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The Biodiversity Support Program's

Biodiversity Conservation Network

Evaluating an Enterprise-Oriented Approach to Community-Based Conservation in the Asia/Pacific Region

Fiscal Year 1998 Technical Report

1 October 1997 - 30 September 1998

Cooperative Agreement Number AEP-A-00-92-00043-00

The Biodiversity Conservation Network is administered by the Biodiversity Support Program (BSP), which is implemented by a consortium of World Wildlife Fund The Nature Conservancy, and World Resources Institute BCN is funded by the United States-Asia Environmental Partnership (US-AEP) which is led by the United States Agency for International Development (USAID) BCN is managed by USAID's Center for the Environment in the Bureau for Global Programs, Field Support, and Research

BCN PROGRAM DESCRIPTION – OCTOBER 1998

Background In the early 1990s staff at the Biodiversity Support Program and their USAID colleagues identified three factors affecting biodiversity conservation efforts First was the observation that many integrated conservation and development projects being implemented in areas of high biodiversity were not likely to succeed because they lacked a link between some of the economic activities proposed and the need to conserve biodiversity Second, was the increased interest in consumer markets for "rainforest products ' The presumption was if products from biologically diverse areas had a recognized value in the marketplace, people living in and around the ecosystems would conserve biodiversity in order to capture some of these economic benefits over the long-term Finally, it was observed that even though many projects promoting economic activities in areas of high biodiversity claimed to be sustainable, no one was certain of what the long-term biological social, or economic impacts of these projects were on the biodiversity of an area and the local and indigenous people living and working there An opportunity to evaluate enterprise-based approaches to address these issues was presented by the creation of the United States-Asia Environmental Partnership (US-AEP) program As a result, the Biodiversity Conservation Network for the Asia and Pacific Regions was initiated

Program Overview The Biodiversity Conservation Network (BCN) was established to 1) support site-specific efforts to conserve biodiversity at a number of sites across Asia and the Pacific and 2) evaluate the effectiveness of enterprise-oriented approaches to community-based biodiversity conservation To achieve these goals BCN brings together organizations in Asia, the Pacific and the United States in active partnerships with local and indigenous communities The Network provides grants for projects that encourage the development of enterprises that are dependent on sustained conservation of local biodiversity Projects supported by BCN grants must monitor the social, economic, and biological impacts of this enterprise oriented approach to community-based conservation A key outcome of BCN s efforts in addition to supporting site-specific conservation programs will be providing information to policy makers the donor community and environmental and development organizations about the conditions under which these enterprise-based approaches can contribute to biodiversity conservation

Approach BCN awarded two types of grants through a rigorous, competitive process Planning Grants and Implementation Grants The Planning Grants – in essence feasibility study funds – were awarded up until April 1994 to offset the costs of project design Three-year Implementation Grants were awarded to those groups whose projects met BCN s requirements for potential enterprise viability and the development of monitoring plans to assess the biological social and economic impacts of the enterprises

Organization and Funding Biodiversity Conservation Network is a 20-million dollar 6 5-year program initiated in late 1992 with funding from the US-AEP which is led by the United States Agency for International Development (USAID) under cooperative agreement number AEP A-00-92 00043-00 The BCN is a USAID attribution to the Global Environmental Facility (GEF) The program is part of the Biodiversity Support Program (BSP), which is implemented by a consortium of World Wildlife Fund The Nature Conservancy, and World Resources Institute BSP works to conserve biological diversity in developing countries by supporting innovative, on-the-ground projects that integrate conservation with social and economic development research and analysis of conservation and development techniques and information exchange and outreach

US-AEP is a coalition of Asia/Pacific and American businesses community groups and governmental institutions The coalition enhances environmental protection and promotes sustainable development in Asia and the Pacific by mobilizing U S environmental technology, expertise and financial resources US-AEP is supported by a USAID program under the guidance of the inter-agency Trade Promotion Coordinating Committee USAID's Center for the Environment in the Bureau for Global Programs Field Support, and Research now has management responsibility for BCN

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The Biodiversity Support Program's

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1 INTRODUCTION

This report outlines BCN's accomplishments for Fiscal Year 1998 and updates our plans for the remainder of the program A complete technical report detailing the results of the BCN program will be produced in April 1999 The purpose of this report is to

1 Review BCN's goals, objectives, and activities discussing the achievements in FY 1998 and updating the plans presented in BCN's Close-Out Workplan associated with each BCN objective (Section 2),

2 Review BCN's financial status (Section 3), and

3 Summarize BCN's results in 1998 by USAID indicators (Appendix A)

In pursuit of its two programmatic goals, BCN has in previous workplans deve ɔped five specific objectives that are linked to the five components of the BCN Program (Figure 1) In the first two years, BCN staff focused on developing an institutional structure (Component A) and selecting a balanced portfolio of projects (Component B) and then in our third year, on assisting in implementing high quality projects (Component C) In the fourth year work continued primarily on Component C and began to focus on conducting analyses of data (Component D) In FY98, we began to wrap up the overall program, focusing in particular on Component D and on communicating results to decision-makers and other practitioners (Component E) In addition to these five sequential objectives, BCN has two cross-cutting objectives that lead to a series of activities taking place across all five components of the program These two cross-cutting components are skills development and partnership building

To plan for our Analytical and Communication work, we developed the *BCN Analytical Framework & Communications Strategy* This framework was submitted to USAID along with our close-out workplan in April 1998 BCN is in the process of updating this framework in conjunction with our ongoing analyses The final analytical results will be presented to USAID by April 1999 along with the final BCN technical report BCN recently requested and received a no-cost extension from USAID that will extend the final close-out date through September, 1999 However most activities will be completed by the original March 1999 project end date Major priorities between now and March 1999 include

(1) Completing data collection and analyses to determine the conditions under which an enterprise-based approach to conservation can be effective

(2) Assisting project partners in finding where appropriate and if requested follow-on funding for their activities

(3) Assisting project partners in developing close-out workplans and developing strategies for their transition away from BCN funding

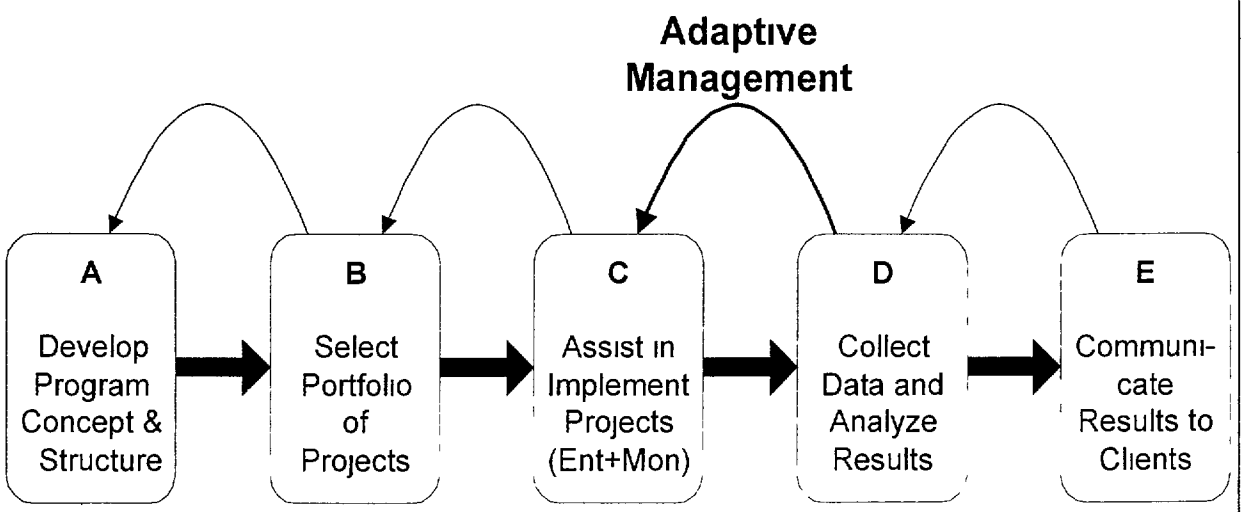
The three major priorities for the extension period will be

(1) Enabling those grantees who have not completed their project activities to finish

(2) Disseminating the results of BCN's analyses widely to other partners, donors, practitioners, et al , through publications, case studies, seminars and mass media

(3) Closing-out the overall BCN program in terms of both its finances and the Cooperative Agreement obligations

FIGURE 1
Overview of the BCN Program Components



Note The above diagram focuses exclusively on BCN s staff's activities The communities and groups implementing the projects in the BCN portfolio are concurrently addressing the similar issues as they design and implement their projects

2 DISCUSSION OF ACTIVITIES BY OBJECTIVE

In the following sections, for each of BCN s Objectives (which are drawn from BCN's original workplans and updated each year) we discuss 1) activities during FY98 including those items that were not anticipated in last year's workplan and 2) activities that will be accomplished during the remainder of the BCN program

OBJECTIVE A Institutional Structure

A competitive grants program is established to meet the evolving needs of BCN s primary clients

1998 Activities In 1998, BCN refined a new management structure that was developed following the departure of the previous Director in December 1997 BCN adjusted its staffing structure to adapt to its changing needs including the need to develop analytical capacity Key highlights include

(1) *Implementation of New Institutional and Managerial Structure* – Major steps in developing the new management structure included

(a) Developing and implementing a management structure encompassing the new Director in Manila, and Senior Program staff in Washington DC Jakarta, and Suva
(b) Hiring a Program Officer and a long-term consultant in Washington, DC
(c) Completing the transfer of the analytical framework and database management from Manila to Washington, DC

(2) *Improvement of Field Based Work with Project Partners* – As a result of these changes, BCN field office and Washington DC staff were able to work more closely with field-based partners to ensure that sustainable monitoring systems are in place, useful information is being collected on the projects' impacts and BCN partners are fully engaged in the analytical phase of the program

(3) *Improvement of Analytical Capacity* – As a result of these changes, BCN program staff were able to make major strides in developing and implementing the analytical framework

(4) *Development of a No-Cost Extension Proposal* – As mentioned above, BCN developed a proposal for a limited no-cost extension

1999 Planned Activities In the final year of the program, BCN will complete its program Major activities include

(1) *Close-Out of Staffing and Managerial Structure* – As BCN completes its program, staff will be phased out During this period, it will be of the utmost importance to maintain flexibility to meet both programmatic needs as well as ensuring that staff are able to seamlessly phase into their post-BCN employment In practice this means that several staff members may be on a part-time schedule or that other flexible arrangements will need to be made in consultation with WWF management Specific plans include

(a) Hire a half-time project coordinator in Washington DC to assist with close-out issues
(b) Close India and Fiji field offices by 31 December 1998
(c) Close Manila field office by 31 March 1999
(d) Close Jakarta and Washington DC offices by 30 September 1999

Most grants will be completed by December 1998 Although, a few grants will be extended, all grants will be completed by June 1999 to enable complete close-out in Washington DC

(2) *Development of Future Options* – BCN and other BSP staff will work in 1999 to develop one or more proposals for new programs These proposals will build on the lessons that BCN staff and partners have learned to date about both the goals and process for doing enterprise-based approaches to conservation

OBJECTIVE B Balanced Portfolio of Projects

By January 1997 a balanced portfolio of up to 22 Implementation Grants is created with grants awarded to teams with the highest quality proposals as determined by a competitive and fair process

1998 Activities By January 1997, all Implementation Grants had been awarded The final portfolio consists of 20 projects in 7 countries There are four general enterprise types represented, and the project sites are located in a variety of different terrestrial and marine habitats The grants are also spread among a range of international, national, and local non-governmental institutions often working with various universities, private businesses and other conservation and development entities In 1998, BCN worked with the existing portfolio of projects and enterprises to identify areas where technical assistance was needed, and then provided such assistance Key highlights included

(1) *Many Implementation Grants Extended* – Many of the grants in BCN's portfolio of project came to the originally scheduled end-dates for their projects Those grantees that had not completed their work were evaluated and those that met the criteria were granted no-cost extensions

(2) *Funding for Two Grants Reorganized* – As in previous years, BCN found it necessary to reorganize the funding for a few grants In particular, the grant to the Biological Sciences Club (BScC) in Indonesia, was shifted from BScC to the University of Indonesia owing to management problems at BScC This grant was then ultimately terminated In the Philippines, BCN continued to deal with ongoing management problems with NATRIPAL

1999 Activities BCN staff expect that all project-related contracts and agreements (with the exception of short-term small, technical assistance grants) will be completed by 30 June 1999 To prepare projects for the end of BCN funding, BCN staff will concentrate on five activities

(1) *Complete Restructuring of Implementation Grants* – BCN staff will complete the process of transferring grant arrangements with BScC and NATRIPAL as mentioned above

(2) *Develop Phase-Out Plans for BCN Support* – BCN Program Officers will meet with project teams as part of their regular field work schedule to hold discussions with partners about phase-out plans (e g , technical and financial reporting schedules) and transitions into other programs and activities These discussions will include the possible need for small grants (all of which would end by June 30, 1999) to support transitions to other long-term sources of funds Finally, the discussions will cover closing the financial aspects of each grant

(3) *Develop Programmatic Plans for the Next Phase of the Projects* – Where requested and appropriate, BCN staff will provide assistance to project teams in designing follow-on activities to ensure that enterprise development and monitoring work can continue to be useful for conservation and people living at the project sites

(4) *Identify Other Potential Sources of Funding* – BCN staff will, if requested by other donor agencies, provide information about BCN-supported activities and work with project partners to help develop, when appropriate relationships with other potential funding sources for future work at the sites

