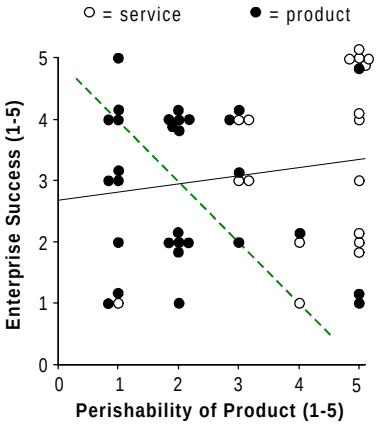
P – Enterprises are better off selling non-perishable commodities unless they have access to nearby markets and/or excellent transportation infrastructure and good logistical development.

Another common assumption is that enterprises can easily reach a sophisticated global market. In reality, this proved quite difficult to do. The five projects whose enterprises were able to reach a global market (Projects #2, #8, #11, #15,and #20) are instructive in that, except for #8, they are selling a world-class product available in few other places. For example, two birdwing butterfly species being sold by ARFAK MOUNTAINS, INDONESIA (#10) are available nowhere else. By contrast, the rattan from PALAWAN, PHILIPPINES (#13) must compete with rattan from everywhere else in Asia. Similarly, thousands of tourists come to ROYAL CHITWAN NATIONAL PARK, NEPAL (#2), which is perhaps the only place in the world where they can ride elephants across the savannah and see endangered rhinos and tigers with an 8,000 meter mountain in the background. These findings lead to the principle:

P – Enterprises should only target international markets if they have a world-class resource in demand and available in few other places.

Although our data did not show a significant correlation between enterprise success and local versus international markets, we believe that most enterprises without a unique, world-class product should focus on domestic markets, at least in the first few years. Similarly, there has been a great deal of hype about "green markets" enabling enterprises to charge a "price premium" for eco-friendly products and services. If, however, we plot our ranking of green market potential against enterprise success, we see no association, which is confirmed by our statistical test (n = 48, χ^2 = 0.715, p = 0.3978). Although it needs further testing, these findings suggest a hypothesis:

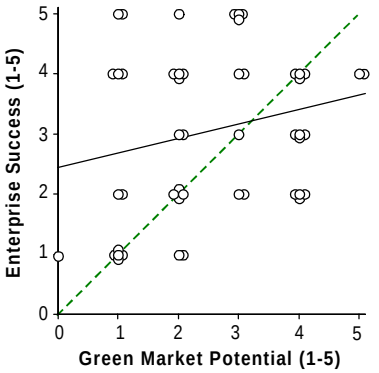
H – There are few if any cases in which there is a "price-premium" available for green-marketed goods or services. At best, a green label will enable you to gain market share at a competitive price. Furthermore, trying to tap an international green market adds another level of complexity to enterprises.



Keep It Light: Although we did not explicitly test it, in general it makes more sense to market light-weight, high-value products like butterflies as opposed to heavier commodities like resin.

Demands of the International Market: SANGGAU, INDONESIA (#8) is an exception to this trend because of its good business skills. Their story in BCN 1999 provides an interesting example of the difficulties in meeting international market quality standards. Among other things, they describe Japanese wholesalers rubbing wool cloths on the enterprise's rattan handbags to see if the weave was uneven.

Targeting a Local Market: In a few other cases, successful enterprises developed national market share through creative marketing. KALAHAN, PHILIPPINES (#14) sold its jams and jellies in Manila as an organic product. Sales were enhanced with the development of a professional-looking label. Likewise, GARHWAL, INDIA (#3) was able to market its honey to religious pilgrims by emphasizing its source from the holy headwaters of the Ganges River.



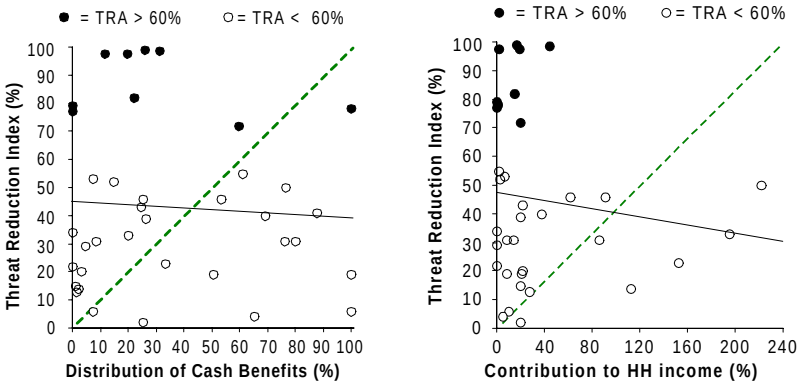
3.3 Benefit Factors

The second condition of the BCN Core Hypothesis states that the enterprise must generate benefits for the stakeholders in the biodiversity.

Cash Benefits

Once your enterprise begins paying some wages and generating some profits, as a manager you are faced with the question of how to distribute this money. To make conservation happen, should you try to ensure that everyone in the village gets an equal but small share of these funds? Or should you give larger shares to a few key individuals? Or should you not intervene so that wages and profits only go to the business's employees and owners? Or, should you encourage the village to pool their earnings in a trust fund, or to build a new school and health clinic?

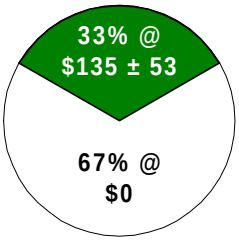
Our first set of analyses looks at the percentage of stakeholders receiving benefits. Our working sub-hypothesis was that the greater the percentage of stakeholders receiving benefits, the greater the likelihood conservation will occur, as shown by the dashed green line in the graph on the left. However, our data show no association between the two variables (n = 37, $\chi^2 = 0.01$, $p = 0.942$). Furthermore, most of the projects with high levels of conservation (colored circles) are clustered in the area of low cash benefit contribution.



A related sub-hypothesis was that there should be a direct correlation between the relative cash contribution the average household receives and conservation success, as shown by the dashed green line in the graph on the right. Here again, the two variables show no association (n = 35, $\chi^2 = 0.35$, $p = 0.557$). And in this case, all projects with high levels of conservation are clustered in the area of a low percentage of household income. Both these results directly refute at least part of the BCN Core Hypothesis, leading to the unexpected principle:

P – Cash benefits (amount per household and distribution among household) are not necessary for conservation success.

Measuring Cash Benefits: As presented in the BCN Analytical Framework, (www.BCNet.org/learning/analytical/appendC.htm), there are four variables that relate to cash benefits:



Distribution of Cash Benefits – Percentage of total stakeholder households receiving benefits. In the diagram, 33% of the stakeholders are receiving benefits. We estimated the specific percentage of stakeholder households receiving a threshold level of cash benefits for each site each year.

Absolute Amount of Cash Benefits – Amount of money received by average household. In the diagram, the 33% of stakeholders receiving benefits receive an average of $135 each. This average thus does not include the 67% of stakeholders receiving no benefits. We estimated this average for each household receiving benefits each year.

Relative Amount of Cash Benefits – It is difficult to compare the absolute level of cash benefits across projects over time since this would require correcting for changes in the value of money over time (discount rates), fluctuating currencies (FX rates), and relative purchasing power (PPP Indices). To avoid these conversions, we transformed absolute cash benefit values into relative values by expressing cash benefits as a percentage of household income.

Variability of Cash Benefits – Variance in the amount of benefits received by average household. In the diagram, the standard deviation in the average benefit is $53. We initially tried to calculate standard deviations for each site, but ended up having to use a qualitative ranking (calculating this factor requires specific household data whereas calculating the average benefit does not).

An alternative explanation of cases with high conservation and low cash benefits might be that local stakeholders are making current conservation decisions based on expectations of future cash benefits. When we consider these cases, however, we find that most communities are focused on the present. One example is VERATA VILLAGES, FIJI (#20) where stakeholders could potentially benefit from large payments if a successful pharmaceutical compound is developed from their marine resources. However, even here, it seems local people were making decisions based on the short-term cash and non-cash benefits they were receiving, and not the long-term possibilities.

Another factor that could influence conservation success is the variability in cash benefits received by each household. This factor proved to be very difficult to measure and based on our ranking data. We found no association between the variables ($n = 38$, $\chi^2 = 0.00$, $p > 0.999$). However, we can also analyze this factor by looking at the types of benefit distribution systems, as shown in the table in the sidebar.

Most of our projects (16 out of 20) distributed benefits directly to the people participating in the enterprise. A major advantage of this distribution system was that it provided an incentive to individuals to do the work that the enterprise requires. Under the other distribution system there were incentives for individuals to "free-ride" and not do as much work. A potential flaw in distributing cash benefits directly to those participating in the enterprise is that these individuals are not necessarily the ones either causing internal threats to biodiversity or with the ability to stop external threats to biodiversity. The former case is more likely to happen when the enterprise is dominated by local elites and the internal threats come from marginalized people within the community. Although our data are not conclusive enough to generate a principle, a working hypothesis that requires more testing is:

H – In some sites, it may be unrealistic and counterproductive to distribute cash benefits equally among all stakeholders. Instead, it may be more important to get cash in the hands of key decision-makers who have influence over the biodiversity.

Finally, another consideration in using cash benefits as incentives for conservation is the "magnet effect." Over time, high levels of cash benefits from an enterprise will probably attract outsiders to the project site, thus lowering the amount of benefits per person and perhaps even putting more pressure on natural resources. Although at this point we do not have the data to test this idea, conservation projects using enterprise strategies may have to limit participation in their enterprises to guard against this problem.

Qualitative Analysis Results: BCN's qualitative analysis concludes: "The scale and distribution of cash benefits alone do not appear to have an impact on conservation. In fact, there is little evidence to suggest that individual cash benefits are a good predictor of conservation outcome."

For the full text of the qualitative analysis, see www.BCNet.org/qual.htm

Frequency of Benefit Distribution Types

Distribution Type	# of Projects	Examples
Equal to all stakeholders	1	P #2
To enterprise participants	16	P #9
To enterprise owners	0	-
To traditional leaders	1	P #15
Establish communal fund	2	P #20

Communal Benefits: Although attractive in theory, in practice it can be difficult to distribute benefits communally without causing jealousy or animosity between different factions of the community. At the BCN Melanesia workshop, the EAST NEW BRITAIN, PNG (#17) team told a story in which sawmill revenues were given to the community to build a church. The only problem was that half the community wanted to put the money into the Catholic Church while the other half wanted it for the Seventh Day Adventist Church.

Getting Benefits to Key Decision-Makers: In many of the Melanesian projects, land use decisions are made by clan elders, who may not necessarily be involved in the enterprise. Project managers must decide between the "modern" system of distributing benefits to enterprise participants versus the traditional system of allowing the elders to do it. This choice may depend on the degree to which resource use decisions made by the elders are respected by the community.

Non-Cash Benefits

In addition to cash benefits directly paid to individuals, enterprises can generate non-cash benefits. For example, cash from an enterprise could be pooled by the community to build a health care center or a road. Furthermore, other benefits might be an increased sense of empowerment among local people or improved environmental conditions. To what degree are these important? Are they more important than cash benefits?

As shown by the dashed green line in the diagram in the sidebar, our working hypothesis was that we would find a positive association between the amount of non-cash benefits and conservation. Here, unlike for cash benefits, we found the expected significant positive association ($n = 39$, $\chi^2 = 11.30$, $p = 0.001$) indicating a strong link between non-cash benefits and conservation success.

BCN's formal qualitative analysis found similar results, concluding:

a. All of the sites with high conservation success also had substantial non-cash benefits.

b. Several of the least successful projects (in terms of conservation) provided non-cash benefits to the community, but *none* did so as comprehensively as the most successful projects.

c. Non-cash benefits are a necessary but not sufficient condition for optimal conservation.

d. Enterprise financial success is not necessary for conservation or to produce non-cash benefits for communities. In other words, subsidized enterprise development accompanied by community development may fulfill this necessary condition of providing non-cash benefits, and enterprise financial success is one of several methods that may be utilized to attain non-cash benefits to communities.

Both quantitative and qualitative findings seem to clearly support the principle:

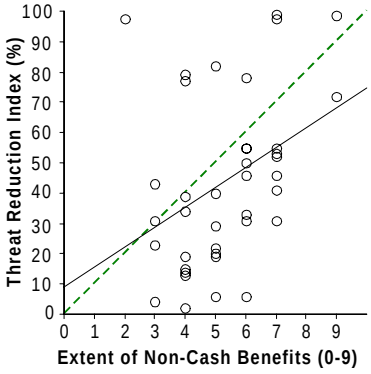
P – *Non-cash benefits are an important and perhaps even necessary condition for conservation.*

Some of the most common non-cash benefits across BCN's project sites were a feeling of conceitedness to the "outside" world and a sense of empowerment, pride and self-worth. The enterprises and projects enabled remote villages to psychologically become part of the global community on their own terms. This was a very powerful incentive for participation in both the enterprises and the broader conservation projects. Non-cash benefits also had the advantage of being relatively easy to generate within the relatively short three-year time frame.

Measuring Non-Cash Benefits: Quantifying non-cash benefits is more difficult than quantifying cash benefits. As presented in the BCN Analytical Framework, (www.BCNet.org/learning/analytical/appendC.htm), we identified four types of non-cash benefits:

1. *Community Projects* funded by the enterprise such as health care centers, church buildings, or roads (this category potentially overlaps with cash-benefits).
2. *Social Benefits* such as better social organization or higher self-esteem.
3. *Environmental Benefits* such as erosion control or watershed protection.
4. *Aesthetic Benefits* such as preservation of spiritually important places and species or recreation.

We then ranked the level of non-cash benefits being provided at each project site on a 10-point scale ranging from (0) no non-cash benefits to (9) extensive non-cash benefits.



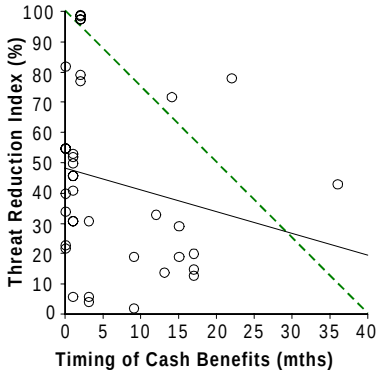
Examples of Non-Cash Benefits: A chart of the non-cash benefits for each project can be found in BCN's formal qualitative analysis, which is available at www.BCNet.org/qual.htm.

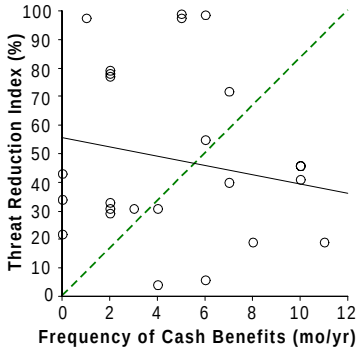
One example is PADAIDO ISLANDS, INDONESIA (#11) where local people took great pride in the fact that they developed their own businesses, mapped and monitored their own resources, and enforced their own local policies to stop threats to the coral reefs.

Timing and Frequency of Benefits

Another factor that might influence the choice of strategy you use is the timing of benefits. Will stakeholders be willing to wait for long-term payoffs? Or do people need to see benefits up front? Also, do they want to receive small amounts of cash benefits on a regular basis? Or larger sums on a more infrequent basis?

One of our working hypotheses was that conservation would increase with a decrease in the interval people have to wait until they receive their first benefit. Another hypothesis is that there would be an increase in conservation with an increase in the frequency of benefits. When we looked at the timing and frequency of both cash and non-cash benefits across our project sites, however, we found that they are very difficult to measure systematically. This difficulty is largely due to the fact that so much depends on how you define things. For example, what constitutes an initial benefit? Should you measure the time until the first stakeholder is paid? Or until the average stakeholder is paid? Perhaps owing to these methodological difficulties, our data do not show any meaningful patterns, As presented in the graphs below. There is no association for either the timing (n = 38, $\chi^2 = 0.96$, $p = 0.328$) or for the frequency (n = 39, $\chi^2 = 0.02$, $p = 0.882$).





Nonetheless, as illustrated in the sidebar, almost every project team reported that local community members get impatient unless they see benefits in the short term. Given this, even though our quantitative data are not conclusive, we feel comfortable stating the principle:

P – *To meet expectations and ensure community support, projects need to produce some tangible benefits within the first years.*

Other anecdotal evidence indicates that people may value large (and thus more infrequent) payments over smaller ones because it seems like "real money." Here, however, there may be gender differences where men prefer large but infrequent payments of cash, whereas women prefer smaller more frequent payments, as indicated by the story in the sidebar.

Measuring the Timing of Benefits: As presented in the BCN Analytical Framework, (www.BCNet.org/learning/analytical/appendC.htm), timing of cash and non-cash benefits:

Timing of Benefits – Number of months from the start of the enterprise until the first benefits are received (excluding benefits paid directly by the project and not the enterprise, such as wages paid to build an initial guesthouse). Note that, in the future, it might be more accurate to measure this as number of months until half the total benefits are paid.

Frequency of Benefits – Number of months per year in which stakeholders receive benefits.

Getting Benefits Up Front – For community members to participate in conservation efforts, they need to see cash and non-cash benefits fairly quickly. For example, legal and illegal loggers at GUNUNG PALUNG, INDONESIA (#7) often said to projects staff that they would support the project only when they see tangible cash and non-cash benefits. Until that time, they were adamant that they would continue to harvest timber in the project area and national park (BCN 1999b). Likewise, the staff at GARHWAL, INDIA (#3) report that when villagers harvested their first ever tasar silkworm crop from oak leaves, it was like "seeing is believing" (BCN 1996, p. 13).

Cash Payments and Gender Differences: The CRATER MOUNTAIN, PNG (#15) team members found that households of one village were getting a greater amount of money per year from making handicrafts than from growing coffee. Nonetheless, the men they talked to valued the money from the coffee more because it came in one lump sum when they sold their harvest, whereas the handicraft money trickled in over the year. Women, however, liked the smaller more frequent payments.

3.4 Stakeholder Factors

The third and last condition of the BCN Core Hypothesis states that there must be a community of stakeholders who have the capacity to counter the internal and external threats to the biodiversity.

Stakeholder Group Organization

One of the key assumptions of the BCN Core Hypothesis is that the stakeholders must be organized to take action. When setting up a new project, the question becomes, should you as a project manager work with existing community resource management groups that follow traditional decision making practices? Or should you try to start new modern groups that might be free of old conflicts and issues?

The different types of stakeholder groups are shown in the following table. The biodiversity at most of the sites in our sample was managed by either traditional groups or a mixture of traditional systems and modern management structures. The only sites with no formal group were in Indonesia, where the resources are by law owned and managed by the government. Indonesia also had the only sites where fully modern groups formed to manage resources owned by the state.

One interesting point here is that in some projects with multiple sites there were different types of stakeholder groups. For example, at GUNUNG HALIMUN, INDONESIA (#6), the two sites located within the park were more modern, whereas the third site located outside the park was neo-traditional, in that decisions were made by a mix of indigenous leaders and elected officials.

Types of Stakeholder Groups for 39 BCN Project Sites

Type	S Asia	SE Asia	Pacific	Total	Example
Individuals	-	3	-	3	G. PALUNG, INDO (#7)
Traditional	3	1	11	15	GARHWAL, INDIA (#3)
Modern	-	4	-	4	SANGGAU, INDO (#8)
Neo-Trad	4	9	4	17	HUMLA, NEPAL (#1)
Total	*7*	*17*	*15*	*39*	

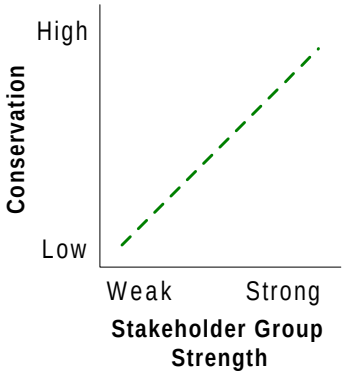
As shown by the dashed green line in the graph, our working sub-hypothesis was that conservation would increase with an increase in the strength of the stakeholder group. We also postulated a similar relationship between conservation and the representativeness of the group. In both these cases, we had trouble applying our rankings in a consistent fashion and no meaningful results emerged. BCN staff also, however, conducted a more specific analysis of stakeholders focusing on four projects. In this analysis, we found that there is a rich variety of different types of stakeholder groups across the BCN portfolio of projects, including variation within sites. Project teams thus need to be aware of the dynamics of these groups.

Measuring Stakeholder Organization: As presented in the BCN Analytical Framework, (www.BCNet.org/learning/analytical/appendC.htm), stakeholder resource management groups can be categorized as:

- *Individuals Acting Without Organization* – There is no formal group managing resources.
- *Traditional Groups* – There is an existing group based on traditional cultural practices.
- *Modern Groups* – There is a new group organized around an enterprise or other modern organizational structure.
- *Neo-Traditional Groups* – There is a new group that has formed, but it is modeled on traditional resource practices or uses a mix of traditional and modern systems.