(5) *Enhance Network Relationships* – BCN staff will convene various meetings between project partners to share lessons learned, solidify the 'network" aspect of the project, build relationships and disseminate project results The structure of these meetings will vary – sometimes they will include projects from one country only, sometimes a mix of countries will be represented, others will have government officials present and still others will be with project partners only BCN staff have begun to draw up strategies for these meetings Currently scheduled meetings include South Asia (December 1998), Pacific Countries (January 1999), and Philippines (February 1999)

OBJECTIVE C High Quality Projects

C1 Enterprise *By March 1999 at least 10 enterprises that have been directly involved in the BCN program are operating on at least a break-even basis (without subsidies)*

1998 Activities The BCN staff continued to work with partners to develop the core enterprises In particular, we continued to emphasize to project partners the importance of keeping a proper set of books and adequately accounting for costs as an essential step toward financial viability However, as will be outlined in detail in BCN's final report, developing truly sustainable enterprises is an extremely difficult proposition Many of the BCN enterprises are generating revenues and some are starting to cover key fixed costs However, few are able to meet their "true" overhead costs including the costs of high level management and training that are currently subsidized by BCN funds Key highlights include

(1) *Production Improved* – Many of our partners' enterprises were able to improve their production systems to the point where they can now consistently fill orders for the product being sold (e g , BScC KEF,YDT, UMass/TERI ATI/Nepal)

(2) *Marketing Opportunities Developed* – Several projects were able to diversify their product line and/or make new market connections (e g Harvard YDT, Hualopu) The Makira Eco-Tour was named one of the top ecotours in the world by Conde Nast Traveler magazine

1999 Activities BCN staff will work with project teams to transition from BCN funding Key activities include

(1) *Help Viable Enterprises Develop Long-Term Support* – BCN staff will work with project teams to help those enterprises that seem promising to "stand on their own' and/or develop alternate sources of support

(2) *Encourage Critical Assessment of Non-Viable Enterprises* – Just as importantly, BCN staff will work with project teams to critically assess those enterprises that do not seem viable and discern whether it makes sense to continue them with subsidies

C2 Project Monitoring *By January 1998 at least 15 project sites are collecting sufficient social economic and biological data leading to at least initial conclusions regarding the conditions required for an enterprise-based approach to promote conservation*

1998 Activities Monitoring remained the top priority for BCN in 1998 Most BCN project partners made adequate progress in implementing their monitoring plans As in past years, BCN staff spent considerable time and energy ensuring that all sites had monitoring systems in-place and emphasized throughout the year the need to simplify the monitoring programs while maintaining their effectiveness Highlights include

(1) *Monitoring Programs Enhanced* – BCN staff succeeded in making significant progress in implementing relatively simple and cost-effective monitoring programs There is clear evidence of projects judiciously incorporating indigenous knowledge and practice with scientific methodologies

(2) *Minimum Set of Data Needs Collected* – BCN staff collected the minimum set of data that will be needed from all projects to test the BCN Core Hypothesis This data set is described in the *BCN Analytical Framework*

(3) *Monitoring Techniques Disseminated* – BCN staff acted as facilitators as project partners began sharing their monitoring programs, approaches, and lessons learned with groups outside the Network For example, BCN in conjunction with BSP completed publication of the book *Measures of Success* BCN is now distributing copies of this book to all parts of the conservation and development community

1999 Activities BCN staff will work to complete project monitoring related to collecting the data necessary to test BCN's hypothesis BCN staff will continue to help projects develop monitoring plans and collect the data they need to manage their projects, both during the term of the BCN grant funding and beyond In particular, BCN staff will focus on the following activities

(1) *Complete Collection of the Minimum Set of Data* – BCN staff will work closely with project teams to ensure that all projects have collected at least the minimum data set to assess the efficacy of the enterprise-oriented approach to conservation Furthermore BCN staff will assess where there are data gaps, where quality of the data needs to be improved, and what strategies can be developed to address these shortfalls

(2) *Dissemination of Monitoring Tools* – BSP/BCN will continue to disseminate *Measures of Success*" and will begin disseminating "*Studying the Social Dimensions of Community-Based Conservation* " two publications which reflect many of the lessons BSP/BCN has learned in designing and implementing community-based monitoring programs, and which we hope will represent a positive addition to the existing literature on the topic

OBJECTIVE D High Quality Analyses

Throughout the life of the project meaningful analytical efforts are undertaken in conjunction with Grantees on all important topics identified by BCN staff and Grantees

1998 Activities The primary focus for BCN in 1998 was the implementation of the final overall Analytical Plan which was presented in *BCN Analytical Framework* Highlights in the past year linked to the implementation of this framework include

(1) *Design Meetings Held* – BCN staff held meetings in Washington DC (December 1997 and May 1998) to refine and debate all aspects of the analytical agenda

(2) *Completion of Data Management System* – BCN staff and partners completed the development of a data management system that will accommodate the data collected from the 20 projects as outlined in the *BCN Analytical Framework*

(3) *Data Analyzed* – BCN's core analytical staff met with all program staff to review one-by-one the data from each of the study sites Each Program Officer prepared detailed analytical data documents regarding the conditions at each project Data were then entered into BCN's database systems

1999 Activities During 1999, BCN staff and partners will place its highest priority on completing the analytical work Key areas include

(1) *Completing Data Collection and Cleaning* – BCN's analysis team will fill gaps in the data set and otherwise complete data collection and cleaning

(2) *Completion of Analyses* – BCN staff and partners will complete the analytical studies outlined in the *BCN Analytical Framework* Example of these studies include

(a) Analysis of the conditions under which an enterprise-based approach to conservation works
(b) A look at different forms of community stakeholders and levels of direct project participation and their impact on project implementation and conservation
(c) A comparative analysis of different enterprise types their cost structures, markets and prospects for viability
(d) A report on working with communities to develop technically and culturally appropriate methods and systems for performing biological and socioeconomic monitoring that can be achieved by partners living and working on site

For a more thorough description of the analyses BCN plans to undertake please refer to the *BCN Analytical Framework*

OBJECTIVE E Communication Leading to Impacts on Policy and Practices

By March 1999 at least two cases are documented in (a) each country where BCN has Implementation Grants and (b) in the United States where change in local or national-level conservation practices and/or policies were a direct result of the BCN Program

1998 Activities BCN staff continued to intensify communication efforts This was for example done through

(1) *Development of the BCNet Web Site* – In response to surveys with project partners that revealed that a growing number of residents in developing countries are coming to rely on the Web for information, BCN developed and implemented the BCNet Web site This site enabled BCN to quickly and efficiently disseminate findings and lessons learned to the public In addition, this enabled BCN to develop an on-line community of people interested in these issues, thus further catalyzing the network concept

(2) *Media Outreach* – BCN staff and partners continued to reach out to various media sources to communicate the results of the projects

(3) *Presenting Lessons Learned to Practitioners and Policy Makers* – BCN staff and project partners participated in various conferences and seminars, which included

(a) Sponsoring a workshop on medicinal plants in India to reach practitioners and policy makers
(b) Producing a publication on community-based timber production with the Rural Development Forestry Network to reach practitioners

(c) Leading a symposium on enterprise-based approaches to conservation at the Annual Society for Conservation Biology Meeting in Sydney, Australia to reach academics
(d) Attending a meeting on community-based resource management at the World Bank in Washington DC to reach donors and international policy makers

1999 Activities BCN will continue to develop different ways of communicating our conservation message, including

(1) *Dissemination of Results in Appropriate Media* – As outlined in the *BCN Analytical Framework* BCN staff and partners will work hard to distribute the results of our analytical efforts in the appropriate media and fora

(2) *Expansion of BCNet Web Site* – BCN Staff will continue to use and expand the BCN World Wide Web site, to which all BCN staff and project partners will contribute In particular, BCN staff will work to develop a proactive presence on the Web

(3) *Development of Final Workshops* – BCN and its partners will work to develop workshops that will conclude the initial phase of the program Workshops will be tailored to meet the specific needs of each country As a rule, however, they will be divided into two phases In the first phase BCN grantees will present detailed and technical summaries of what they have learned These presentations will be made to each other and to other interested parties During the second phase, grantees will present broader overviews of the lessons learned from the program experience These presentations will be made to a broader audience that will hopefully include key decision makers from the government and other relevant organizations, and thus contribute to policy development in the area of enterprise-based approaches to conservation A similar workshop is planned to be held in Washington DC during March, 1999

CROSS-CUTTING OBJECTIVE X1 Skills Development

Throughout the life of their projects BCN Grantees develop and improve the skills necessary to enhance the quality of their projects (examples of such skills include proposal writing financial management marketing social monitoring and analysis and communication of results)

1998 Activities BCN staff and grantees identified the following skills as critical for BCN project implementation monitoring and evaluation design and implementation, enterprise management (especially cost accounting), financial reporting, and communication of accomplishments As in past years, during 1998, BCN staff and partners worked together, both formally and informally, to build these skills

1999 Activities In 1999, the focus on skills building will principally involve the capture of progress made in grantee skills development to date and transitioning to other sources of input

CROSS-CUTTING OBJECTIVE X2 Partnerships

Throughout the life of their projects BCN Grantees develop and maintain the partnerships with each other and with other organizations that are necessary to enhance the quality of their projects and conservation

1998 Activities Key partnerships developed during 1998 were those which assisted individual enterprises in getting products marketed or, in the case of tourism, attracted increased numbers of visitors, enabled projects to strengthen their monitoring and evaluation programs and facilitate the communication of what BCN is trying to do at individual sites

1999 Activities As mentioned earlier, BCN staff hope to provide more meaning to the "network" aspect of BCN's program Examples include

(a) Placing increased attention on developing an on-line community on the BCNet World Wide Web site, and devising a strategy for the site to continue after BCN funding ends
(b) Coordinating meetings at the regional or national levels to compile BCN-supported projects together to share lessons learned, disseminate the work that they have accomplished over the past three years, and devise strategies to collaborate in the future on common goals and agendas
(c) Assist project partners in linking up with other funding sources by providing opportunities for them to present their work to wider audiences

3 FINANCIAL INFORMATION

BUDGET ITEM	AUTHORIZED AMOUNT [1]	DISBURSEMENTS FY 1993 10/92-9/93	FY 1994 10/93-9/94	FY 1995 10/94-9/95	FY 1996 10/95-9/96	FY 1997 [2] 10/96-9/97	FY 1998 10/97-9/98	TOTAL DISBURSEMENTS TO DATE [2]
Salaries/Benefits	2 116,079	112 607	530 117	574 955	570 245	624 148	547 481	2 959,553
WWF Indirect Costs	1,464 633	84 821	350 808	346,788	303 561	294,190	247,306	1,627 474
Travel & Per Diem	620 542	3 841	127 650	134 437	106,937	122 804	81 262	576 931
Other Direct Costs	862 634	62 066	153 114	266 294	197 839	181 806	240,120	1 103,239
T/A Advisory Groups	1 798 612	309	140 153	70 610	177 387	91,078	133 029	612 566
Sub-agreements	13,137 500	19 660	1 127 768	1 867 211	2 828 660	2 339 444	1 986 197	10,168 940
TOTAL	20 000 000	283 304	2 429 610	3 260 295	4,184,629	3 653,470	3 235 395	17,048 703

Notes

[1] BCN has submitted a revised budget to USAID and is awaiting approval

[2] Line item expenses for FY97 and Total Disbursements To Date vary slightly from official financial reports due to location of small grant expenses in accounting system

[3] Financial Status Report dated October 30 1998 $1 537 240 Federal share of unliquidated obligations have not been expensed

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APPENDIX A BCN Performance Monitoring Indicators

The following pages contain highlights of the FY1998 results for the USAID Performance Indicators for the Biodiversity Conservation Network (BCN) The quantitative results reported here and selected project highlights are also given in the Biodiversity Support Program (BSP) Final Indicators Report We have included in this separate report some additional highlights and explanatory notes For example in the last section we have included examples of cases where we have catalyzed the replication of a particular approach or policy that facilitates conservation Although this last category is not part of the formal framework we believe that documenting how USAID's investments are having a catalytic effect on conservation initiatives is important

Biodiversity Support Program

WWF

The Nature Conservancy

A U S A I D funded consortium of World Wildlife Fund The Nature Conservancy and World Resources Institute

MEMORANDUM

To Jerry Bisson, USAID
From BCN Washington Office
CC Kathy Saterson, BSP
Vance Russell, BSP
Ganesan Balachander, BCN Manila
Bernd Cordes, BCN Jakarta
Date November 11th, 1998
Subject BCN 1998 Indicators Report

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This memo outlines the FY1998 results for the USAID Performance Indicators for the Biodiversity Conservation Network (BCN) The quantitative results reported here and selected project highlights will also be given in the Biodiversity Support Program (BSP) Final Indicators Report We have included in this separate report some additional highlights and explanatory notes

Please note that although we have calculated our planned indicators for FY99 for those sites that will continue under the proposed BCN no-cost extension, we have not included them in this report

SO-1

Strategic Objective Effective biodiversity conservation and management
Indicator 1 Area of biologically important habitat under effective management
Unit of measure Number of sites (N) and hectares (ha) under effective management
Sources Field visits, reports, and evaluations

(*cumulative*)	**FY98 Planned**	**FY98 Actual**
Number of sites (N)	28	26
Area in hectares (ha)	465,931	374,762 5

The decrease from the 1998 projection is in large part due to changes in the way that we define and

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measure the various sites For example several sites have been combined based on our improved understanding of the site obtained through our analytical efforts In addition the area of a number of sites has been changed due to our refined understanding of local conditions