We used a ten-point scale to rank the existence and effectiveness of the stakeholder group ranging from (0) no stakeholder group exists to (9) group meets regularly and has a history of taking effective action. However, these rankings were difficult to apply consistently across projects.

We also tried to look at how representative the stakeholder group was of the stakeholder population as a whole. But this proved to be impossible to quantify in any effective manner. We were able, however, to assess stakeholder population homogeneity on a five-point scale from (1) many ethnic groups to (5) only one ethnic group.



BCN Stakeholder Study: The full text of the BCN Stakeholder Study can be found in Mahonti et al. (In Preparation).

Stakeholder Group Leadership

One of the most important factors that can influence the success of an organization is its leadership. But leadership can take many different forms. In setting up a project, is it better to work with a stakeholder group led by traditional leaders or by leaders who emerge from outside the traditional cultural structure? Is it better to have one strong person who can be the leader? Or a group of people leading collectively? And how can your group transfer leadership over time without damaging the organization?

The different types of leadership are shown in the following table. The leaders at most sites in our sample were either traditional leaders or people originally from the site who, because of their acquired skills and education, are becoming recognized as leaders.

Types of Stakeholder Group Leadership for 39 BCN Project Sites

Type	S Asia	SE Asia	Pacific	Total	Example
Complt Out	-	1	-	1	LORE LINDU, INDO (#9)
Inside Out	-	2	1	3	KALAHAN, PHIL (#14)
Outside In	2	9	2	13	NEW BRIT, PNG (#17)
Complt In	5	5	12	22	VERATA, FIJI (#20)
Total	*7*	*17*	*15*	*39*	

As shown by the dashed green line in the scatterplot, our working sub-hypothesis was that an increase in leadership strength would lead to an increase in conservation. We found that there is, indeed, a significant association between these two variables (n = 39, $\chi^2 = 9.39$, $p = 0.002$), which leads to the principle:

P – Strong stakeholder group leadership is an important and perhaps necessary condition for conservation.

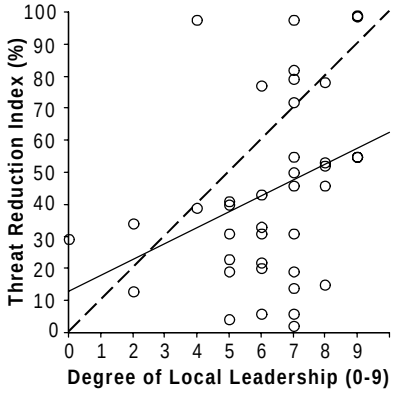
This principle might seem obvious, but implementing it raises at least two interesting issues for practitioners. The first is whether the resource management group, the enterprise, and the project should all be led by the same individuals. Anecdotal evidence indicates that resource management groups benefit from having collective leadership (often by traditional leaders), whereas the enterprises and projects seem to be most effective when led by one strong individual (often an outside-insider who might have more technical skills).

The second issue is how to transfer leadership over time. Many projects, enterprises and stakeholder groups encountered problems when a strong leader needed to be replaced. Anecdotal evidence indicates that where possible, project teams can help communities prepare for transitions by finding individuals with natural leadership talent and over time helping them develop complementary skills. In doing so, however, projects need to be aware of potential political ramifications.

Measuring Leadership: As presented in the BCN Analytical Framework, (www.BCNet.org/learning/analytical/appendC.htm), leadership can be categorized as:

- *Complete Outsider* – Leader has recently come from outside. A good example is the leader of the group harvesting butterflies at LORE LINDU, INDONESIA (#9) who recently migrated to Palolo Valley from Bali.
- *Inside Outsider* – An outsider who over time has become an insider. A good example is the leader of the KALAHAN, PHILIPPINES (#14) community, an American missionary who moved to the site in the 1960s.
- *Outside Insider* – An inside leader who has gained his or her position through contact with the outside world. A good example is the leader of the enterprise at the Mu site at the EAST NEW BRITAIN, PNG (#17) project who went to trade school and is now becoming a big man in the community through the enterprise.
- *Complete Insider* – A traditional leader. Good examples are the leaders of VERATA VILLAGES, FIJI (#20) who are from the traditional chiefly family.

In addition to categorizing the type of leadership, we used a ten-point scale to rank leadership strength ranging from (0) no leader to (9) very strong leader. In cases, it was difficult to separate out the stakeholder group from the project, which may have confused the rankings.



Resource Control and Policing

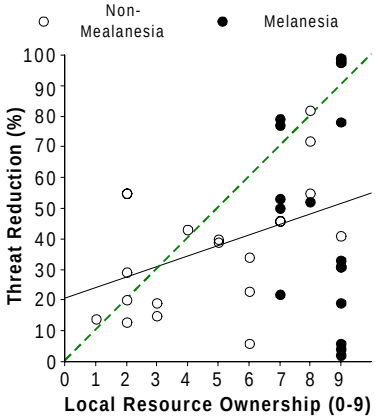
Measuring Resource Control and Policing: As presented in the BCN Analytical Framework, (www.BCNet.org/learning/analytical/appendC.htm), there are four types of resource control:

1. *Open Access* – No formal ownership – access is open to anyone.
2. *Public* – Ownership held by the state.
3. *Communal* – Ownership held jointly by members of the stakeholder group.
4. *Private* – Ownership held by individuals along clearly delineated boundaries.

Within these broad categories, ownership can be legal or *de facto* (meaning in reality people manage and use resources without legal title). Furthermore, in some cases different resources can be owned in different ways. For example, in PNG, communities own land and surface resources while sub-surface resources are the property of the state.

We used a ten-point scale to rank the degree of local stakeholder access to resources ranging from (0) no access to (9) complete access. We also assessed the legality of the communities' claim to resources on a separate five-point scale ranging from (1) illegal to (5) constitutionally guaranteed.

We looked at the communities' ability to police resource use rights on a ten-point scale ranging from (0) group takes no action against violations of resource use rules to (9) group takes strong action against all violations. We also measured the source of the threats, dividing them into those that were primarily from internal stakeholders and those that were from external sources.



A key question in any resource management system is who has the right to access resources. There is a large body of literature arguing that people are far more likely to conserve resources that they own and that, if ownership is not specified, then a "tragedy of the commons" occurs. But does ownership necessarily lead to more conservation? And even if a project works with people who technically own the resources, is this ownership meaningful if they cannot enforce their rights?

The different types of resource ownership are shown in the table below. Legal ownership is consistent within regions. In Melanesia there is only communal ownership. In Nepal, ownership is communal since the state transferred resource rights to local communities. In India, however, these rights are still technically held by the state, although under joint forest management local people are gaining more rights. In Indonesia, all resources are legally owned by the state, though in several cases communities have *de facto* control and in other cases it seems to be more open access. Finally, in the Philippines, the government is in the process of transferring resource rights to indigenous communities, although in some sites this has led to open access conditions in the short term.

Types of Resource Ownership for 39 BCN Project Sites
Where two numbers are shown, the first is legal and the second *de facto*.

Type	S Asia	SE Asia	Pacific	Total	Example
Open Access	-	- / 4	-	- / 4	G. PALUNG, INDO (#7)
Public	3	11 / 5	-	14 / 8	SIKKIM, INDIA (#4)
Communal	4	6 / 8	15	25 / 28	MAKIRA, SI (#19)
Private	-	- / -	-	- / -	-
Total	*7*	*17*	*15*	*39*	

As shown by the dashed green line in the graph in the sidebar, our sub-hypothesis was that an increase in local resource ownership would lead to an increase in conservation success. When we looked at this relationship, we found no significant association (n = 39, $\chi^2 = 0.63$, $p = 0.429$). The lack of any significant association between degree of local resource ownership and conservation seems to counter the conventional wisdom. Indeed, if we look at the countries in South and Southeast Asia (the white dots in the graph in the sidebar), the broader conservation community is trying to help local and indigenous communities obtain resource tenure rights as a means of promoting conservation. These efforts include Joint Forest Management in India and Nepal, Certificates of Ancestral Domain Claim in the Philippines, and community forestry in Indonesia. If, however, we look at the situation in Melanesia (the black dots), we find that many local groups have constitutionally guaranteed tenure rights. Despite their strong tenure rights, there is a real range in conservation success. Coupled with the results of our qualitative analysis described in the sidebar on the next page, these results support the principle:

P – *Local tenure rights are important, but they are not a sufficient condition for conservation success.*

Given this principle, in cases where obtaining tenure is a difficult, long-term process, it may make sense for projects to focus on helping communities obtain intermediate levels of access to resources. For example, at LORE LINDU, INDONESIA (#9), the project was able to help community members get exclusive permits to harvest wold honey from within the Park. These incremental steps toward greater resource access were some of the most important non-cash benefits the projects generated.

Our second sub-hypothesis was that an increase in local policing ability would lead to an increase in conservation success. Here, we found a significant association (n = 39, $\chi^2 = 11.35$, $p = 0.001$). This finding may be an artifact of the way in which we measured conservation success in terms of reducing threats. Nonetheless, it indicates that while local people might not need full legal title to resources, they do need to be able to protect the resources they are using, leading to the principle:

P – *Communities need to have the power to defend resource rights, whether they are legally held by themselves or by the state.*

As discussed on page 15, we can divide threats into *internal threats* caused by local stakeholders themselves, and *external threats* caused by outsiders. A given stakeholder group might be good at stopping internal threats but not external ones, or vice versa. The two graphs show the relationship between our Threat Reduction Index and our rankings of the groups' ability to counter external and internal threats, respectively. For both types of threats, we found significant positive associations (external: n = 38, $\chi^2 = 10.56$, $p = 0.001$; internal: n = 39, $\chi^2 = 4.36$, $p = 0.036$).

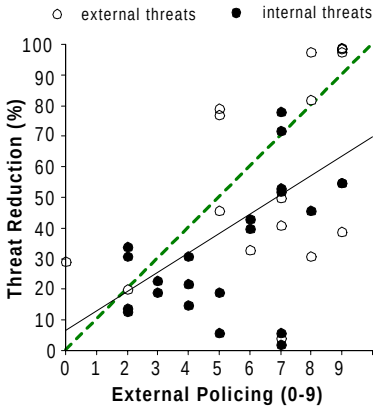
With internal threats, the challenge is to get your neighbors to adhere to rules that have been collectively established. Enforcement of these rules thus often gets tangled up in complex community and family relationships. With external threats, the challenge is to have sufficient authority to stop outsiders from violating the rules. The communities must either have the authority themselves, or be able to collaborate with government entities that do. Initially, community members might be intimidated by influential outsiders trying to access their resources. Ultimately, however, once their authority has been established, it seems generally easier for communities to unite against external threats. This observation is reflected in the fact that projects facing primarily external threats had a significantly higher TRA ranking than projects facing primarily internal threats (see page 15). These findings lead to the principle:

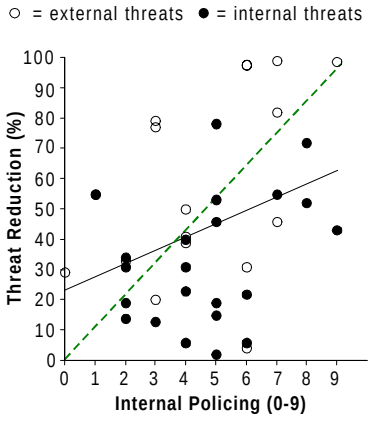
P – *If communities have sufficient authority, then it is easier to come together to stop external as opposed to internal threats.*

Qualitative Analysis Results: BCN's qualitative analysis concludes: "All of the successful projects had clear ownership of their resources at the start of the project, but two projects which had full control scored in the lowest group with regard to conservation success. On the other hand, all of the projects with moderately good conservation lacked ownership of their resources.

This suggests that strong control over the resource is neither necessary nor sufficient for optimal conservation outcome, but may be a weak catalyst."

For the full text of the qualitative analysis, see www.BCNet.org/qual.htm.





Difficulties in Internal Policing: The CRATER MOUNTAIN, PNG (#15) project team writes, "It becomes hard for community members to take a stand in a decision ruling against a relative, because then his clan members will not stand by him in times when he is in trouble" (BCN 1999, p. 148).

Stakeholder Homogeneity

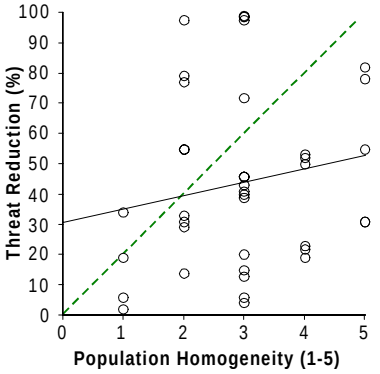
Measuring Stakeholder Homogeneity: As presented in the BCN Analytical Framework, (www.BCNet.org/learning/analytical/appendC.htm), we initially focused on how well the stakeholder group represented the broader population of stakeholders at the site. Categories that we considered included gender, ethnicity, age, religion, caste, and economic status.

This measurement proved to be almost impossible to quantify. Considering only ethnicity, religion and caste, we were, however, able to use a five-point scale to rank the degree of local stakeholder homogeneity ranging from (1) many different sub-groups to (5) no sub-groups.

Although local communities are often viewed as homogeneous entities, in reality they are typically composed of many different factions. In using an enterprise strategy for conservation, is it better to try to bring different factions together to work on a single enterprise, or is it better to set up separate businesses for each of the factions?

Divisions among stakeholder groups vary from site to site and across cultures. For example, in South Asia most of our sites had members from different castes, each of which used resources in different ways. In Southeast Asia, there were divisions between wealthy and poor village members as well as between indigenous peoples and migrants. Finally, in the Pacific, communities were split into different sub-clans, clans, and language groups.

As shown by the dashed green line in the graph, our working sub-hypothesis was that conservation would increase with an increase in stakeholder homogeneity. We found no significant association between these two factors ($n = 39$, $\chi^2 = 0.82$, $p = 0.365$). Nonetheless, we heard stories from almost all of the projects about conflicts between competing stakeholder sub-groups.



In particular, it seemed difficult for project teams to set up enterprises that required different community sub-groups to cooperate with one another. These artificial enterprise arrangements papered over deep social fissures that inevitably emerged to the detriment of the business. For some types of enterprises, such as ecotourism or capital intensive product processing, it may be logistically and economically impossible to set up multiple, parallel businesses at one site. However, for many product-harvesting businesses, it may be possible to structure the enterprise so that each community sub-group manages its own component. These findings lead to the principle:

P – *It is generally better to use an enterprise strategy with a homogeneous group of stakeholders. If it is logistically and economically feasible, you should set up separate enterprises for separate factions within a community.*

Problems with Ethnic Heterogeneity: The GUNUNG PALUNG, INDONESIA (#7) project team is convinced that one obstacle to starting the timber harvesting business was the communities' ethnic heterogeneity. The site is composed of relatively recent ethnic Malay, Balinese Javanese, and Chinese migrants each with different patterns of resource use (BCN 1999b).

Interestingly, however, there is some anecdotal evidence that, in cases of extreme levels of conflict between stakeholder groups, while it is impossible to use an enterprise-based strategy, the conflict itself may actually be good for conservation. For example, in the LAKEKAMU BASIN, PNG (#16) site the historical animosity between the members of the four different language groups living there made it impossible to set up a successful enterprise. Nonetheless, this conflict actually kept the community members from being able to sign resource use agreements with outside developers who wanted to clear forest for an oil palm plantation.

3.5 External and Process Factors

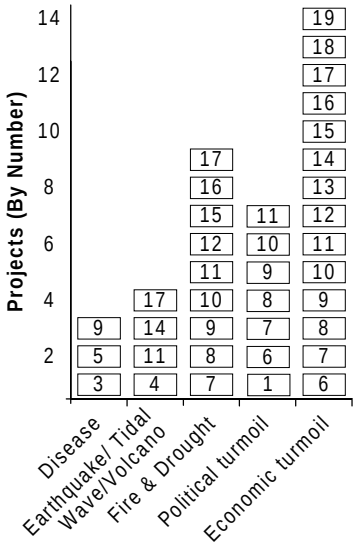
In addition to conditions that are directly related to the BCN Core Hypothesis, the projects were also affected by external factors beyond the control of the project teams, and by factors related to the process of implementing the projects.

Chaos

Perhaps the most influential external factors were unexpected natural and man-made disasters. How should your conservation project respond to inevitable emergency situations?

As outlined in the graph in the sidebar, few projects were spared from some sort of catastrophe or another. Natural disasters ranged from the earthquake that destroyed the KALAHAN, PHILIPPINES (#14) site to the volcano that shut down the entire economy of EAST NEW BRITAIN, PNG (#17) to the viral diseases that plagued honey production at GARHWAL, INDIA (#3) and LORE LINDU, INDONESIA (#9). Almost all the Southeast Asian and PNG sites were severely affected by the El Niño linked droughts and fires that swept through the region in 1998. The Indonesian sites were also dramatically affected by the country's political turmoil. And a majority of the projects were severely impacted by the Asian economic crisis that dramatically disrupted business conditions.

Numbers in boxes refer to individual projects using the standard BCN coding.



Each of these disasters, at a minimum, made conditions for the enterprises more difficult. In the worst cases, they set progress back a year or more while the project focused on basic relief efforts and tried to repair the damage done. Perhaps the only redeeming feature was that in some cases where the project team temporarily set-aside their conservation work, the disaster relief work helped strengthen long-term relationships between the community and the project team. This leads to the principle:

A Silver Lining: In January 1996, a large earthquake struck off 60km from the PADAIDO ISLANDS, INDONESIA (#11). The resulting tidal wave devastated island villages. Project staff decided to delay BCN-funded conservation work in favor of relief efforts to assist the thousands of people affected. This relief work helped the team develop the trust and respect of the community members and, ultimately, facilitated project implementation.

P – In times of chaos, a flexible approach to implementing your workplan, even if it means suspending direct conservation work, can lead to long-term conservation gains.

Policy Environment

Other influential external factors are the policy and institutional environments in which the projects operate. To what degree should a project team worry about trying to influence policies?

Policy Impact: The VERATA VILLAGES, FIJI (#20) project team helped to pass national legislation regarding biodiversity prospecting that was the first of its kind in the Pacific. (BCN 1997, p. 101)

Policies are made at the local, provincial, national, and international levels. Overall, BCN projects influenced many different policies, ranging from local regulations on cyanide and bomb fishing in PADAIDO ISLANDS, INDONESIA (#11) to national legislation governing the use of ecotourism revenues in Nepal proposed by the CHITWAN, NEPAL (#2) project team. It is difficult to draw any general analytical conclusions from this work beyond the obvious point that it is important for projects to pay attention to the policy environment including in particular, those policies that potentially affect project activities.

Project Effectiveness and Stakeholder Buy-In

To test an enterprise strategy for conservation, BCN tried as much as possible to separate the enterprise from the surrounding project. Nonetheless, project effectiveness undoubtedly had a great impact on bottom-line conservation success. In developing an enterprise approach, a key question that emerged was should the project be implemented by one organization, or several organizations working together? A second question is how can a project get the stakeholders to buy into project activities?

In order to address project effectiveness, we first looked at the institutional arrangements within each project and how they affected project implementation and, ultimately, conservation impact. Our working sub-hypothesis was that, due to the complexity of an enterprise strategy, organizations that collaborate and pool complementary skills with other organizations would be more effective. We found this statement to be generally true. But, in contrast to the current emphasis within the conservation community on the need for partnerships and consortia, we found that the least complex institutional arrangements were the most effective. We also found that one of the most important ingredients for success was having the roles of each institution clearly defined. To this end, those organizations that essentially worked alone but entered into contractual arrangements for specific project tasks achieved greater conservation impact than formal consortia and were able to spend more time on conservation and less on internal disruptions.

Second, we looked qualitatively at how funding levels affect conservation success. Our working sub-hypothesis was that more money would lead to more conservation. We found that, if anything, there was an inverse association, with smaller grants leading to higher conservation. In fact, the six projects that received the least amount of money were also some of the best projects in terms of conservation impact. They also had fewer institutional disruptions. Together, these findings lead to the principle:

P – *Avoid large consortia of institutions and make sure that roles are clearly spelled out from the start.*

Ultimately, a conservation project is about trying to convince stakeholders to accept or "buy-in" to project goals, objectives, and activities. As outlined in the sidebar, we only developed our measurement of buy-in late in our analyses making quantitative analysis impossible. Anecdotal evidence indicates, however, that community enterprises were effective in convincing local stakeholders and relevant government officials that the organizations implementing the projects were not just there "preaching conservation" but were also interested in the welfare of the local people. This leads to the hypothesis:

H – *Developing enterprises can help a conservation NGO gain the trust of local community members and government officials.*

Measuring Stakeholder Buy-In: As presented in the BCN Analytical Framework, (www.BCNet.org/learning/analytical/appendC.htm), we measured stakeholder "buy-in" by asking key informants to rank the community's degree of acceptance of the project.