Effective management and monitoring in Garhwal, India
The project team for the silk and honey project in Garhwal, northern India, have demonstrated adaptive management in FY98 Project activities have been well established in 14 villages of the Akash Kamini Valley The project has made major progress in revitalizing the traditional resource management bodies in the area including in particular, the *Van Panchayats* and the *Mahila Mangal Dals* These institutions have begun managing some areas of the forest that they have been given control over The project staff report that local community members chased away migrants to the area who were hoping to graze their livestock in the forests In addition, there are now volunteer guards who are patrolling the forest areas (Data Text Document, 1998) Through the efforts of a biological research team led by Dr S P Singh of Kumaun University, the project has also been able to identify overgrazing of seedlings as a major threat to the long-term survival of the forest Dr Singh and his team are implementing a monitoring regime to document the extent of the problem These data are being shared with the local community forest management institutions (Singh 1998)

Adaptive management in Lore Lindu National Park
As the BCN-funded honey hunting enterprise started generating enough revenue, more and more untrained and less environmentally responsible farmers were going into the forest to gather the honey To deal with this issue, TNC-IP, the communities, and local Indonesian Park officials worked together to devise a system whereby 'passes" or identification cards are given to 'accredited" honey hunters so that they can legally enter the Park, collect honey, and more sustainably manage the resource than would otherwise have been the case if open access continued This is a specific example where information from the project was used to make changes in resource use In addition, this permitting process has already been agreed to in principle for another site (coffee plantations in the Park), and may also be applied to rattan harvesting from the Park in the future (Source SCB98 from the 1998 Data text document)

The general feeling on the project is that the honey hunters are further along in managing their own enterprise than at any other site in this project The project team writes "The most successful enterprise has been the honey hunting, yet this has required the least management input Here, the community had an existing activity, which was turned into a group enterprise by the simple expedient of lending the group a revolving cash fund" (SCB Paper 1998) The most promising development is the formation of a honey hunters' group in Watutau, and the provision of a Rp 800,000 loan [to be repaid after July 1998] to establish a revolving purchase fund for honey in the village Honey hunters identified immediate cash needs as the reason they sold honey in the village at low prices [Rp2,000/bottle] rather than to wait to collect sufficient quantities to transport to Palu where it can be sold for twice the price The revolving fund allows the group to buy honey directly in the village and collect sufficient quantity to defray transport costs and still earn greater profit If successful, the same model will be used in other honey hunting villages such as Winawanga in the northern Napu Valley" (TR3, and Neville 1998 as cited in the 1998 Data text document)

SO-2

Strategic Objective Effective Biodiversity Conservation and Management
Indicator 2 Documented improvements in biodiversity conservation as a result of strengthened policies or improved policy implementation
Unit of measure Number of policy successes

(*annual*)	FY98 Planned	FY98 Actual	FY99 Planned
Number of policy successes	15	14 (28 + 14 = 42 cumulative)	5 (42 + 5 = 47 cumulative)

We still believe that this indicator should be considered cumulative as the policies are in place until removed and they have the potential to impact conservation over an indefinite period of time The number of incremental policies for the BCN in 1998 was 14 and the projected increment for 1999 is 5

Enforcement of destructive fishing bans in Padaido Islands

Last year, BCN reported how bans placed on the use of small-mesh gill net, sodium cyanide, and dynamite fishing techniques within the Padaido Islands project site area resulted in coral reef conservation During its 1998 site visit, BCN learned that this policy has evolved from a local decree to an enforced, *de facto* regulation BCN staff spoke with two community leaders from the villages of Saba and Pasi/Dauwi who provided vivid descriptions of consistent, local policing actions taken throughout the project waters and community meetings, and how the status quo is shifting within these communities to allow for enforcement of the fishing bans with local authorities once a violation has been documented Enforcement of a local decree is not an easy task in Indonesia, as the government officially has little recognition of such regulations However the project and participating communities have successfully captured enough local support both on site and off to effectively ensure that destructive fishing bans are being observed and enforced (BCN 1998 Site Visit Notes)

Community laws in the Crater Mountain Wildlife Management Area in Papua New Guinea

There is extensive documentation of the success of the community laws in regulating the enterprise activities and reducing threats to biodiversity This documentation is the result of the community enforcing the rules, adjudicating violations, and making records of this process In FY1998 these policies were continued For example, on December 19, 1997 two Simbu provincial government officials from outside the WMA were found hunting with a shotgun on Haia clan lands near the village of Haia Haia management Committee representatives confiscated the shotgun cartridges and the officials were fined 20 kina for hunting with a shotgun in the WMA which is against the law #6 (RCF Technical Report #4)

SO-3

Strategic Objective Effective biodiversity conservation and management
Indicator 1 Area of biologically important habitat under improved management
Unit of measure Number of sites (N) and hectares (ha) under improved management
Sources Field visits, reports and evaluations

(*cumulative*)	**FY98 Planned**	**FY98 Actual**
Number of sites (N)	NA	29
Area in hectares (ha)	NA	334754 4

See examples for IR4-1 below

IR2-1

Intermediate Result 2 Strengthened national and local policies and/or improved policy implementation to support biodiversity conservation
Indicator 1 Index of policy results
Unit of measure Policy Index

(*cumulative*)	FY98 Planned	FY98 Actual	FY99 Planned
Policy index	298	344	360

Note The policy index is calculated for each project by awarding 1 point for each of the following steps in each policy initiative policy analysis communication and education policies adopted by local regional, or national institutions implementation, and documented conservation as a result of the policy

Philippine projects continue to implement land tenure policies
Several new policies occurred as expected in FY98 The Philippine projects have been very active in gaining legal status for ancestral lands The first major achievement was the completion of CADC Process for Kalahan Education Foundation in Central Luzon The Certificate of Ancetstral Domain Claim (CADC) program in the Philippines enables local communities to gain legal management title over their ancestral lands The BCN-fiunded project was able to complete the CADC process in 1998 They received the certificate that gives them the rights to continue to manage the Kalahan reserve plus an additional 35,000 ha around the reserve As part of this process the community is also developing their own detailed land-use management plan In addition, the project was able to reroute a major highway that was considered a threat to Biodiversity The project helped stop the construction of a major highway through the center of the Kalahan reserve They negotiated an alternative route with the national government A major factor in the discussion was the monitoring information that the project team was able to collect The

documentation of the endangered species present in the reserve helped strengthen the case for relocating the highway (BCN 1998 Site Visit)

Local resource decrees in the forests of Makira
Based on Village Resource Management Planning work conducted by SIDT and CI during 1998, participating communities in the highlands of Makira decided to pass a series of local resource use decrees during 1998 Key among these local decrees is the instatement of bird hunting rules both for sport and for subsistence expanded this year from an initial set of rules on fruit pigeon hunting to include other regulations over many of the avifauna which make Makira so biologically distinct In addition, highlands community members have banned the use of DDT in their rivers as a fishing technique to harvest freshwater eels and other aquatic organisms as a result of awareness of the negative environmental and health impacts such practices can result in (BCN 1998 Site Visit)

IR4-1

Intermediate Result 4 Improved management of globally and locally significant biodiversity sites
Indicator 1 Index of site management benchmarks
Unit of measure Site management index

(*cumulative*)	FY98 Planned	FY98 Actual	FY Planned
Site mgmt index	259	288	291

The effect of management at the site level in Nepal
A regional workshop on 'Collaborative Management of Protected Areas in the Asia Region was held at the Nepal Conservation Research and Training Center (NCRTC) in Chitwan, May 25–28 1998, attended and addressed by the Royal Prince Gyanendra Bir Bikram Shah A summary of the workshop illustrates the valued role the project site is playing in developing a strong conservation approach in the region

> Recalling the history of the King Mahendra Trust for Nature Conservation His Royal Highness said that the venue of the workshop, KMTNC/NCRTC had been witness to the changing needs of conservation over the last decade and a half Originally, the focus was on hard science and species related research activities Learning through experience that contemporary conservation is no more related to species biology [than social issues], KMTNC embarked on a process of collaborative management primarily in the Annapurna Conservation Area Project, and also pioneered a community approach towards conservation as exemplified by the Baghmara and Kumrose community forestry programs in the buffer zone of the Royal Chitwan National Park (KMTNC 1998)

Management hurdles in Lakekamu, Papua New Guinea
Although in most cases the BCN-funded projects have made progress, in a few cases the projects actually moved backwards in terms of the indicator benchmarks For example, the Lakekamu Basin project in PNG (#16) essentially found that they had to start the entire adaptive management process over from scratch In the words of the project team in their 1998 Story from the Field

> Our own experiences show that the ICAD concept is one of the complex approaches to conservation and development And 1998 has been tough for the Lakekamu Basin both in terms of finance and community support Due to the halt in project funds not much project activity was carried out as planned 100% commitment from project staff and FPCD was obvious but there is a lack of meaningful community support and participation We recommended a new or revised strategic plan given the current situation on the ground (FPCD Story from the Field Version 23 October 1998)

As a result we had to subtract the "design management activities' benchmark from the 1997 score

Biodiversity
Conservation
Network

Narrative Report for 1998 Indicators

Version 11 November 1998

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Summary of Sites

Table 1 Site breakdown for the cumulative SO-1 reported by BCN
Note that the total hectares possible at each site is based on the current site definitions being tracked by BCN as part of the analytical efforts These numbers may differ (in some cases substantially) from the numbers reported in 1997 For the most part, this is a function of our improved understanding of what land should and should not be defined as part of the site

BCN SITES	SO-1 (ha)
1 1 Karnali	13,452
2 1 RCNP	713
2 2 Baghmara	496
2 3 Kumrose	93,200
3 1 Akash Kamini	1650
4 1 Yuksam	9600
5 1 BR Hills	11 000
6 1 Lewijamang	2,000
6 2 Citalahab	2,000
6 3 Ciptarasa	2,000
8 1 PFMA	20,000
9 1 Napu	11,000
9 3 Bada	11,000
10 1 Arfak	21,930
11 1 Saba	100
11 3 Pasi/Dauwi	650
12 1 Bendum	2926 5
14 1 Kalahan	14 730
15 1 Herowana	21 000
15 2 Haia	59,860
15 3 Maimafu	25 600
17 4 Mu	1,920
18 1, 2, 3 Arnavon	2,235
19 1 Warihito/W	4,500
19 2 Hauta	40,000
20 1 Verata	1,200
Totals	374,762 5

Table of Maps to Accompany Narratives

All maps listed below were sent in May 1998 to USAID Please refer to those maps

Country	Lead Organization	Names of Maps
Nepal	Appropriate Technology International	So Asia - Showing Nepal, Nepal - Showing Project Area Map of the Community Based Ecosystem Management Project, Humla Nepal **(Large)**
	King Mahendra Trust for Nature Conservation	KMTNC-NCRTC-Operational Sites for Community Programmes Map 2 Park Drainage Map 3 Soil vs Forest Type
India	Appropriate Technology International	Garhwal, Himalaya-project area Akashkamini catchment-land use Akashkamini Watershed-key map Akashkamini Watershed-forest types
	The Mountain Institute	Map 1 Sikkim, showing trail routes, national parks, sancturies Map 2 Sketch map of Yuksom-Dzongri Trail Yuksam & Dzongri (USAID map) Welcome to Yuksam brochure printed by Tibetan Refugee Self Help Centre, Darjeeling-above map included in brochure
	U of Massachusetts at Boston	Biligiri Rangaswamy Temple Sanctuary, Karnataka
Indonesia	Biological Science Club / GHNP	Trail Map South Halimun Long Trail Map Gunung Halimun NP Trail Map East Halimun Trail Map North Halimun Gambar 1 Jalur wisata di Ciptarasa-Pangguyangan, Halimun Selatan Gambar 2 Jalur wisata di Citalahap-Cikaniki, Halimun Timur Gambar 3 Jalur wisata ke curug goong dan curug Piit, Halimun Timur Gambar 4 Jalur Wisata di Leuwijamang, Halimun Utara

Country	Lead Organization	Names of Maps
		Taman Nasional Gunung Halimun **(Large)**
Indonesia - Continued	Harvard University Laboratory of Tropical Forest Ecology	Map 1 Project Site within West Kalimantan Map 2 Land Use Classification Near Proposed Community Forest Area Map 3 Project Site and Location of Dusun included in Project Map 4 Sample sitew w/in the Proposed Timber Management Area Map 5 Plan for annual timber harvest
	Yayasan Dian Tama	PETA SITUASI-Areal Kerja Proyek/SEDP/PPHK Wilayah Model PHKP Kabupaten Dati II Sanggau Propinsi Dati I Kalimantan Barat **(Large)**
	World Wide Fund for Nature Indonesia Programme	Location of Villages in the Arfak Mountain Region Arfak - Boundary Location and Status on September 1989
	Hualopu Foundation\ Rumsram	Figure 1 Padaido Is sites of Eastern Biak Island Figure 2 Saba Village, Beach & sampling sites Figure 3 surveyed live coral cover - P Wundi Figure 4 Reef Crest - Dawi
	The Nature Conservancy	Lore Lindu National Park Central Sulawesi Indonesia – Vegetation and Land Cover Map Based on Landsat TM Image 1996
Philippines	Manila Observatory\ Environmental Research Division	Pantaron Range Mindanao-Forest Cover Sitio Bendum, Mahayag and Tawan-Tawan Land use Map Bendum, Tawan-Tawan and Mahayag Topographic Map
	Nagkakaisang mga Tribu ng Palawan	Map Showing BCN Project Areas - Figure 1 with inset
	Kalahan Educational Foundation	Site location map (no title-pink color) **(Large)** Vegetative Cover-1997 **(Large)** Vegetative cover-1994 **(Large)**
Papua New Guinea	Research and Conservation Foundation	Crater Mountain - Karimui - Goroka Topographic Survey **(Large)**