The informant was given 10 beans, each of which represented 10% of the community, and asked to place each bean in one of 5 boxes ranging from (-2) community strongly dislikes project to (0) community is neutral to (2) community strongly likes project. The exercise was then repeated, using one bean for each major leader in the community. The number of beans in each box was multiplied by the rank of each box to get the total buy-in value for the community as a whole and for the leadership.

Unfortunately, we only developed this ranking technique late in our analytical process and so we could not get data for all project sites.

Analyzing Institutional Arrangements: The findings presented here are drawn from a more thorough analysis of the institutional arrangements in each of the projects funded by BCN that was conducted by BSP staff (Hochman, et al. 1999).

Too Much Buy-In? The CRATER MOUNTAIN, PNG (#15) project tells the story how one community passed a law that the project representative in their site could not leave their village because he was so important to them. Clearly, the project has achieved buy-in. This buy-in can become problematic, however, if the community starts expecting the NGO to provide services that the government should normally provide like dispute resolution, provision of drinking water, or building schools. A conservation group has to be careful not to stray too far from its core mission.

4. And the Answers Are…

At the start of this report, we said that BCN was set up as a large-scale experiment to look at three key questions:

- Can an enterprise strategy lead to conservation?
- Can an enterprise strategy pay for conservation?
- How can we implement more effective projects and learn from our experiences?

Now that we have discussed the BCN Analytical Framework and presented some of our basic results, we are in a position to try to answer these three questions.

4.1 Can an Enterprise Strategy Lead to Conservation?

This question is the basic test of the BCN Core Hypothesis. We found that, yes, an enterprise strategy can lead to conservation, but only under limited conditions…and never on its own.

Yes, But Only Under Limited Conditions…

The BCN Core Hypothesis states that if an enterprise approach to community-based conservation is going to be effective, then the enterprises must: 1a) be viable, 1b) have a direct link to biodiversity, 2) generate benefits, and 3) involve a community of stakeholders that has the capacity to take action to counter threats to the biodiversity. In effect, we are saying that there are a series of "hurdles" that a project must cross to make an enterprise-based strategy lead to conservation success. Each of these hurdles can be thought of as a "necessary but not sufficient condition" under which an enterprise strategy will work.

Viable Enterprises

The first and, perhaps, toughest condition of the BCN Core Hypothesis states that there must be a viable enterprise. And as we discussed in Section 3, the BCN businesses suffered from many logistical challenges. We found that they had problems developing good management systems, maintaining good bookkeeping or accounting systems, training their employees, and getting them to show up for work on a regular basis. They had problems figuring out how to efficiently produce their products and maintain quality control. They had problems finding markets for their products and services, getting their products to markets, and collecting money from their customers. And they had problems dealing with government regulations and bureaucracies.

Despite these myriad challenges, we found that some of the BCN enterprises were able to make progress towards long-term viability. Key factors that influenced enterprise success included having good bookkeeping skills, working in markets that are established but not too competitive, doing good market research, and focusing on simple enterprises that used skills local community members already possess.

Overall, we found a weak association between future enterprise success and conservation success. Perhaps most interestingly, although we predicted the opposite, we found a strong association between future

Summary Qualitative Results: BCN's qualitative analysis concludes "The enterprise lessons to be drawn from this analysis define good business sense: that successful enterprises require good markets. Competition in a market requires a strong business plan. The projects that attained optimal conservation successes tended to market domestically, accessed their markets well, and enjoyed little competition. Green markets may best be understood as niches that provide opportunities along with many others. National markets are a safer bet since they are simpler and require fewer managerial skills to access, but the payoffs from international markets may be much higher. The most important lesson here is the necessity of a good business plan."

For the full text of the qualitative analysis, see www.BCNet.org/qual.htm.

enterprise success and the degree of local community involvement in the ownership and management of the enterprise. We also found a strong association between local involvement in the enterprise and conservation success. These findings indicate that getting people involved in the enterprise is an important step in getting them engaged in the larger conservation process.

Taken together, these results imply that, although it is difficult, communities can set up viable enterprises under the conditions captured in our principles. In particular, these businesses are likely to be viable only if they are based on a well thought-out business plan, and if they have people with the necessary management and bookkeeping skills.

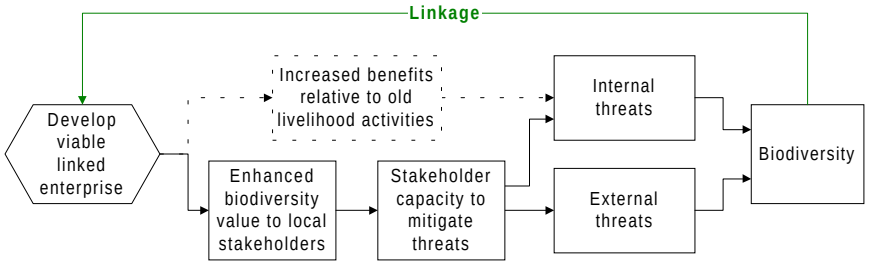
Linked Enterprises

Summary Qualitative Results: BCN's qualitative analysis concludes: "Enterprises that appear to have a good perceived linkage in the minds of the community tended to score higher TRAs than the ones that were less linked."

For the full text of the qualitative analysis, see www.BCNet.org/qual.htm.

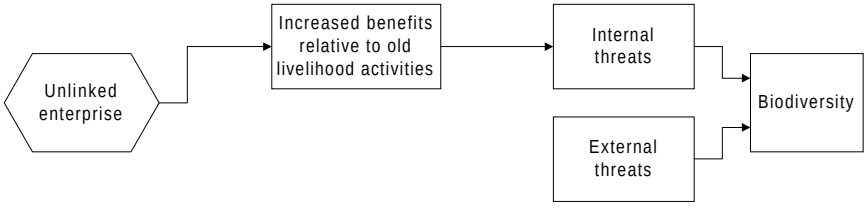
The second part of the first condition of the BCN Core Hypothesis is that the enterprise must be linked to the biodiversity of the project site. In this case, despite the initial emphasis BCN placed on funding only projects with high linkage, we found that many of the businesses ended up not being highly linked. In particular, it was difficult to develop product-harvesting businesses that were dependent on the biodiversity of the site.

Surprisingly, conservation happened regardless of whether or not the enterprise was linked. This result implies that linkage is not necessary for conservation, at least in the short-term. Over the long-term, however, if there is no linkage between the enterprise and biodiversity, then by definition, a linked enterprise strategy will not work. In effect, as shown in the model below, without linkage, the enterprise approach becomes simply an economic substitution strategy that does not address external threats. We also found that the communities' perception of linkage might actually be more important than actual linkage.



With Linkage – Enterprise Strategy for Conservation

Without Linkage – Economic Substitution Strategy for Conservation



Stakeholder Benefits

The second condition of the BCN Core Hypothesis is that the enterprise must generate benefits for the stakeholders in the biodiversity. In this case, we found that conservation occurred regardless of the percentage of stakeholder households receiving cash benefits or the average amount of benefits each household received.

On the other hand, we found that conservation was associated with high levels of non-cash benefits. Furthermore, our anecdotal evidence indicates that it is important to get benefits to the stakeholders as soon as possible after project activities commence. Finally, although we do not have the data to say for sure, our experiences indicate that instead of trying to distribute benefits widely, it may be more important to ensure that they go to key resource use decision-makers.

These results imply that, while cash benefits are not important in influencing stakeholders' willingness to counter threats, stakeholders do need some incentives to take action. In particular, non-cash benefits seem to be effective in promoting trust and cooperation between stakeholders and project staff.

Summary Qualitative Analysis: BCN's qualitative analysis concludes "BCN's Core Hypothesis states that enterprises must generate benefits to be successful. Implicit in this statement is the assumption of cash and non-cash benefits. This analysis validates one piece of the Core Hypothesis but suggests that cash benefits may not be as important as non-cash benefits Essentially, this is a lesson that enterprises must be supported by complementary development work. Specifically, environmental education and conservation awareness promotion may be related to conservation success."

For the full text of the qualitative analysis, see www.BCNet.org/qual.htm.

Stakeholder Capacity to Take Action

The third and final condition of the BCN Core Hypothesis is that there must be a community of stakeholders who have the capacity to counter internal and external threats to the biodiversity.

Regarding the existence and strength of the stakeholder group, although our data were not definitive, we believe that it is better for conservation to work with an established group. It is clear, however, that the group needs strong, though balanced, leadership.

With regard to tenure, we found that for conservation to occur, some level of access to the resources was more important than having full legal control. It was also particularly important for communities to have the ability to enforce these rights against both internal and external sources of threats. We believe that an enterprise strategy is more effective in countering external threats. Countering internal threats seems to be more difficult when the stakeholder group is heterogeneous and/or there is a high degree of conflict between factions of the community.

Summary Qualitative Analysis: BCN's qualitative analysis concludes: "Projects may have a better chance of success if there are few or no internal threats, although this neither a necessary nor sufficient condition for conservation success.

An efficient system to distribute penalties is needed both as a deterrent and to promote confidence in community ability to enforce policy."

For the full text of the qualitative analysis, see www.BCNet.org/qual.htm.

Other Conditions

In addition to the conditions directly related to the BCN Core Hypothesis, the projects were affected by other conditions. Of particular importance were the disasters that struck almost all project sites.

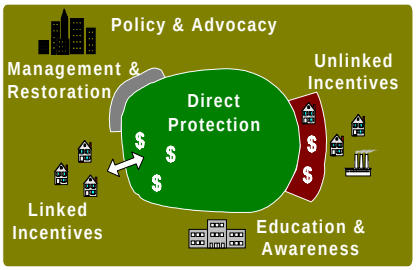
…And Never on Its Own

In the previous section, we compared the conditions in the BCN Core Hypothesis to a series of hurdles that a project needs to cross to make an enterprise strategy work. If we look at the summary table below, however, we find that in some cases, conservation occurred (the project crossed the last hurdle) without meeting all of the conditions (the previous hurdles). For example, none of the most successful projects at the bottom of the table below has a highly linked enterprise. Several of them have not had successful enterprises. And most of them have not had high cash benefits. How can we explain this apparent contradiction?

Summary Categorization of 39 BCN Sites Across Key Factors

Site	Linkage	Enterprise Success	Cash Benefits	Non-Cash Benefits	Policing Ability	TRA	Threat Type
15.1	med	high	low	med	med	2%	internal
16.1	high	low	med	low	high	4%	external
8.1	med	med	low	med	med	6%	internal
15.2	high	low	high	med	high	6%	internal
6.2	med	high	low	med	low	13%	internal
9.2	high	low	low	med	low	14%	internal
6.3	med	med	low	med	med	15%	internal
9.1	med	med	high	med	low	19%	internal
15.3	med	high	med	med	med	19%	internal
6.1	high	med	low	med	low	20%	external
11.2	low	low	low	med	med	22%	internal
5.1	med	high	low	low	med	23%	internal
9.3	med	low	low	med	low	29%	external
16.2	med	low	low	low	high	31%	external
19.1	low	low	high	high	med	31%	internal
19.2	high	high	high	med	low	31%	internal
18.1	low	low	low	med	med	33%	external
7.1	high	**low**	**low**	med	low	34%	internal
4.2	high	high	**low**	med	high	39%	external
4.1	high	high	high	med	med	40%	internal
13.1	**med**	**low**	high	high	med	41%	external
3.1	**med**	**low**	**low**	low	high	43%	internal
13.2	**med**	high	**low**	high	med	46%	external
13.3	**med**	high	med	med	high	46%	internal
10.1	high	high	high	med	med	50%	internal
11.1	high	high	**low**	high	high	52%	internal
11.3	high	high	**low**	high	med	53%	internal
1.1	**med**	high	med	high	high	55%	internal
2.1	**med**	high	(no data)	med	med	55%	internal
2.2	**high**	high	(no data)	med	med	55%	internal
12.1	**med**	**low**	med	high	high	72%	internal
17.5	**med**	**low**	**low**	med	med	77%	external
20.1	**med**	**low**	high	med	med	78%	internal
17.6	**med**	**med**	**low**	med	med	79%	external
14.1	**low**	high	**low**	med	high	82%	external
17.1	**med**	high	**low**	high	high	98%	external
17.2	**med**	**med**	**low**	low	high	98%	external
17.3	**med**	high	**low**	high	high	99%	external
17.4	**med**	high	**low**	high	high	99%	external

One way to explain this contradiction is to realize that the enterprise strategy expressed by the BCN Core Hypothesis does not happen in a vacuum in which a project team uses only this strategy and no other. Instead, a project generally uses a variety of conservation strategies such as direct protection, management and restoration, policy and advocacy, unlinked incentives, and education and awareness as shown in the diagram in the sidebar and also in the diagram on page 14.

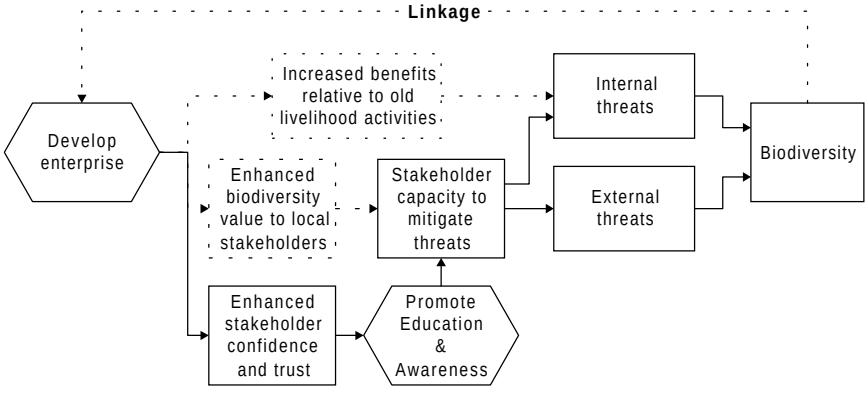


If we look more closely at our results, we find an interesting pattern begins to emerge that indicates that education and awareness might be particularly important. Key points include that a) community participation in the enterprise was significantly associated with conservation, b) non-cash benefits, such as enhanced community confidence, were also significantly associated with conservation, and c) as shown by anecdotal evidence, communities took action in support of conservation in sites where they had good working relationships with project staff members.

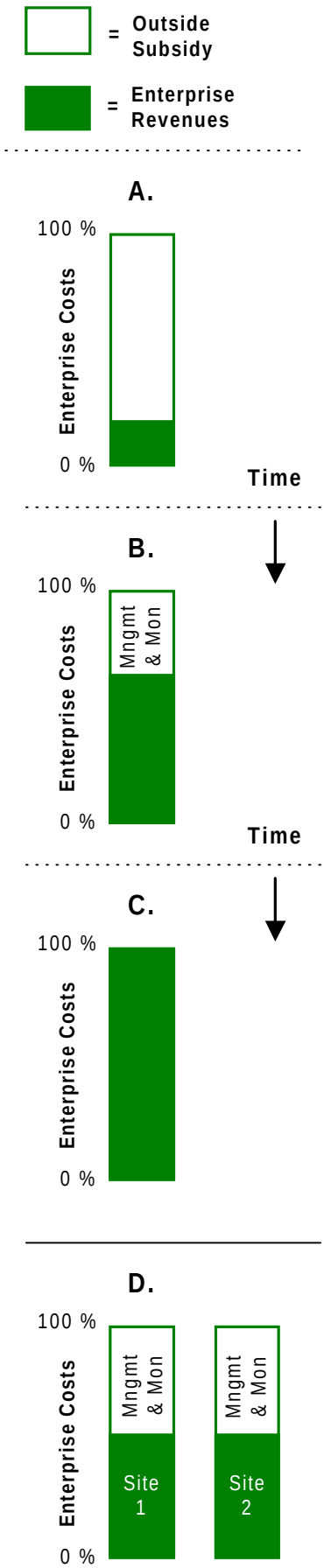
Taken together, these observations suggest that there might be an alternate pathway by which an enterprise strategy can lead to conservation. As shown in the following diagram, this pathway involves a conservation NGO coming in and establishing an enterprise. The enterprise gives the NGO staff members entry into the community. Community members participate in the enterprise and develop enhanced confidence in themselves. They also come to know and trust the project team and become more receptive to the conservation ideas that the team members bring. If the NGO promotes education and awareness, then the stakeholders may be more willing to listen and take actions to counter both internal and especially external threats. In this model, the enterprise does not have to be linked to the biodiversity. However, if the enterprise is linked, then the other path can work as well.

Providing Government Services: Trap of NGOs having to provide government services. To try to be all things to all people.

A Revised Model of an Enterprise Strategy for Conservation



The real “take-home” point here is that we can’t expect any one conservation strategy to save the rainforests and the reefs by itself. Instead, any given project needs to have the appropriate mixture of strategies tailored to meet local conditions.



4.2 Can an Enterprise Strategy Pay for Conservation?

One of the main ideas behind BCN was to see if enterprises could not only achieve conservation, but also help pay for the costs of doing it. The premise is that if an enterprise is leading to conservation and the enterprise is self-sufficient, than the conservation is being paid for without the need for outside subsidies.

Subsidies are Required, Especially for Management…

As shown in Diagram A, initially a conservation business will only be able to cover a small fraction of its costs and thus requires a substantial outside subsidy. Over time, however, an enterprise should be able to cover more of its variable and fixed costs and thus reduce the subsidy required as shown in Diagram B. The ideal goal becomes to get the enterprise to cover all its costs as shown in Diagram C.

If the BCN experience is any guide, it will at best take a number of years for most community-based enterprises to become self-sufficient. And in many cases, it may be hard to get the enterprise to cover all its costs. In particular, it may be necessary to pay for good quality management and for monitoring activities. Thus, Diagram B, in which an outside subsidy is perpetually required to pay for these true costs of the enterprise, may be the most common scenario. The challenge is to avoid situations where the enterprise is not covering its variable costs and is thus losing money.

…but a Partial Subsidy Means There Is Also a Partial Return

Although BCN's initial goal was to develop enterprises that could cover 100% of their costs within a three-year time period, we have come to realize that this goal was not only unrealistic, but also unnecessary. There is nothing inherently magical about the idea of an enterprise covering 100% of its costs – especially if it provides environmental or social benefits.[1] As shown in Diagram D, suppose there is an enterprise that leads to conservation at a given project site, but only covers 50% of its costs. Since the glass is "half-empty," the remaining 50% of the enterprise costs must come from grants or in-kind subsidies for managerial salaries. If, however, we view the glass as being "half-full," then the 50% of the costs that the enterprise is able to cover can be seen as a "return" that helps to pay for conservation. In effect, this money can be taken and used to fund another business at a second site, thus doubling the amount of conservation that occurs for a given level of investment.

The key number here is thus not 100% percent self-sufficiency, but rather the ratio between the amount of money required to be invested in the enterprise and the amount of conservation that you get in return. If the enterprise generates more than a dollar's worth of conservation for every dollar invested, (the ratio is > 1) it is worthwhile. If, however, the enterprise generates less than a dollar's worth of conservation (the ratio is <1), it is not. The trick is to be able to value the amount of conservation that occurs – this can best be done by thinking about the investment (aka subsidy) required by the best alternative non-enterprise based strategy.

[1] This idea originally came from a conversation with Frances Seymour of WRI.

4.3 How Can We Implement More Effective Projects and Learn From Our Experiences?

If one thing is clear at this point, it is that ultimately the ability to implement effective projects depends on practitioners having the information that they need to make management decisions. In order to be able to decide which conservation strategies to use or to evaluate the relative costs and benefits of each strategy, knowledge is at a premium. Practitioners need the ability to understand the specific local conditions at their project site, both at the start of their project and as they change over time. To do so, they need to be able to collect the right information, analyze it, and use it. One process for dealing with information is adaptive management. BCN explored adaptive management at a project level and at a programmatic level.

Adaptive Management: Margoluis and Salafsky (1998) define Adaptive Management as integrating project design, management, and monitoring to provide a framework for:

1. *Experimentally Testing Assumptions* – Systematically trying different interventions to achieve a desired outcome.

2. *Adaptation* – Using the results of this monitoring to improve your project.

3. *Learning* – Sharing what you have learned with team members and other practitioners.

Project Level Adaptive Management

In developing the BCN monitoring program and analytical framework, we initially tried to develop program wide indicators. Over time, however, we realized that each project site would need its own monitoring plan tailored to the specific conditions at that site. We also learned that monitoring can only be effectively conducted in the context of good project design and management. We thus developed a process for doing monitoring in the context of the project cycle as shown on the next page. Steps in the overall process include:

- *Start: Clarify Group's Mission* – A Mission Statement provides a vision for the future of your group – your long-term desired outcome and the strategy for getting there. Before setting out to design a new project, you must have a clear understanding of your group's mission. If you plan to work with other groups on the new project, it is also important to understand their missions and how yours relates to theirs.