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Country	Lead Organization	Names of Maps
	Pacific Heritage Foundation	Papua New Guinea-Topographic Survey (Oxford Map 9387) **(Large)**
Solomon Islands	The Nature Conservancy	Conservation area boundary
	Conservation International	Map of Provinces (see Makira) Central Makira - Bauro Highlands
Fiji	University of the South Pacific	Verata Conservation Areas as Drawn by Ratu Pio Radikedike (1 free hand & 2 w/ dark line)
Asia - Regional	Terrestrial Ecoregions of the Indo-Pacific **(Large)**	
World wide	Global 200 Ecoregions **(Large)**	

BCN Site 1 1 Humla District

A General Information

Site Name	1 1 Humla District
Province/State	Humla District
Country	Nepal
Institutional Partners	Appropriate Technology International (ATI) Asian Network for Small Scale Agricultural Resources (ANSAB) Humla Conservation and Development Association (HCDA)

Biome	37 W Himalayan alpine shrub/meadow
Area Under Effective Management (ha)	13,452 ha
Total Project Area (ha)	52,000 ha (last year site reported as 43,000 ha, change occurred as a result of improvements in delineation accuracy attained by project during 1998)

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

The project site consists of 22 villages in eight Village Development Committees of the Chuwa and Humla Karnali river watersheds in northwestern Nepal, covering an area of approximately 863 km^2 This area consists of nearly 30% of forested lands and roughly the same percentage in grasslands and shrublands combined (Subedi 1998) Hence, the area of biodiversity being protected at this site is 60% of 86,300 hectares, roughly equivalent to 52,000 ha

The biotic communities within the Humla District are defined by an altitudinal gradient, ranging from subtropical vegetation in the valleys (1800 m) to arid vegetation and alpine pastures at higher elevations (6500 m) (Subedi 1998, ATI 1994) Biological significance of the site is a function of its geographic location

> The [Humla] region lies within the transition zone dividing the Western Himalaya (Holarctic biogeographic zone) from the Eastern Himalaya (Oriental biogeographic zone) This location (distance from markets, inaccessibility, and the unusual confluence of geologic, climatic and biological factors) and the area s geographic isolation create a region of high floral diversity, with distinctive vegetation as well as a high degree of endemism including many valuable medicinal and aromatic plants
>
> The area is not only rich in species biodiversity but also represents a broad range of habitat types The area also inhabits a number of wild fauna including the following eight protected and endangered species snow leopard (*Panthera uncia*) clouded leopard (*Neofelis nebulosa*) musk deer (*Moschus moschiferous*), wolf (*Canis lupus*), leopard cat (*Felis bengalensis*), wild yak (*Bos mutus*), as well as impeyan pheasant (*Lophophorus impejanus*) and satyr pheasant (*Tragopan satyra*) (Subedi 1998)

Globally, one of every 8 plant species on earth is in danger of extinction (IUCN 1997) This represents a threat to the world's supply of both existing and yet undiscovered foods and medicines

The Humla District of Nepal is an example of a unique and threatened repository of plants Humla lies between two distinct botanical regions, the Western and Eastern Himalayas The valley is home to at least 70 species of wild plants that have been traditionally used in the household (ATI 1994, Subedi 1998) Some of these are being exploited commercially and may be over harvested

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information Reported

Since the inception of the 'jatamansi' (*Nardostachys grandiflora* an herbaceous plant with roots used as an incense ingredient) collecting groups, the wild herbs of the project area are no longer an open resource threatened with overexploitation Instead, because the commercial herbs are being collected at the project distillery rather than distant markets, the community groups are able to monitor the volume of plants being harvested and thus control the level of extraction

1998 Update

Resource sustainability continues to improve on site Unlike traditional extractive practices, project enterprise impacts from collecting groups are not always fatal to the host medicinal plant In addition, the adoption of superior harvest techniques has allowed for regeneration and regrowth of host plants, which are perennial (BCN 1998)

During 1997, the 10 Community Forest User Groups (CFUGs) demonstrated conservation of their 5300 ha of forest habitat through their sustainable enterprise practices This year, BCN is pleased to report a 60% increased of effectively managed habitat by project participants as a result of an additional 14 CFUGS encompassing 8200 ha of forest habitat being granted management control from the District Government To date, the total registered hand-over of forest habitat from the district government to the 24 local resource groups has consequently secured approximately 13 500 ha of land, representing over 25% of the total 52,000 ha of site biodiversity under effective management, up from 10% during 1997 (BCN 1998)

Successful maintenance of extractive sustainability within the jatamansi oil enterprise continues on site As a component within the on-goiong project monitoring to track enterprise impacts, broad mapping of project habitats is currently underway with participation from local experts Maps being developed will include information on land use patterns, commerical plant coverage, communtiy forest delineation, and biophysical features, and are designed to be used by both local user groups and district officials to track changes in habitat quality and ecological composition throughout the project's post-BCN future (ATI 1998)

C Adaptive Management

1997 Information Reported

The project team and community continue to generate and analyze data

> Biological monitoring teams completed their inventory and regeneration activities in the Humla project area during the summer of 1997 This included mapping of resources in conjunction with local community members and continued work on the regeneration aspects of the commercially utilized plant species found (BCN 1997)

The local institution in this project the Humla Conservation and Development Association (HCDA) was faced with an unexpected problem in FY97 which required both delicacy and resolve to overcome The leader of one of the villages in the association had convinced the community to supply inferior material to the distillery to increase the volume delivered and thus the payment to the village The challenge was to deal with the village in such a manner as to not alienate them from the project but maintain the standards set forth by the HCDA In the words of the project team

> Humla Oil was faced for the first time with having to make cold, hard business decisions regarding the supply of material Humla Oil decided to explain, once again, the quality of the material that they would buy from Collectors and stick by this criteria even if it meant excluding certain collectors/communities This is the only way they can survive as a viable business into the future (BCN 1997)

1998 Update

Increasing learning and awareness of the destructive impacts from traditional collection practices has led to higher participation from both jatamansi collectors and local residents in their sustainable management of local plant resources Subedi and Bhattarai (1998) report that as a result of the project, local participant learning on site has resulted in changes in extractive behaviors and the possibility of learning replication elsewhere

> The local collectors have realized the destructive nature of their traditional collection practices and have been increasingly convinced that a collection practice better than their own in terms of resource sustainability exists which is closely related with the long-term supply of raw material and increased economic benefits
>
> This realization assisted by adequate orientation and training, has initiated the practice of controlled harvesting together with managed utilization of common property resources This has also resulted in the increased community control over common property resources
>
> A group of trained local manpower in terms of sustainable harvesting practices, value addition procedures management and marketing skills, have been developed They have become efficient as well as the most effective influential local persons capable even to act as motivators and trainers in identical attempts in other parts in the future

Biological monitoring of enterprise impacts by project participants is on-going (BCN 1998)

D References

Appropriate Technology International (ATI) 1994 *Community-Based Ecosystem Management for Humla Nepal An Implementation Grant Preproposal to the Biodiversity Conservation Network* Appropriate Technology International, Washington, DC

Appropriate Technology International (ATI) 1998 *ATI/ANSAB Sixth Technical Report to Biodiversity Conservation Network* Appropriate Technology International, Washington, DC

Biodiversity Conservation Network (BCN) 1997 *Annual Report Getting Down to Business* Biodiversity Support Program, Washington, DC

Biodiversity Conservation Network (BCN) 1998 *Overall Analytical Data Text Document for Humla Nepal* Version October 6 1998 Biodiversity Support Program Washington, DC

The World Conservation Union (IUCN) 1997 *Red List of Threatened Plants* The World Conservation Union Gland, Switzerland As cited in The Washington Post, 4/8/98

Subedi, Bhishma P 1998 *Participatory Utilization and Conservation of Medicinal and Aromatic Plants A Case from Western Nepal Himalaya* Paper presentation at the International Conference on Medicinal Plants, February 16 – 19, 1998, Bangalore, India

Subedi, Bhishma P , and Nirmal K Bhattarai 1998 Community Managed Enterprise Participation of Rural People in Medicinal and Aromatic Plants Conservation and Use Paper presentation at the International Conference on Medicinal Plants, February 16 – 19, 1998, Bangalore, India

E Maps

1 Site Map

See previously submitted site maps to USAID, May 1998

2 Provincial/National Maps

3 Global/Regional Maps

See previously submitted global/regional maps to USAID

The Biodiversity Support Program s Biodiversity Conservation Network (BCN) Planning and Implementation Grants (produced by WWF-US Conservation Science)

Terrestrial Eco-Regions of the Indo-Pacific (produced by WWF-US Conservation Science)

Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 2 1 Royal Chitwan National Park

A General Information

Site Name	2 1 Royal Chitwan National Park
Province/State	Chitwan
Country	Nepal
Institutional Partners	King Mahendra Trust for Nature World Wildlife Fund

Biome	34 Terai-Duar savannas and grasslands
Area Under Effective Management (ha)	93,200 ha
Total Project Area (ha)	93 200 ha

B Environmental Quality

a Significance of the Sites for Biodiversity Conservation

Royal Chitwan National Park (RCNP) is located in the central Terai region of Nepal The 932 square kilometer park encompasses one of the last remaining, large fragments of grasslands and riverine forests that once dominated the Gangetic and Brahmaputra plains The deposition of heavy annual silt loads in alluvial grasslands during monsoon floods recharges nutrient levels and maintains the world's tallest grasslands Some grassland associations are dominated by species that exceed seven meters by the end of the monsoon This habitat complex supports the highest recorded densities of Bengal tigers (*Panthera tigris*) in Asia, the second largest grater one-horned rhinoceros (*Rhinoceros unicornis*) population in the world and over 489 bird species (270 of which nest in the park) The presence of a large charismatic megafauna and dramatic landscapes are what make RCNP the premier destination for ecotourists in Asia (WWF-US 1996)

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information Reported

The successful protection of large animal habitat in RCNP was documented in 1996 and again in 1997

> Successful conservation efforts in the area and the strong presence of the Royal Nepal Army along the border of the RCNP have led to the recovery of rhinoceros populations in the Chitwan Valley The rhinoceros population was reduced to between 60 to 80 individuals in 1988 today there are over 450 rhinoceroses in RCNP and this population is the primary source for translocation populations to other reserves in Asia (WWF US 1996)

The following is an example of on-the-ground conservation in both Baghmara and Kumrose (BCN 1997) The community implemented a policy of plantation patrols to monitor and respond to threats This policy proved to be successful in averting the killing of area rhinos and tigers The project team wrote

> Perhaps the most important achievement of the project is the change in attitude of the local people When poachers, attracted by the increasing numbers of wildlife attempted to kill rhinos by digging pits near Baghmara, the community members not only informed authorities but also filled the pits so that no wildlife would be killed Even when livestock were killed by a tiger in Kumrose the people did not complain because they know that tourists come expressly to see tigers Now that locals are receiving direct benefits from tourism they can afford to be more tolerant In fact in many instances now, the community forest decreases the loss of property due to wildlife In a KMTNC survey, 79% of people mentioned that the community forest is helping to buffer crop land and also mentioned that crop depredation has been decreased after establishment of the community forest in Baghmara (BCN 1997)

1998 Update

Patrols and other monitoirng activities that were started in previous year were continued in 1998 Populations of key target species are continuing to increase (KMTNC 1998)

C Adaptive Management

1997 Information Reported

In order to involve the local people in conservation activities the project staff learned to modify the way in which they conduct outreach activities Rather than hold meetings which few people attend, the project staff instead went from household to household to explain the User Group initiative and get approval This was especially necessary in a place like Chitwan, where people have become suspicious of any perceived governmental project after the earlier negative impacts of the gazetting of RCNP

1998 Update

A regional workshop on "Collaborative Management of Protected Areas in the Asia Region" was held at the Nepal Conservation Research and Training Center (NCRTC) in Chitwan, May 25–28, 1998, attended and addressed by the Royal Prince Gyanendra Bir Bikram Shah A summary of the workshop illustrates the valued role the project site is playing in developing a strong conservation approach in the region

> Recalling the history of the King Mahendra Trust for Nature Conservation His Royal Highness said that the venue of the workshop, KMTNC/NCRTC had been witness to the changing needs of conservation over the last decade and a half Originally, the focus was on hard science and species related research activities Learning through experience that contemporary conservation is no more related to species biology [than social issues], KMTNC embarked on a process of collaborative management, primarily in the Annapurna Conservation Area Project, and also pioneered a community approach towards conservation as exemplified by the Baghmara and Kumrose community forestry programs in the buffer zone of the Royal Chitwan National Park (KMTNC 1998)

Community awareness and management contributions toward resident wildlife continue to be documented from within the project site Reported in the 1998 Summer issue of *Prakriti Newsletter of the King Mahendra Trust for Nature Conservation* is the following anecdote illustrating this

> A female rhino and a calf were found injured in Chitwan The female was speared [by a male rhino] and the calf was charged by the male They were given medical assistance in Kumrose One male rhino was injured during hierarchical fight in March 1998 at the Icharni Island of Royal Chitwan National Park The rhino was later provided with medical assistance by the Nepal Conservation Research and Training Center ' (KMTNC 1998)

In addition, during 1998 the Kathmandu Post reported a story on how a team working near the Park found a wounded, orphaned baby rhino with the remains of its dead mother, who had been killed by poachers for her horn The orphaned rhino was nursed back to health by a botanist at the Park (KMTNC 1998)