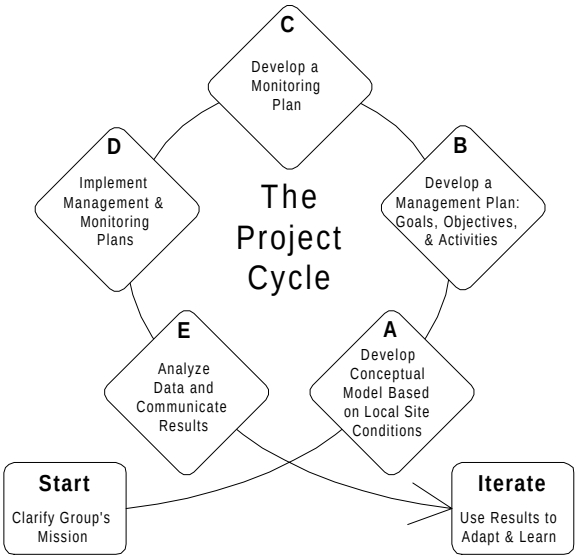
Steps in Project Level Adaptive Management: The steps outlined here are described in detail in Margoluis and Salafsky (1998).

- *A: Design a Conceptual Model Based on Local Site Conditions* – A Conceptual Model is the foundation of all project design, management, and monitoring activities. It is a diagram of a set of relationships between certain factors that are believed to impact or lead to your target condition. The model is first built to present a picture of the project area prior to the start of the project. It is next adapted to reflect local site conditions and then used to identify and rank the key threats to biodiversity that your project will address.

Go or No Go? If we had had the BCN projects develop conceptual models prior to starting project implementation, at least a few of the projects would have probably either tried different enterprises or even not used an enterprise strategy for conservation. This underscores the importance of this step.

- *B: Develop Management Plan: Goals, Objectives, and Activities* – A Management Plan describes the explicit goals, objectives, and activities designed to address threats identified in the Conceptual Model. Goals are broad statements of the desired state toward which the project is directed. Objectives are more specific statements of the desired outcomes or accomplishments of the project. Activities are specific actions undertaken by project participants designed to reach each of the project's objectives, which in turn, should lead to realization of your project's goal. All activities need to be linked to specific objectives that target critical threat factors identified in your Conceptual Model.

Steps in the Project Cycle
Source: Margoluis and Salafsky (1998)



Safe-Fail: Traditionally, monitoring has been seen as a judgmental evaluation being carried out by an outsider. As a result, there is pressure to hide negative results. We found, however, that monitoring is most effective as a self-evaluation that is used to improve management. Under this framework, failure, while not desired, are seen as part of the natural learning processes – it becomes safe to fail. A true failure only occurs when mistakes are made and we fail to learn from them.

- *C: Develop Monitoring Plan* – A Monitoring Plan describes how you will assess the success of your project interventions. The plan starts by outlining who your audiences are, what their information needs are, what monitoring strategies you will employ to get the data needed to meet each of these needs, and the specific indicators you will measure. The remainder of the plan lists how, when, by whom, and where data for these indicators will be collected.
- *D: Implement Management and Monitoring Plans* – The Project Conceptual Model, Management Plan, and Monitoring Plan taken together comprise a complete Project Plan. This step involves implementing this Project Plan.
- E: *Analyze Data and Communicate Results* – Once data have been collected, they need to be analyzed and the results need to be communicated to your internal and external audiences.
- *Iteration: Use Results to Adapt and Learn* – Iteration is the key step in Adaptive Management. It is where the work invested in monitoring can pay off by helping you incorporate the information that you have obtained to improve your project and move forward. In this chapter, we discuss how to complete the process of testing assumptions and adapt your Project Plan based on your monitoring results. We also discuss why you should document and share the knowledge you have gained with others so that they can improve their conservation efforts.

Overall, this approach to monitoring takes a substantial investment of work, time, and money. But we also have come to believe that this investment is essential to get projects that can be effective, adapt to changing conditions, and learn.

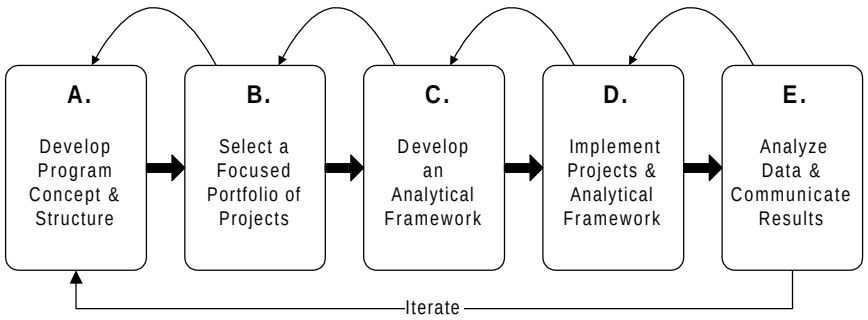
Program Level Adaptive Management

Although projects are the basic unit at which conservation happens, adaptive management also applies at a programmatic level. And this is where we feel that BCN may actually make its greatest impact. BCN was one of the first "Learning Programs" that tried to test a specific hypothesis about how to do conservation while doing it. Based on our experiences, we highly recommend this process be used to test other conservation strategies.

The steps involved in setting up a learning program are outlined below. These steps are similar, but in some cases slightly different from the steps in the project cycle. These steps are also related to those that the BCN program followed, but are modified based on our experiences.

- *Step A. Develop Program Concept and Structure* – The first step in developing a learning program is to determine what problem or question you want to address with your program, what your specific hypothesis is, how you will structure your program, and how you will monitor it over time. BCN tested an enterprise strategy for conservation. Other strategies need to be tested as well.
- *Step B. Select a Focused Portfolio of Projects* – The second step is to establish and implement the specific process that you will use for reviewing and selecting the projects in your program.
- *Step C. Develop an Analytical Framework* – The third step is to figure out how you and your partners will collect the data necessary to test your hypothesis. Your analytical framework is best developed as early as possible in the overall program. It should be developed by the project team members who will be directly responsible for collecting and analyzing the data.
- *Step D. Implement Projects & Analytical Framework* – The fourth step is to implement your plan. You need to ensure that all roles are covered and to facilitate participation.
- *Step E. Analyze Data & Communicate Results* – The final step in developing a learning program is to analyze your data and communicate the results to your key audiences.

Steps in a Learning Program
Source: Salafsky and Margoluis (1999a)



Learning Programs: The steps described on this page are described in detail in Salafsky and Margoluis, 1999a.

Costs and Benefits of Learning Program: Costs of a learning program include that they require:

- *More Staff* – A much greater investment in skilled interdisciplinary program staff.
- *More Money* – More money to pay for the staff and required meetings.
- *A Willingness to Value Failure* – That program managers take a "safe-fail" approach in which an honest appraisal of problems is valued above bottom-line results.
- *A Willingness to Experiment* – Groups that are willing to deal with uncertainty.
- *A Necessarily Narrow Focus* – A restricted focus so that you can test your hypothesis. For example, with regard to BCN's first goal of making conservation happen, we learned that a given project should employ a wide range of strategies that are appropriate to the specific conditions at the project site. This selection of strategies may or may not include enterprise-based approaches. With regard to our second goal of testing our hypothesis, however, we had to restrict our focus to only enterprise strategies. This led to some serious contradictions and tough choices.

Benefits of Learning Programs include:

- *Improved Knowledge* – The knowledge and learning that comes from the collective research being done.
- *Cross-Project Learning* – The networking and capacity building from bringing groups together.
- *Improved Partnerships* – Breaks down the traditional hierarchy that separates donor or program management and project staff.

5. When Should You Use an Enterprise Strategy?

Early on in this report, we said that our purpose in testing the BCN Core Hypothesis was that we "would like to be able to inform conservation practitioners and managers about the specific conditions under which it might make sense to adopt an enterprise strategy – and just as importantly, the specific conditions under which it might not." As you might have guessed by now, we cannot give you a definitive answer that is guaranteed to work at your specific site. We can, however, offer you a process that will enable you to answer this question on your own as outlined in the flow chart on the next page.

As in any conservation project, the flow chart begins with developing an Initial Conceptual Model of the situation at your project site. Once you have developed a good understanding of the situation at your site, you can use the *BCN Enterprise Strategy Guide* shown in the table below to decide if you should use this approach. To use this guide, compare the conditions at your site with the factors listed in the far left-hand column. If you get even one entry in the "Forget It !" column, then as the flow chart indicates, you might want to think about another strategy. If most of your criteria are in the "Think Hard" or "Maybe If…" columns, then you should think about the comments in the far right column. If you can resolve the problems, then it might make sense to use an enterprise strategy. Finally, if most of your criteria are in the "Go For It !" column, you are home free, assuming all your assumptions are true.

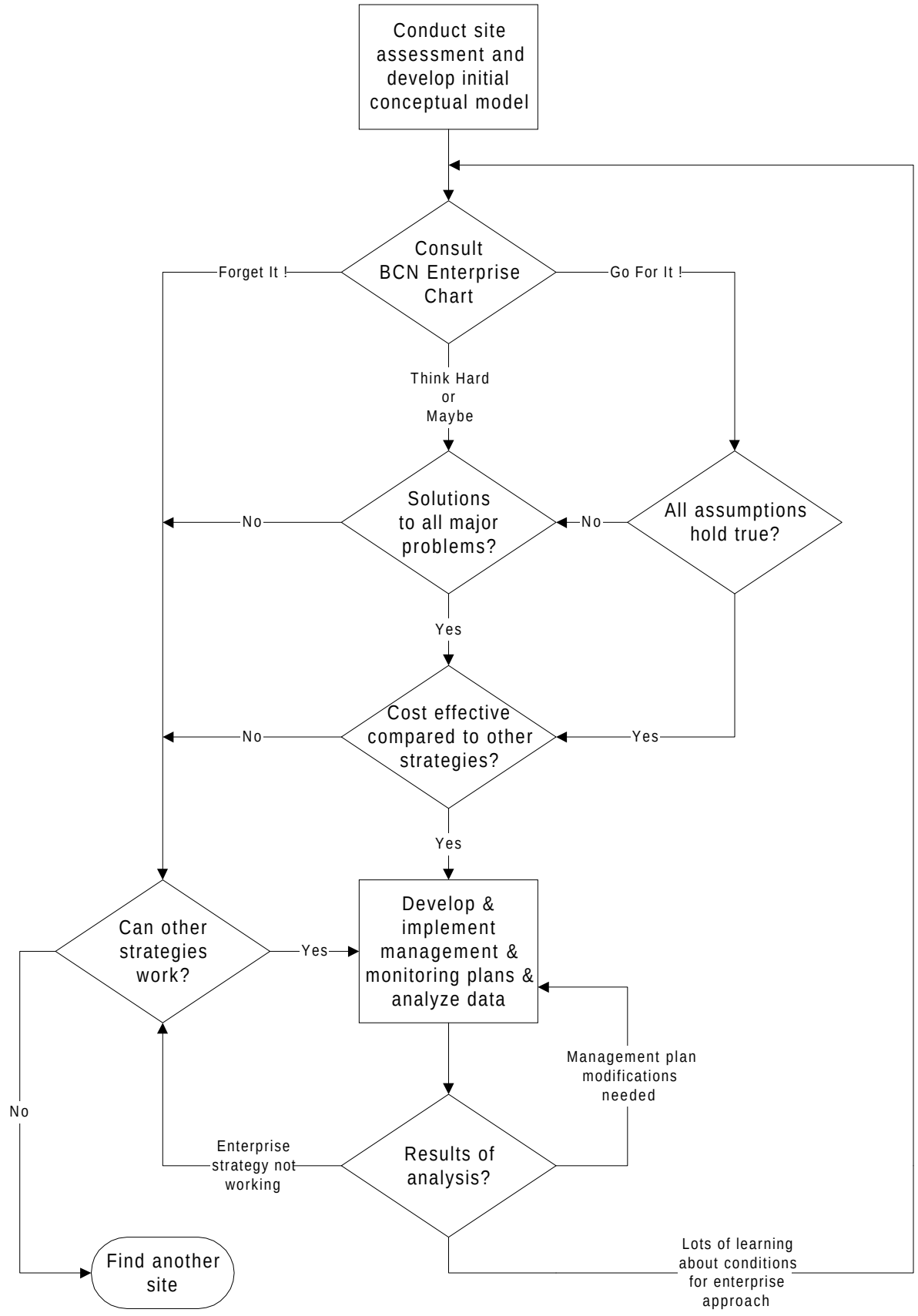
If your enterprise passes this initial test, you then have to determine if the enterprise strategy will be cost effective relative to other approaches. If it is, you can now develop management and monitoring plans for your project, and implement them. Once you collect and analyze data, you will be able to see if your assumptions held true. Most likely, you will have to modify your plan over time. If things do not work out, you may have to try another strategy or even consider moving to another more tractable site. Finally, no matter what your outcome is, you will have no doubt learned a great deal about the conditions under which an enterprise strategy does and does not work. By sharing your experiences with others, you will be contributing to our collective understanding about the conditions under which it is possible to use an enterprise strategy to achieve conservation.

The BCN Enterprise Strategy Guide

See Analyses and Principles in Section 3 for an explanation of the conditions.

FACTOR	CONDITIONS AT YOUR SITE				Comment on "Maybe If…" Column
Enterprise					
Potential profitability	< var costs	< fix costs	> fix costs	Costs+profit	…if have management subsidy
Market demand	None	Low	High	Medium	…if overharvesting can be controlled
Infrastructure	Poor	Marginal	Okay	Good	…if low weight, high value product
Local enterprise skills	None	Few	Some	Lots	…if people can be hired and trained
Complexity	Extreme	High	Medium	Low	…if sufficient support is available
Linkage	None	Low	Medium	High	…if community perceives linkage
Benefits					
Cash benefits	None	Few	High	Moderate	…if they do not cause conflict
Non-cash benefits	None	Few	Some	High	…if they are meaningful to community
Timing	Long wait	Unknown	Short	Immediate	…if at least some initial quick benefits
Distribution	Very wide	Elites only	Limited	Targeted	…if to resource use decision-makers
Stakeholder					
Stakeholder group	Not present	Very new	Present	Established	…if groups shows interest
Leadership	None	Weak	Strong	Balanced	…if leader is respected by people
Resource access	None	Ill-defined	Some	Full	…if not clear how important
Enforceability	None	Limited	Some	Strong	…if community can defend their rights
Stakeholder homog	Low	Minimal	Moderate	Complete	…if can compartmentalize businesses
Conflict	Constant	Frequent	Occasional	Rare	…if enterprise/project not involved
Threat source	All internal	Most internl	Most extern	All external	…if external threat pays cash
Other					
Chaos	Constant	Frequent	Some	Unlikely	…if you roll with it
Project alliance	Unwieldy	None	Strategic	Experienced	…if alliance has complementary skills
IMPLICATION	**Forget It !**	**Think Hard**	**Maybe If…**	**Go For It !**	

The BCN Enterprise Strategy Decision Chart
See text for details.



6. Next Steps Along the Path

The analyses and conclusions in this report mark the end of a long journey. But like most ends, they can also be viewed as the beginnings of new journeys. Although the BCN program ends in September 1999, most of the projects in the Network have found new sources of funding and will continue with their work. Similarly, all of the individuals who have been involved with this program will continue on – many of us with the same projects, others of us with new projects or other endeavors. We've all made our share of mistakes, learned important lessons, and developed our skills. As a result, we will all hopefully be able to improve our work in the future.

Despite our successes, we should not be too optimistic. While we have been working with mixed results at just twenty local project sites across Asia and the Pacific, huge forces have been reshaping the landscapes of the world. Over the past seven years, vast areas of forest have been cut down, burned, or degraded. Large numbers of coral reefs have been overfished, poisoned, or bombed. Meanwhile, human populations and their demands upon the environment, fueled by ever increasing consumerism, are increasing. We cannot forget that our work with a few thousand stakeholders in remote corners of the world is dwarfed by the collective impact of the billions of people living in cities and rural areas who are going on with their daily lives. We have in effect, been puffing out our cheeks and blowing in the face of a hurricane.

Thinking about our work in this context, it's easy to despair. And yet, at the same time, it's hard not to have hope. Our experiences have convinced us that if we are collectively going to solve the problems facing us, that we are starting to find the right path. In particular, we have become convinced that conservation will only succeed if we can help practitioners:

1. Define conservation and objectively measure their success in moving toward it;
2. Discover and refine guiding principles for using enterprise-based and other strategies for conservation;
3. Use adaptive management to make their own maps of the landscape and capture the knowledge they have gained in learning institutions.

Our next steps will involve continuing to develop each of these ideas, building on the work that BCN has done to date. As our journey continues, we hope we will meet you again along the way.

Selected BCN Publications

The following list includes key BCN-related publications and documents, many of which are available from the Biodiversity Support Program. Many of these items are also available on-line at www.BCNet.org.

Baron, Nancy (1998) Keeping Watch: Experiences from the Field in Community-Based Monitoring. *Lessons from the Field*, Issue 1. Biodiversity Support Program, Washington, D.C., USA.

BCN (1994) *Annual Report: January 1, 1994 - December 31, 1994*. Biodiversity Support Program, Washington, D.C., USA.

BCN (1995) *Annual Report*. Biodiversity Support Program, Washington, D.C., USA.

BCN (1996) *Annual Report: Stories from the Field and Lessons Learned*. Biodiversity Support Program, Washington, D.C., USA.

BCN (1997) *Annual Report: Getting Down to Business*. Biodiversity Support Program, Washington, D.C., USA.

BCN (1998) *Analytical Framework & Communications Strategy*. Biodiversity Support Program, Washington, D.C., USA.

BCN (1999a) *Evaluating Linkages Between Business, the Environment, and Local Communities: Final Stories from the Field*. Biodiversity Support Program, Washington, D.C., USA.

BCN (1999b) *Patterns in Conservation: Evaluating Linkages between Business, Communities and the Environment*. Biodiversity Support Program, Washington, D.C., USA.

Cordes, Bernd (1999) Doing Business in Borneo. *Lessons from the Field*, Issue BCN-2. Biodiversity Support Program, Washington, D.C., USA.

Hochman, Cheryl, Richard Margoluis, Katrina Brandon, and Nick Salafsky (1999) Institutional Arrangements for Conservation: The Role of NGOs. Biodiversity Support Program, Washington, D.C., USA.

Johnson, Arlyne (1999) Measuring Our Success: One Team's Experience in Monitoring the Crater Mountain Wildlife Management Area Project in Papua New Guinea. *Lessons from the Field*, Issue BCN-3. Biodiversity Support Program, Washington, D.C., USA.

Mahonti, Sengo et al. (1999) What's at Stake? A Study of Stakeholder Organizations in Conservation and Development Projects. Biodiversity Support Program, Washington, D.C., USA.

Margoluis, Richard and Nick Salafsky (1998) *Measures of Success: Designing, Managing, and Monitoring Conservation and Development Projects*. Island Press, Washington, D.C., USA.

Peters, Charles M. (1994) *Sustainable Harvest of Non-Timber Plant Resources in Tropical Moist Forest: An Ecological Primer*. Biodiversity Support Program, Washington, D.C., 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, Kimbe, West New Britain, Papua New Guinea.

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, N.Y., USA.

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

Salafsky, Nick, Bernd Cordes, Mark Leighton, Max Henderson, Wesley Watt, and Ronald Cherry (1997) Chainsaws as a Tool for Conservation? A Comparison of Community-Based Timber Production Enterprises in Papua New Guinea and Indonesia. *Rural Development Forestry Network* Paper 22b.

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, D.C., 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, D.C., USA.

Wollenberg, Eva and Andrew Ingles, eds. (1998) *Incomes from the Forest: Methods for the Development and Conservation of Forest Products for Local Communities*. 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, D.C., USA.

About the Biodiversity Support Program (BSP)

The Biodiversity Support Program (BSP) is a consortium of World Wildlife Fund, The Nature Conservancy, and World Resources Institute. BSP is funded by the United States Agency for International Development.

BSP's mission is to promote conservation of the world's biological diversity and to maximize the impact of the United States government's 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.

About the Biodiversity Conservation Network (BCN)

The Biodiversity Conservation Network (BCN) is a part of BSP. BCN was designed to address a commonly held idea that, if local people can benefit from using their forests and reefs, then they will take action to conserve and sustainably use them. This enterprise-based conservation strategy sounded good in theory, but would it actually work in practice?

BCN tested this enterprise strategy by doing it. Local communities and partner NGOs set up businesses – like ecotourism or forest product harvesting – that directly depend on the biodiversity of specific sites. These communities and NGOs then tracked the businesses' financial viability as well as their environmental and socioeconomic impacts. By funding and working with twenty such projects across Asia and the Pacific, BCN tried to learn under what conditions this strategy works – and under what conditions it does not.