D References

Biodiversity Conservation Network (BCN) 1997 *Annual Report 1997 Getting Down to Business* Biodiversity Support Program, Washington DC

King Mahendra Trust for Nature Conservation (KMTNC) 1998 *Prakiti* KMTNC Newsleter Volume 2, No 1 Lalitpur, Nepal

World Wildlife Fund 1996 *Promoting Local Guardianship of Endangered Species and Wildlife Habitat in Royal Chitwan National Park Nepal* Poster produced by WWF-US Conservation Science Division

E Maps

1 Site Map

See previously submitted site maps to USAID, May 1998

2 Provincial/National Maps

3 Global/Regional Maps

See previously submitted global/regional maps to USAID

The Biodiversity Support Program s Biodiversity Conservation Network (BCN) Planning and Implementation Grants (produced by WWF-US Conservation Science)

Biological Distinctiveness of the Terrestrial Ecoregions of the Indo-Pacific (produced by WWF-US Conservation Science)

The Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 2 2 Baghmara Plantation

A General Information

Site Name	2 2 Baghmara Plantation
Province/State	Chitwan
Country	Nepal
Institutional Partners	King Mahendra Trust for Nature World Wildlife Fund

Biome	34 Terai-Duar savannas and grasslands
Area Under Effective Management (ha)	496 ha
Total Project Area (ha)	496 ha

B Environmental Quality

a Significance of the Sites for Biodiversity Conservation

Royal Chitwan National Park (RCNP) is located in the central Terai region of Nepal The 932 square kilometer park encompasses one of the last remaining, large fragments of grasslands and riverine forests that once dominated the Gangetic and Brahmaputra plains The deposition of heavy annual silt loads in alluvial grasslands during monsoon floods recharges nutrient levels and maintains the world's tallest grasslands Some grassland associations are dominated by species that exceed seven meters by the end of the monsoon This habitat complex supports the highest recorded densities of Bengal tigers (*Panthera tigris*) in Asia, the second largest grater one-horned rhinoceros (*Rhinoceros unicornis*) population in the world and over 489 bird species (270 of which nest in the park) The presence of a large charismatic megafauna and dramatic landscapes are what make RCNP the premier destination for ecotourists in Asia (WWF-US 1996)

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information Reported

The successful protection of large animal habitat in RCNP was documented in 1996 and again in 1997

> Successful conservation efforts in the area and the strong presence of the Royal Nepal Army along the border of the RCNP have led to the recovery of rhinoceros populations in the Chitwan Valley The rhinoceros population was reduced to between 60 to 80 individuals in 1988 today there are over 450 rhinoceroses in RCNP and this population is the primary source for translocation populations to other reserves in Asia (WWF-US 1996)

The following is an example of on-the-ground conservation in both Baghmara and Kumrose (BCN Annual Report 97) The community implemented a policy of plantation patrols to monitor and respond to threats This policy proved to be successful in averting the killing of area rhinos and tigers The project team wrote

> Perhaps the most important achievement of the project is the change in attitude of the local people When poachers attracted by the increasing numbers of wildlife attempted to kill rhinos by digging pits near Baghmara, the community members not only informed authorities, but also filled the pits so that no wildlife would be killed Even when livestock were killed by a tiger in Kumrose the people did not complain because they know that tourists come expressly to see tigers Now that locals are receiving direct benefits from tourism they can afford to be more tolerant In fact in many instances now the community forest decreases the loss of property due to wildlife In a KMTNC survey 79% of people mentioned that the community forest is helping to buffer crop land and also mentioned that crop depredation has been decreased after establishment of the community forest in Baghmara (BCN 1997)

1998 Update

See information for Site 2 1

C Adaptive Management

1997 Information Reported

In order to involve the local people in conservation activities, the project staff learned to modify the way in which they conduct outreach activities Rather than hold meetings which few people attend, the project staff instead went from household to household to explain the User Group initiative and get approval This was especially necessary in a place like Chitwan, where people have become suspicious of any perceived governmental project after the earlier negative impacts of the gazetting of RCNP

1998 Update

See information for Site 2 1

D References

Biodiversity Conservation Network (BCN) 1997 *Annual Report 1997 Getting Down to Business* Biodiversity Support Program, Washington DC

King Mahendra Trust for Nature Conservation (KMTNC) 1998 *Prakiti* KMTNC Newsleter Volume 2, No 1 Lalitpur, Nepal

World Wildlife Fund 1996 *Promoting Local Guardianship of Endangered Species and Wildlife Habitat in Royal Chitwan National Park Nepal* Poster produced by WWF-US Conservation Science Division

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See previously submitted site maps to USAID, May 1998

2 Provincial/National Maps

3 Global/Regional Maps

See previously submitted global/regional maps to USAID

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Biological Distinctiveness of the Terrestrial Ecoregions of the Indo-Pacific (produced by WWF-US Conservation Science)

The Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 2 3 Kumrose Plantation

A General Information

Site Name	2 3 Kumrose Plantation
Province/State	Chitwan
Country	Nepal
Institutional Partners	King Mahendra Trust for Nature World Wildlife Fund

Biome	34 Terai-Duar savannas and grasslands
Area Under Effective Management (ha)	713 ha
Total Project Area (ha)	713 ha (last year site reported as 1000 ha, change occurred as a result of improvements in delineation accuracy attained by project during 1998)

B Environmental Quality

a Significance of the Sites for Biodiversity Conservation

Royal Chitwan National Park (RCNP) is located in the central Terai region of Nepal The 932 square kilometer park encompasses one of the last remaining, large fragments of grasslands and riverine forests that once dominated the Gangetic and Brahmaputra plains The deposition of heavy annual silt loads in alluvial grasslands during monsoon floods recharges nutrient levels and maintains the world's tallest grasslands Some grassland associations are dominated by species that exceed seven meters by the end of the monsoon This habitat complex supports the highest recorded densities of Bengal tigers (*Panthera tigris*) in Asia the second largest grater one-horned rhinoceros (*Rhinoceros unicornis*) population in the world and over 489 bird species (270 of which nest in the park) The presence of a large charismatic megafauna and dramatic landscapes are what make RCNP the premier destination for ecotourists in Asia (WWF-US 1996)

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information Reported

The successful protection of large animal habitat in RCNP was documented in 1996 and again in 1997

> Successful conservation efforts in the area and the strong presence of the Royal Nepal Army along the border of the RCNP have led to the recovery of rhinoceros populations in the Chitwan Valley The rhinoceros population was reduced to between 60 to 80 individuals in 1988 today there are over 450 rhinoceroses in RCNP and this population is the primary source for translocation populations to other reserves in Asia (WWF-US 1996)

The following is an example of on-the-ground conservation in both Baghmara and Kumrose (BCN Annual Report 97) The community implemented a policy of plantation patrols to monitor and respond to threats This policy proved to be successful in averting the killing of area rhinos and tigers The project team wrote

> Perhaps the most important achievement of the project is the change in attitude of the local people When poachers attracted by the increasing numbers of wildlife attempted to kill rhinos by digging pits near Baghmara, the community members not only informed authorities but also filled the pits so that no wildlife would be killed Even when livestock were killed by a tiger in Kumrose the people did not complain because they know that tourists come expressly to see tigers Now that locals are receiving direct benefits from tourism they can afford to be more tolerant In fact in many instances now the community forest decreases the loss of property due to wildlife In a KMTNC survey, 79% of people mentioned that the community forest is helping to buffer crop land and also mentioned that crop depredation has been decreased after establishment of the community forest in Baghmara (BCN 1997)

1998 Update

See information for Site 2 1

C Adaptive Management

1997 Information Reported

In order to involve the local people in conservation activities, the project staff learned to modify the way in which they conduct outreach activities Rather than hold meetings which few people attend, the project staff instead went from household to household to explain the User Group initiative and get approval This was especially necessary in a place like Chitwan, where people have become suspicious of any perceived governmental project after the earlier negative impacts of the gazetting of RCNP

1998 Update

See information for Site 2 1

D References

Biodiversity Conservation Network (BCN) 1997 *Annual Report 1997 Getting Down to Business* Biodiversity Support Program, Washington DC

King Mahendra Trust for Nature Conservation (KMTNC) 1998 *Prakiti* KMTNC Newsleter Volume 2, No 1 Lalitpur, Nepal

World Wildlife Fund 1996 *Promoting Local Guardianship of Endangered Species and Wildlife Habitat in Royal Chitwan National Park Nepal* Poster produced by WWF-US Conservation Science Division

E Maps

1 Site Map

See previously submitted site maps to USAID, May 1998

2 Provincial/National Maps

3 Global/Regional Maps

See previously submitted global/regional maps to USAID

The Biodiversity Support Program s Biodiversity Conservation Network (BCN) Planning and Implementation Grants (produced by WWF-US Conservation Science)

Biological Distinctiveness of the Terrestrial Ecoregions of the Indo-Pacific (produced by WWF-US Conservation Science)

The Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 3 1 Akash Kamini Valley

A General Information

Site Name	3 1 Akash Kamini Valley
Province/State	Garhwal
Country	India
Institutional Partners	Appropriate Technology International (ATI)

Biome	26 E Himalayan broadleaf forest
Area Under Effective Management (ha)	1650
Total Project Area (ha)	5500

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

The mountainous Garhwal district, which contains some of India's holiest pilgrimage sites is rich in botanical diversity including vast expanses of oak forest It is also home to the endangered snow leopard, black bear, bharal deer, and musk deer The principal threats to the region's biodiversity are unsustainable levels of fuelwood and fodder collection, grazing, and harvesting of non-timber forest products (BCN 1997)

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information Reported

New site for 1998

1998 Update

Through the efforts of a biological research team led by Dr S P Singh of Kumaun University, the project has been able to identify overgrazing of seedlings as a major threat to the long-term survival of the forest Dr Singh and his team are implementing a monitoring regieme to document the extent of the problem These data are being shared with the local community forest management institutions (Singh 1998)

C Adaptive Management

1997 Information Reported

New site for 1998

1998 Update

The project has made major progress in revitalizing the traditional resource management bodies in the area including in particular, the *Van Panchayats* and the *Mahila Mangal Dals* These institutions have begun managing some areas of the forest, particularly the ones that they have been given control over

The project staff report that local community members chased away migrants to the area who were hoping to graze their livestock in the forests In addition, there are now volunteer guards who are patrolling the forest areas (Data Text Document 1998)

D References

Biodiversity Conservation Network (BCN) 1997 *Annual Report 1997 Getting Down to Business* Biodiversity Support Program, Washington DC

Data Text Document 1998 A compilation of information about the project by BCN program officers

Singh, S P 1998 *Monitoring the Conservation Impact of Silk and Honey Enterprises on Oak Forests in Garhwal India* Paper presented to the Society for Conservation Biology Meetings, Sydney, Australia

The Mountain Institute (TMI) 1997 *Technical Report for Reporting Period March - August 1997* Washington DC

E Maps

1 Site Map

See previously submitted site maps to USAID, May 1998

2 Provincial/National Maps

3 Global/Regional Maps

The Biodiversity Support Program s Biodiversity Conservation Network (BCN) Planning and Implementation Grants (produced by WWF-US Conservation Science)

Biological Distinctiveness of the Terrestrial Ecoregions of the Indo-Pacific (produced by WWF-US Conservation Science)

The Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 4 1 Yuksam

A General Information

Site Name	4 1 Yuksam
Province/State	Sikkim
Country	India
Institutional Partners	The Mountain Institute (TMI)

Biome	26 E Himalayan broadleaf forest
Area Under Effective Management (ha)	9,600 ha
Total Site Area (ha)	9,600 ha

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

Sikkim is a center of biodiversity, due to the variety of landscapes and climatic conditions which range from tropical to alpine There are about 6,000 plant species (ca 4,000 flowering species) The alpine areas are known worldwide for their richness in medicinal herbs (over 100 species) rhododendrons (35 species and 48 varieties), and primulas, while the temperate and sub-tropical belts are habitats for over 400 orchid species The diversity of fauna is equally impressive, with as many as 1,400 butterfly species 1200 moths, 550 birds, 144 mammals, 39 reptiles 9 amphibian, and 16 fish species (Ral and Sudriyal 1997)

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information Reported

A proposed Rathong-Chhu Hydroelectric Project was declared closed in August 1997 Such a project would have obviously been counterproductive to conservation efforts on site (TMI 1997)

A review of impacts from the project activities completed to date is currently underway Measures to address possible mitigation of impacts are being planned by the project team as well

1998 Update

The project has continued to monitor the threats to the biodiversity of the site The threat of grazing has been stopped The threat of fuelwood collection has been reduced through the training of porters and tourism guides The threat from land conversion has also been reduced Finally, littering and trail erosion have been somewhat halted (Data Text Document 1998)

C Adaptive Management

1997 Information Reported

The Sikkim project is continually testing the hypothesis that community control over resources leads to effective conservation In the words of the project team

> A major success this year, the emergence of a community based non-government organization the Khanchendzonga Conservation Committee (KCC) also presents a significant challenge to the project - how to support this organization in its efforts to play a positive role in conservation and development? This question highlights a key issue in the project - how to institutionalize activities and processes introduced by the project so that they are sustainable? (BCN 1997)

The project members have used data to modify approaches, such as the following

> As part of the applied research and monitoring component of the project, GBPIHED began intensive field monitoring of potential project impacts Additionally community ecotourism plans using participatory methods are providing participants with useful information on the status and management of natural resources as well as on project activities that required modification e g design of study tours in order to maximize the benefits for all community members (BCN 97)

1998 Update

As examples of adaptive management actions, the project team reports about the community organization (KCC)

- The Panchayat has now empowered KCC to fine poachers (Rs 5000/- for poaching Musk Deer, Rs 1000/- for any other animal)
- The KCC is also trying to keep the lake in Yuksam clean The Panchayat has issued orders to keep cattle away from the lake As a result of community efforts to keep the lake clean and undisturbed the lake was visited by migratory birds - a first after many years
- KCC also keeps track of the Tibetan doctors that go up the trail to collect medicinal plants/herbs
- KCC has now learned the procedure of how to lodge a complaint with the appropriate person/office and make sure they send copies of the complaint/request to several appropriate people/institutions to ensure that action is taken
- KCC members have committed to mobilize more community members to attend KCC meetings
- KCC members are ensuring that no plastic is used in Yuksam

D References

Biodiversity Conservation Network (BCN) 1997 *Annual Report 1997 Getting Down to Business* Biodiversity Support Program, Washington DC

Data Text Document 1998 A compilation of information about the project by BCN program officers

Ral, S C , and R C Sundriyal 1997 *Tourism and biodiversity conservation the Sikkim Himalaya* Report to BCN

The Mountain Institute (TMI) 1997 *Technical Report for Reporting Period March - August 1997* Washington DC

E Maps

1 Site Map

See previously submitted site maps to USAID, May 1998

2 Provincial/National Maps

3 Global/Regional Maps

The Biodiversity Support Program s Biodiversity Conservation Network (BCN) Planning and Implementation Grants (produced by WWF-US Conservation Science)

Biological Distinctiveness of the Terrestrial Ecoregions of the Indo-Pacific (produced by WWF-US Conservation Science)

The Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 5 1 Biligiri Rangan Hills

A General Information

Site Name	5 1 Biligiri Rangan Hills
Province/State	Karnataka
Country	India
Institutional Partners	Tata Energy Research Institute (TERI) Vivekanada Girijana Kalyana Kendra (VGKK) University of Massachusetts/Boston (UMB)

Biome	15 SW Ghats moist deciduous forest
Area Under Effective Management (ha)	11,000 ha
Total Site Area	11,000 ha

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

As stated in the Annual Report

> The Western Ghats is one of the most biologically diverse areas in South Asia The Biligiri Rangan Hills contain elephants, gaurs sambars, wild pigs, sloth bears barking deer and over 900 species of flowering plants This richness led to the area being declared a Wildlife Sanctuary in 1974 The biodiversity of the sanctuary is threatened however by human pressures, which possibly include over harvesting of forest products by both local Soliga communities and outsiders (BCN 1997)

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information Reported

The enterprise participants have adopted techniques that reduce the impact of their activities on the environment For example, honey collectors have been trained to reduce bee mortality during harvesting Amla collectors have been persuaded to remove parasites from trees Efforts towards this end have included training a number of enterprise participants in improved methods that reduce impacts of harvesting on the species In particular, the Soliga honey hunters have been trained in techniques that improve the quality of honey, while reducing bee and larvae mortality Similarly, Amla collectors have participated in pre and post-harvest discussions enabling them to gain a deeper understanding of resource availability, spatial distribution of the resource, and impacts of harvest The Soligas are also assessing the prevalence of parasitic plants on the Amla tree and are actively involved in removing the parasites during the harvest (BCN 1997)

1998 Update

The project has continued to monitor the threats to the biodiversity of the site The current TRA for the site is

Threat	Area Ranking	Intensity Ranking	Urgency Ranking	Total Ranking	Threat met Total	BCN	Raw Score	TRA Index
- Grazing	1	2	1	4	0%	0%	0	
NTFP over exploitation	5	4	4	13	75%	75%	9 75	
Fire	6	5	5	16	65%	10%	1 6	
Fuelwood	2	1	2	5	0%	0%	0	
Poaching	3	3	3	9	0%	0%	0	
Mining	4	6	6	16	100%	20%	3 2	
TOTAL				63			14 55	23%

NTFP overexploitation has been met Other threats are still being dealt with (Data Text Document 1998)

C Adaptive Management

1997 Information Reported

The project team used monitoring data to test the initial assumptions in the project design and make changes accordingly to business operations and monitoring methods

> While we understood from the beginning that professionals might be required to run the enterprise at the start we underestimated the need for skilled staff at the entry and intermediate level positions As a result training activities at all levels for all aspects of the project including resource monitoring, became an integral part of the project (Bawa et al 1997)

> Our efforts to develop techniques for community-based resource monitoring were slowed by difficulties in adapting our complicated research methods to the community's needs and capabilities [ ] In one experiment key persons in the community were asked to estimate the size of the nelli crop in their traditional manner, and found their estimates to be similar to the estimates arrived at through more rigorous and systematic methods However, we found that this information on nelli availability, particularly its spatial distribution, was not well distributed across the community [ ] thus the need for systematic community-wide assessments was underlines and we are in the process of experimenting with techniques for the same (Bawa et al 1997)

1998 Update

The project is continuing the development of enterprise and monitoring activities Community members are protecting imporant against internal threats – for example guarding honey trees It is less clear, however, whether the harvest is occuring sustainably (Data Text Document, 1998)

D References

Bawa, K S , S Lele K S Murali and B Ganesan 1997 Extraction of non-timber forest products in Biligiri Rangan Hills India monitoring of a community based project (Attachment to Tech Report of Sept 97)

Biodiversity Conservation Network (BCN) 1997 *Annual Report 1997 Getting Down to Business*

Data Text Document 1998 A compilation of information about the project by BCN program officers

Tata Energy Research Institute (TERI) 1997 An Integrated Approach to Management of Tropical Forests for Non-Timber Forest Products Second Annual Report to the Biodiversity Conservation Network

E Maps

1 Site Map

See previously submitted site maps to USAID May 1998

2 Provincial/National Maps

3 Global/Regional Maps

The Biodiversity Support Program s Biodiversity Conservation Network (BCN) Planning and Implementation Grants (produced by WWF-US Conservation Science)

Biological Distinctiveness of the Terrestrial Ecoregions of the Indo-Pacific (produced by WWF-US Conservation Science)

The Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 6 1 Lewijamang (N Gunung Halimun National Park)

A General Information

Site Name	6 1 Lewijamang (North Gunung Halimun National Park)
Province/State	West Java
Country	Indonesia
Institutional Partners	Biological Science Club (BScC) Gunung Halimun National Park Management Authority (GoI-PHPA) McDonald's Indonesia Family Restaurants Wildlife Preservation Trust International (WPTI) Center for Biodiversity and Conservation Studies, University of Indonesia (CBCS-UI) (Note These five groups comprise the GHNP Consortium)

Biome	88 Western Java montane forests
Area Under Effective Management (ha)	2000 ha
Total Project Area	7,000 ha

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

Gunung Halimun National Park (GHNP), officially established in 1992, is a key refuge for over 23 mammal species (with primates being observed more frequently than any other mammals in faunal surveys), 156 bird species, and over 500 plant species The Park represents a critical sink of biodiversity for Indonesia, and is the last and largest source of original lowland forest on Java (BScC *et al* 1995, p 6, BCN 1997, p 45) Included in GHNP's unique habitat are endangered species of endemic primates, such as the IUCN red-listed Javan gibbon (*Hylobates moloch*) and grizzled langur (*Presbytis comata*), as well as 18 endemic birds, including the endangered Javan Hawk Eagle and five others which are considered rare (BScC *et al* 1995, p 6 - 9, BCN 1997, p 45) GHNP's floral characteristics include high orchid diversity, a multitude of epiphytic and bryophytic communities complementing the undisturbed forest canopy, and a genetic diversity storehouse of wild banana and rice hybrids for the agricultural needs (BScC *et al* 1995, p 9) of people living within and outside the Park's boundaries

GHNP's ecological setting is characterized by the Western Java montane forests ecoregion, an area considered 'bioregionally outstanding' in terms of its biological distinctiveness within the Indo-Pacific region GHNP and the surrounding areas (including neighboring Gunung Gede-Pangrango National Park) has been rated as a 'high priority site at the regional scale' for biodiversity conservation priority setting (Wikramanayake *et al* , 1998) in Indonesia

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information

Within all three project sites – Lewijamang in the North, Citalahab in the East, and Ciptarasa and Ciptarasa in the South – financial benefits accrued to community members during 1997 As a result of these revenues generated, the ecotourism enterprises have, as recorded by project staff, "helped to encourage" all the participating community members towards the project's end goal protection of Java's remaining undisturbed lowland forests (BCN 1997, p 47) Such concrete incentives for conservation, particularly when paired with the protected area system, are assisting the Consortium in sustaining GHNP's viability through genuine stakeholder support at the local level – stakeholders who recognize the value environmental and economic value of maintaining habitat quality to ensure continued visitation (BScC 1998, p 10)

Consortium staff have not only reported the positive value of benefits generated for local residents to support ongoing conservation efforts in GHNP, but also the real and potential negative impacts of having visitor numbers increase in the Park While to date there has been no perceptible reduction in, say wildlife observation, there has been a minor "pollution" problem in the enterprise's start-up phase as detailed in the Consortium's Technical Report to BCN for the period June through November, 1997 (BScC *et al* 1998, p 9)

> In general there is still a very mild impact from the project and the Guest Houses on the habitat quality and quantity There has been a little plastic garbage found [along camping trails], left by visitors (students) However, the local management will always do their best to make the visitors (especially student groups) aware of the problems of discarding garbage particularly plastic waste

This reporting of both the positive and negative impacts of enterprise development is critical to BCN's overall capacity to comment on enterprise-based approaches to conservation, and in BCN's and the Consortium's ability to weigh the benefits and costs of such operations in relation to objective habitat maintenance

It is worth noting that Lewijamang is located within the Park's boundaries making it one of several "enclave" communities participating in conservation efforts for GHNP This northern site as the second highest visitation rates by outside guests because it is somewhat less accessible than the eastern entrance Nonetheless, the site is an important one because trail development becomes a crucial "environmental sustainability" issue, as do efforts to monitor and minimize agricultural expansion by local villagers Both of these issues have become important ones at the project site, and GHNP Consortium staff have worked with villagers to develop commitments against further expansion into the Park, as well as to help enforce bans on illegal, small-scale cutting of trees and mining for gold in nearby rivers The project has reported some success on all of these fronts

1998 Information

In each site, there has been evidence of habitat area being maintained despite tourism and local community pressures The percentage of rattan which has been cut by the community is relatively low This may be due to the fact that most rattan are relatively young, and the community tend to use bamboo, because the project has trained people to use bamboo rather than rattan But there is still some rattan cut in the restricted areas in the southern entrance The bamboo population in all three areas seems to be decreasing (Technical report 4) There are four types of bamboo being utilized by

the community living around the Park In general there is still a very mild impact from the project and Guest Houses on the habitat quality and quantity There has been a little plastic garbage found left by the visitors However, the local management always do their best to make the visitors aware of the problems of discarding garbage, particularly plastic waste From information gained from the local people, several threats have declined illegal gold mining is occurring less wood cutting and encroachment are also declining especially on trails that have been signposted as Ecotourism Trails in the National Park (Technical report 4)

C Adaptive Management

1997 Information

The success of the Consortium's ecotourism operation has received praise from both visitors (some, especially birders, have returned three or four times for visits) and other conservation projects operating within Indonesia, as was noted by the Consortium in BCN s 1997 Annual Report (p 47)

> The third area of success [experienced by the project] is the learning and exchange going on with projects undertaking similar or related projects There have been four other Indonesian projects who it would seem have thought highly enough of our project to visit it and to do comparative studies They are i) Siberut Project, West Sumatra ii) WWF Project, Ujung Kulon West Java iii) YES (Sumatra Ecotourism Foundation) Project, North Sumatra iv) Pact Indonesia Project North Sumatra

One reason for this interest is that the Consortium has gone further than many similar projects in developing methods for monitoring the project's impacts, learning from that information, and existing project management structures and activities so they are more effective in achieving project objectives This makes the GHNP example a bit unique since these monitoring and learning tools (e g , monitoring by project staff and visitors of key indicator species, or bird surveys and inventories to be used by visitors) are being looked at by others within the geographic region who are considering ecotourism operations as an incentive for biodiversity conservation

1998 Information

Adaptive management was seen in the project by use of the monitoring data collected This is noted in the response to the technical report submitted by the project

> The habitat monitoring report was quite useful for several reasons First, it points out that the biological monitoring can help with marketing the enterprise That is exactly right All monitoring should be integrated It should not be done for the sake of data gathering and research It should be useful for the project s goals, including market development, promotional materials, and providing good information to tourists visiting the sites Second, it makes the point that locals are involved to some extent in the work being done This type of collaboration should be encouraged and expended throughout the monitoring activities Third, it provided good trail descriptions (p 5) I hope this information is used by the enterprise to help it make decisions on the trails they will mark in the future Fourth it is one of the first times carrying capacity ' (of 5-7 people) and the need to limit the size of groups using the trail at any one time has been mentioned in a report The biological monitoring can help make adjustments to the current estimates of 5-7 people so that, in the future, the Consortium might find that 10 people are safe-- or perhaps that the limit should be 4-5 visitors at a time This information will help the enterprise make informed decisions about its package tours, its pricing, and its optimal number of visitors (1998 Data text document)

In fact, an example of the use of the monitoring is the ability of the project to accurately document which birds are present in the area This information is highly valuable to the project as birdwatching is a very real selling point of the Park Providing this list to birders could attract more visitors However, it is important to realize the necessary improvements in the monitoring system, as was noted by the Project Officer for Indonesia

> It's worth noting though that when we stopped in on the head of the handicrafts cooperative in Ciptarasa, I made references to the monitoring and the sustainable use of resources He said he was aware of the monitoring and did acknowledge the direct link between the health of the resource and the health of the enterprise, but it appeared that there wasn't much community involvement in the monitoring to speak of, even though Steve and Damai have both told me of their desire to identify local villagers with the will and the capacity to assist with the biological monitoring It is clear there has been very limited involvement of community members and more importantly perhaps, the Field Managers in the socioeconomic monitoring (e g p 1) From the report it appears that the contractor and volunteers responsible for implementing the monitoring have not spent an intensive amount of time in the field (1998 Data text document p9)

The project received a written official permit/change in legal status for the guest house in the North and East They needed this because they are community operated business activities within Park boundaries To date, this was only done on the verbal OK of the Park head

To decrease the level of encroachment made by the local community into the Park, the Management of Nirmala Tea Estate, in November 1997 awarded certain acres of land to the communities This decision was made among other things, due to their respect for the consortium (Technical Report 4 p3)

Monitoring on site has not included local community members nearly to the extent that it should, but monitoring has been happening nonetheless, especially on bird species, key primate monitoring, rattan extraction, and water quality in the rivers running through the Park and along hiking trails

In terms of capacity building some progress was made in FY98 as on-site local community members and groups gained strength in guest house management, and at the project level in terms of the Bogor office becoming a distinct, legal entity/NGO The Consortium for GHNP still exists in a formal capacity, but its ability to function has been severely constrained by internal conflicts This has been one area where the project has suffered serious setbacks in the past year (1998, BC, personal communication)

D References

BCN 1997 *Annual Report Getting Down to Business* Biodiversity Support Program, Washington, DC

BCN Data text Document 1998
Which includes
Monitoring Plan September 1995
First and Second Technical Reports (TR1-2)BCN's Third Site Visit (SV3 Report)
Income expenses reported in T-mid DEW are from TR3 - no other TR3 information has been included at this point other than this
All SVs thru 7 31 97
1996 and 1997 BCN Performance Indicators, as reported to USAID (BCN Indicators)
Socioeconomic Report submitted September 1998 (SER)

GHNP Consortium 1995 *Development of Local Enterprises in and around Gunung Halimun National Park West Java* Jakarta, Indonesia

GHNP Consortium 1998 *Fourth Interim Technical Report Submitted to The Biodiversity Conservation Network* Jakarta, Indonesia

Wikramanayake E , E Dinerstein, P Hedao, D M Olson, L Horowitz, and P Hurley In preparation *A Conservation Assessment of the Terrestrial Ecoregions of the Indo-Pacific Region* World Wildlife Fund, Washington, DC

E Maps

1 Site Map

Map was delivered in May 1998

2 Provincial/National Maps

3 Global/Regional Maps

The Biodiversity Support Program s Biodiversity Conservation Network (BCN) Planning and Implementation Grants (produced by WWF-US Conservation Science)

Biological Distinctiveness of the Terrestrial Ecoregions of the Indo-Pacific (produced by WWF-US Conservation Science)

The Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 6 2 Citalahab (E Gunung Halimun National Park)

A General Information

Site Name	6 2 Citalahab (East Gunung Halimun National Park)
Province/State	West Java
Country	Indonesia
Institutional Partners	Biological Science Club (BScC) Gunung Halimun National Park Management Authority (GoI-PHPA) McDonald's Indonesia Family Restaurants Wildlife Preservation Trust International (WPTI) Center for Biodiversity and Conservation Studies, University of Indonesia (CBCS-UI) (Note These five groups comprise the GHNP Consortium)

Biome	88 Western Java montane forests
Area Under Effective Management (ha)	2,000 ha
Total Project Area	8 000 ha

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

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GHNP's ecological setting is characterized by the Western Java montane forests ecoregion, an area considered 'bioregionally outstanding' in terms of its biological distinctiveness within the Indo-Pacific region GHNP and the surrounding areas (including neighboring Gunung Gede-Pangrango National Park) has been rated as a 'high priority site at the regional scale for biodiversity conservation priority setting (Wikramanayake *et al* , 1998) in Indonesia

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information

Within all three project sites – Lewijamang in the North, Citalahab in the East and Ciptarasa and Ciptarasa in the South – financial benefits accrued to community members during 1997 As a result of

these revenues generated, the ecotourism enterprises have, as recorded by project staff "helped to encourage" all the participating community members towards the project s end goal protection of Java's remaining undisturbed lowland forests (BCN 1997 p 47) Such concrete incentives for conservation particularly when paired with the protected area system, are assisting the Consortium in sustaining GHNP's viability through genuine stakeholder support at the local level – stakeholders who recognize the value environmental and economic value of maintaining habitat quality to ensure continued visitation (BScC 1998, p 10)

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> In general there is still a very mild impact from the project and the Guest Houses on the habitat quality and quantity There has been a little plastic garbage found [along camping trails], left by visitors (students) However the local management will always do their best to make the visitors (especially student groups) aware of the problems of discarding garbage, particularly plastic waste

This reporting of both the positive and negative impacts of enterprise development is critical to BCN s overall capacity to comment on enterprise-based approaches to conservation and in BCN's and the Consortium's ability to weigh the benefits and costs of such operations in relation to objective habitat maintenance

It is worth noting that the Citalahab guest houses, which are located just outside the border of the Park, have received the highest number of visitors to date, not only representing significant cash generation for local residents, but also providing guests with an opportunity to make use of the additional environmental information about GHNP which can be found at the nearby, JICA-sponsored research station An added feature which strengthens the message of maintaining habitat to a wider audience

1998 Information

In each site, there has been evidence of habitat area being maintained despite tourism and local community pressures The percentage of rattan which has been cut by the community is relatively low This may be due to the fact that most rattan are relatively young, and the community tend to use bamboo, because the project has trained people to use bamboo rather than rattan But there is still some rattan cut in the restricted areas in the southern entrance The bamboo population in all three areas seems to be decreasing (Technical report 4) There are four types of bamboo being utilized by the community living around the Park In general there is still a very mild impact from the project and Guest Houses on the habitat quality and quantity There has been a little plastic garbage found, left by the visitors However, the local management always do their best to make the visitors aware of the problems of discarding garbage, particularly plastic waste From information gained from the local people, several threats have declined illegal gold mining is occurring less, wood cutting and encroachment are also declining especially on trails that have been signposted as Ecotourism Trails in the National Park (Technical report 4, p3)

C Adaptive Management

1997 Information

The success of the Consortium's ecotourism operation has received praise from both visitors (some, especially birders, have returned three or four times for visits) and other conservation projects operating within Indonesia as was noted by the Consortium in BCN s 1997 Annual Report (p 47)

> The third area of success [experienced by the project] is the learning and exchange going on with projects undertaking similar or related projects There have been four other Indonesian projects who, it would seem, have thought highly enough of our project to visit it and to do comparative studies They are i) Siberut Project West Sumatra ii) WWF Project, Ujung Kulon, West Java, iii) YES (Sumatra Ecotourism Foundation) Project, North Sumatra, iv) Pact Indonesia Project North Sumatra

One reason for this interest is that the Consortium has gone further than most similar projects in developing methods for monitoring the project's impacts, learning from that information, and existing project management structures and activities so they are more effective in achieving project objectives This makes the GHNP example a bit unique since these monitoring and learning tools (e g , monitoring by project staff and visitors of key indicator species, or bird surveys and inventories to be used by visitors) are being looked at by others within the geographic region who are considering ecotourism operations as an incentive for biodiversity conservation

1998 Information

Adaptive management was seen in the project by use of the monitoring data collected This is noted in the response to the technical report submitted by the project

> The habitat monitoring report was quite useful for several reasons First it points out that the biological monitoring can help with marketing the enterprise That is exactly right All monitoring should be integrated It should not be done for the sake of data gathering and research It should be useful for the project s goals including market development, promotional materials, and providing good information to tourists visiting the sites Second, it makes the point that locals are involved to some extent in the work being done This type of collaboration should be encouraged and expended throughout the monitoring activities Third it provided good trail descriptions (p 5) I hope this information is used by the enterprise to help it make decisions on the trails they will mark in the future Fourth, it is one of the first times ' carrying capacity (of 5-7 people) and the need to limit the size of groups using the trail at any one time has been mentioned in a report The biological monitoring can help make adjustments to the current estimates of 5-7 people so that in the future, the Consortium might find that 10 people are safe-- or perhaps that the limit should be 4-5 visitors at a time This information will help the enterprise make informed decisions about its package tours, its pricing, and its optimal number of visitors (1998 Data text document)

In fact, an example of the use of the monitoring is the ability of the project to accurately document which birds are present in the area This information is highly valuable to the project as birdwatching is a very real selling point of the Park Providing this list to birders could attract more visitors However, it is important to realize the necessary improvements in the monitoring system, as was noted by the Project Officer for Indonesia

> It's worth noting, though, that when we stopped in on the head of the handicrafts cooperative in Ciptarasa, I made references to the monitoring and the sustainable use of resources He said he was aware of the monitoring and did acknowledge the direct link between the health of the resource and the

> health of the enterprise but it appeared that there wasn t much community involvement in the monitoring to speak of even though Steve and Damai have both told me of their desire to identify local villagers with the will and the capacity to assist with the biological monitoring It is clear there has been very limited involvement of community members and, more importantly perhaps the Field Managers in the socioeconomic monitoring (e g , p 1) From the report, it appears that the contractor and volunteers responsible for implementing the monitoring have not spent an intensive amount of time in the field (1998 Data text document p9)

The project received a written, official permit/change in legal status for the guest house in the North and East They needed this because they are community operated business activities within Park boundaries To date, this was only done on the verbal OK of the Park head

To decrease the level of encroachment made by the local community into the Park, the Management of Nirmala Tea Estate, in November 1997, awarded certain acres of land to the communities This decision was made among other things, due to their respect for the consortium (Technical Report 4, p3)

Monitoring on site has not included local community members nearly to the extent that it should, but monitoring has been happening nonetheless especially on bird species, key primate monitoring, rattan extraction, and water quality in the rivers running through the Park and along hiking trails

In terms of capacity building, some progress was made in FY98 as on-site, local community members and groups gained strength in guest house management, and at the project level in terms of the Bogor office becoming a distinct, legal entity/NGO The Consortium for GHNP still exists in a formal capacity but its ability to function has been severely constrained by internal conflicts This has been one area where the project has suffered serious setbacks in the past year (1998, BC, personal communication)

D References

BCN 1997 *Annual Report Getting Down to Business* Biodiversity Support Program, Washington DC

BCN Data text Document 1998
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GHNP Consortium 1995 *Development of Local Enterprises in and around Gunung Halimun National Park, West Java* Jakarta, Indonesia

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Wikramanayake E E Dinerstein P Hedao, D M Olson, L Horowitz and P Hurley In preparation *A Conservation Assessment of the Terrestrial Ecoregions of the Indo-Pacific Region* World Wildlife Fund, Washington, DC

E Maps

1 Site Map

Map was delivered in May 1998

2 Provincial/National Maps

3 Global/Regional Maps

The Biodiversity Support Program s Biodiversity Conservation Network (BCN) Planning and Implementation Grants (produced by WWF-US Conservation Science)

Biological Distinctiveness of the Terrestrial Ecoregions of the Indo-Pacific (produced by WWF-US Conservation Science)

The Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 6 3 Ciptarasa (S Gunung Halimun National Park)

A General Information

Site Name	6 3 Ciptarasa (South Gunung Halimun National Park)
Province/State	West Java
Country	Indonesia
Institutional Partners	Biological Science Club (BScC) Gunung Halimun National Park (PHPA) McDonald's Indonesia Family Restaurants Wildlife Preservation Trust International (WPTI) Center for Biodiversity and Conservation Studies, University of Indonesia (CBCS-UI) (Note These five groups comprise the GHNP Consortium)

Biome	8 Western Java montane forests
Area Under Effective Management (ha)	2,000 ha
Total Project Area	6,000 ha

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

Gunung Halimun National Park (GHNP), officially established in 1992, is a key refuge for over 23 mammal species (with primates being observed more frequently than any other mammals in faunal surveys), 156 bird species, and over 500 plant species The Park represents a critical sink of biodiversity for Indonesia, and is the last and largest source of original lowland forest on Java (BScC *et al* 1995, p 6, BCN 1997, p 45) Included in GHNP's unique habitat are endangered species of endemic primates, such as the IUCN red-listed Javan gibbon (*Hylobates moloch*) and grizzled langur (*Presbytis comata*) as well as 18 endemic birds, including the endangered Javan Hawk Eagle and five others which are considered rare (BScC *et al* 1995, p 6 - 9, BCN 1997, p 45) GHNP's floral characteristics include high orchid diversity, a multitude of epiphytic and bryophytic communities complementing the undisturbed forest canopy, and a genetic diversity storehouse of wild banana and rice hybrids for the agricultural needs (BScC *et al* 1995, p 9) of people living within and outside the Park's boundaries

GHNP's ecological setting is characterized by the Western Java montane forests ecoregion, an area considered 'bioregionally outstanding' in terms of its biological distinctiveness within the Indo-Pacific region GHNP and the surrounding areas (including neighboring Gunung Gede-Pangrango National Park) has been rated as a 'high priority site at the regional scale' for biodiversity conservation priority setting (Wikramanayake *et al*, 1998) in Indonesia

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b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information

Within all three project sites – Lewijamang in the North Citalahab in the East, and Ciptarasa and Ciptarasa in the South – financial benefits accrued to community members during 1997 As a result of these revenues generated the ecotourism enterprises have, as recorded by project staff, "helped to encourage' all the participating community members towards the project's end goal protection of Java's remaining undisturbed lowland forests (BCN 1997, p 47) Such concrete incentives for conservation, particularly when paired with the protected area system, are assisting the Consortium in sustaining GHNP's viability through genuine stakeholder support at the local level – stakeholders who recognize the value environmental and economic value of maintaining habitat quality to ensure continued visitation (BScC 1998, p 10)

Consortium staff have not only reported the positive value of benefits generated for local residents to support ongoing conservation efforts in GHNP, but also the real and potential negative impacts of having visitor numbers increase in the Park While to date there has been no perceptible reduction in, say, wildlife observation, there has been a minor "pollution" problem in the enterprise's start-up phase as detailed in the Consortium s Technical Report to BCN for the period June through November, 1997 (BScC *et al* 1998, p 9)

> In general there is still a very mild impact from the project and the Guest Houses on the habitat quality and quantity There has been a little plastic garbage found [along camping trails], left by visitors (students) However, the local management will always do their best to make the visitors (especially student groups) aware of the problems of discarding garbage particularly plastic waste

This reporting of both the positive and negative impacts of enterprise development is critical to BCN's overall capacity to comment on enterprise-based approaches to conservation, and in BCN's and the Consortium's ability to weigh the benefits and costs of such operations in relation to objective habitat maintenance

It is worth noting that the Ciptarasa which are located about a kilometer outside the Park's boundaries, have to date had the least visitation from outside guests, as a result of difficult accessibility While from an enterprise perspective this has had a negative impact, it has, from an environmental one, allowed the Consortium staff working at the site to work more with local communities on mapping low-impact trails, training guides and conferring with communities which are not always in agreement about how the Park's resources should be utilized (the project is working with an indigenous Kasepuhan community which is located closest to the Park, and a more stridently Muslim "migrant" community near to where the guest houses have been built

1998 Information

In each site, there has been evidence of habitat area being maintained despite tourism and local community pressures The percentage of rattan which has been cut by the community is relatively low This may be due to the fact that most rattan are relatively young, and the community tend to use bamboo, because the project has trained people to use bamboo rather than rattan But there is still some rattan cut in the restricted areas in the southern entrance The bamboo population in all three areas seems to be decreasing (Technical report 4) There are four types of bamboo being utilized by the community living around the Park In general there is still a very mild impact from the project and

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C Adaptive Management

1997 Information

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3 Global/Regional Maps

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The Global 200 Ecoregions (produced by WWF-US Conservation Science)

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BCN Site 8 1 Participatory Forest Management Area

A General Information

Site Name	8 1 Participatory Forest Management Area (PFMA)
Province/State	Sanggau District, West Kalimantan
Country	Indonesia
Institutional Partners	Yayasan Dian Tama (YDT) P D Dian Niaga Appropriate Technology International (ATI) Social Forestry Development Project-GTZ

Biome	83 2 Borneo peat swamp forests
Area Under Effective Management (ha)	20 000 ha
Total Project Area	102 000 ha

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

The forests of Borneo are considered to be among the most diverse in the world One factor contributing to this richness is the island's unique location between two phytogeographically different regions east and west of the Wallacea line, which separates two large, evolutionarily distinct areas of terrestrial taxonomy (YDT *et al* 1995 p 6-7) As a result of Borneo's isolation and its variety of habitats, high species endemism occurs there In terms of faunal diversity, Borneo is considered, along with Irian Jaya and Sumatera, to be one of the three most biologically diverse islands in Indonesia As an example, 48% of Bornean mammal species are endemic (YDT *et al* 1995, p 7), and there are an estimated 800 tree species in the PFMA project site area alone (YDT *et al* 1995, p 9)

The PFMA ecological setting is characterized by the Borneo peat swamp forest ecoregion and tropical, wet evergreen forests The PFMA includes areas considered "globally outstanding" in terms of its biological distinctiveness within the Indo-Pacific region which is given the highest biodiversity conservation priority ranking on a global scale (Wikramanayake *et al* , 1998)

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information

In 1991 – and again in 1995 – the Social Forestry Development Project, with which YDT is working, developed aerial maps of the PFMA using color-coded land use designations These maps revealed a slow but perceptible trend of agricultural expansion within the already heavily populated and degraded PFMA New aerial maps are planned to be developed in 1999 Through anecdotal and "on-the-ground' evidence, however, YDT and SFDP staff expect the maps to demonstrate at the very least a slow-down in agricultural expansion (the area's primary threat including both commercial plantations and shifting agriculture), and quite possibly a slight improvement in habitat quality This optimism is the result of a combination of activities being implemented by the SFDP and BCN-sponsored YDT programs Among them annual forest rehabilitation drives (i e , organized

community tree-planting on a large scale), enterprise development based on the extraction and sustainable management of bamboo, rattan, damar resin, forest rubber, and (now, on a small scale) timber that has increased awareness about the commercial value of the remaining forest s products and the establishment of both a community organization with the explicit purpose of sustainably managing the PFMA ard boundaries to bar further commercial/plantation development by outside interests YDT has played a crucial role in this as it acts as a link to both markets and training for community-level monitoring of resources

1998 Information

Although this project has established a viable enterprise, it is still struggling to establish conservation In the data text document, it was noted that farmers complained that the walk to the forest to collect rattan is longer than last years, involving three hours walk to the forests This i compared to an hour walk the years before (BCN, 1998, Data text document, p19) It is unlikely that re-planting activities will be able to demonstrate that conservation and sustainable management have taken place at this site for a few years

C Adaptive Management

1997 Information

A continual challenge for BCN-sponsored projects is to convey the urgency and need for ongoing collection of relevant information – information which can be used to the benefit of local decision-makers as they develop flexible management plans and articulate more sustainable resource use practices With regards to socioeconomic monitoring, YDT reported the following in BCN's 1997 Annual Report

> The most difficult part was explaining the program to the villagers who are not directly involved in the project In the past, they had had experiences where information that they gave out in interviews was used against them So at first they viewed our questions with suspicion because they were afraid that the data they gave us would be used to levy taxes on them But after we explained why the data is needed and how it would benefit them they became verv cooperative about providing the information

The project's experience on the biological side has been similar During the summer of 1997 a natural resource inventory was completed within the PFMA Local villagers who participated in the 1995 and 1997 trainings for this work successfully acquired skills in survey methodologies Results from these baseline surveys have been used to develop growth and yield information for the products from the forests which are being used by the enterprises rattan, bamboo, and damar This information yielded a few significant pieces of information First, it was found that the market does not necessarily "want" bamboo products, even though bamboo is in high supply, according to surveys completed Instead, there is greater market demand for rattan-made products But the surveys revealed that rattan is in much shorter supply and that it was relatively distant from the communities with which YDT had been working As a result, YDT expanded the scope of its work to include villages closer to the rattan supplies, and to begin a program of encouraging and assisting with rattan planting, a program local communities have readily participated in having seen the value of the rattan (YDT has been successfully selling locally woven products for about a year now)

Given that local participants have been trained for ongoing monitoring and that permanent forest transects have been established within the PFMA, the project faces – as do many of the other BCN

funded projects – the challenge of trying to sustain such monitoring efforts as the BCN funding draws to a close (BCN 1997) The key might be in whether or not community members truly value the information biological and socioeconomic monitoring gives them about the health and sustainability of the enterprises, which rely so heavily on the natural resources found in the PFMA

1998 Information

Responsibility for the biological monitoring has shifted Whereas before YDT was responsible for it, now LPKHP (the Lembaga) and SFDP are SFDP has fantastic, big picture data on the PFMA area -- great maps, good surveys, etc -- to supplement the more detailed, enterprise-focused data involving rattan and bamboo regeneration rates And by having members of the Lembaga do the data collection on the bamboo, rattan and damar, they are at least theoretically setting up a system whereby the monitoring gets done by people from the villages (Site Visit 5)
It is hoped that this monitoring continues after the BCN project ends Given the possible decline in resource stock, this monitoring is an invaluable tool to the enterprise

Since the new permit for damar harvesting has not yet been given, the indicator numbers are based on the management of rattan harvesting However, trial tapping was conducted in June 1997 for 7 of the 10 tree species recommended by SFDP It is expected the yield resulting from the tapping can be compiled with the natural resource inventory data in order to determine the sustainability and feasibility of the damar enterprise The Institutional development has taken place within the Lembaga, the local group, which has gotten stronger in the last year (BCN, 1998, Data text document)

D References

BCN 1997 *Annual Report Getting Down to Business* Biodiversity Support Program Washington, DC

BCN 1997 Data text document
Which includes
Technical Report 1 (January 1 - June 30 1996)
Technical Report 2 (July 1 - December 31, 1996)
Technical Report 3 (January 1 - June, 30, 1997)
Technical Report 4 (July 1 - December 31, 1997)
Site Visit 4-6, BC memo to HC 12 3 96, TR 4
YDT Leaflets, Rudy Utama's correspondance with HC

Wikramanayake E , E Dinerstein, P Hedao, D M Olson L Horowitz, and P Hurley In preparation *A Conservation Assessment of the Terrestrial Ecoregions of the Indo-Pacific Region* World Wildlife Fund, Washington, DC

Yayasan Dian Tama, P D Dian Niaga, Appropriate Technology International, and Social Forestry Development Project 1995 *Development of Sustainable Small-Scale Forest-Based Enterprises within the Participatory Forest Management Area (PFMA) Model in Kalimantan Indonesia* Pontianak, Kalimantan, Indonesia

E Maps

1 Site Map

Map was delivered in May 1998

62

2 Provincial/National Maps

3 Global/Regional Maps

The Biodiversity Support Program s Biodiversity Conservation Network (BCN) Planning and Implementation Grants (produced by WWF-US Conservation Science)

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The Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 9 1 Napu Valley

A General Information

Site Name	9 1 Napu Valley
Province/State	Central Sulawesi Province
Country	Indonesia
Institutional Partners	The Nature Conservancy Indonesia Program (TNC-IP) CARE-Indonesia University of Guelph Sobek Expeditions

Biome	111 Sulawesi montane forest
Area Under Effective Management (ha)	11,000 ha
Total Project Area	11 000 ha

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

Sulawesi's Lore Lindu National Park (LLNP) encompasses 217,000 ha, 90% of which is covered in montane forests, and the other 10% comprised of rare and species-rich lowland rainforest (TNC 1998, p 4, TNC-IP 1995, p 4) LLNP is surrounded by three distinct valleys where TNC-IP is working Palolo (north), Napu (east), and Bada (south) As the main catchment and watershed for these valleys and the biological communities residing within them, LLNP's maintenance is critical to Central Sulawesi's ecological balance LLNP's habitat harbors most of Sulawesi's mammals (including some endemic, endangered species), birds (194 species, including 66 endemics), and a rich variety of rare butterflies (TNC-IP 1995, p 4 - 5, BCN 1998, p 57) For these reasons, the World Parks Congress established Lore Lindu as a national park in 1982 and, in 1993, LLNP was declared a Man and Biosphere Reserve by UNESCO and nominated as a World Heritage Site by the Indonesian Government (TNC-IP 1995, p 5, BCN 1998, p 57)

The LLNP ecological setting is characterized by the Sulawesi montane forest ecoregion, an area considered "globally outstanding" in terms of its biological distinctiveness within the Indo-Pacific region It has subsequently been given the highest biodiversity conservation priority ranking on a global scale (Wikramanayake *et al* , 1998)

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information

Sustaining effective management of large, ecologically complex protected areas requires adequate sources of financial and human support The largest "investment" in conservation to date in and around LLNP has been from the BCN But because of its distinctiveness, LLNP has recently attracted the attention of several major donors The Asian Development Bank, for example, is likely to loan the Indonesian government up to $40 million dollars over 5 years for conservation of the Park and its buffer zone It is expected that the BCN-funded sites and specific activities will continue to receive

support from this arrangement in an effort to maintain funding for balanced development and conservation initiatives In addition, TNC-IP is currently receiving funds from the USAID mission in Indonesia and other foundations to sustain the activities that have been started with BCN money and to expand TNC-IP's mix of strategies for conservation in the Park (e g , in FY97, the BCN-funded monitoring activities v ere able to leverage US$8,000 from ANZDEC to produce satellite images and maps of LLNP, which will be used for regional planning purposes, including designating strict conservation and limited resource use zones in and around the Park solidifying Park boundaries, determining where infrastructure development will have the least environmental impact etc)

The cumulative impact of TNC-IP s (and other, local environmental NGOs) very visible presence in LLNP has been the postponement of plans to build a major a major hydroelectric dam within the Park boundaries (near Lake Lindu), the cancellation of plans to build an environmentally destructive road right along side the Lariang River, which borders the southwestern edge of the Park, and heightened awareness among community members working with TNC-I and CARE regarding agricultural encroachment into LLNP (particularly with coffee crops)

1998 Information

In December 1997 after TNC negotiated on the honey hunters behalf with local government authorities, a SIPMAN (a resource access right permit) was given to honey hunters allowing them legal access to the hives in the Park (Sources SCB98, Binara, NRM98) As a result, "They are very proud of being involved in TNC program When one of them finds a hive in the forest, he marks it by writing TNC with his chopping knife at the branch near the hive Nobody else will harvest the hive It already becomes their new customary law " (Source Binara) Nevertheless there are limitations Honey hunters are not allowed to enter or go near the plantation owned by PT HASFARM, even though borders for the plantation are not clear (Source Binara from the 1998 Data text document)

Until late 1997 honey hunters operated in the Park on the assumption that if you find the hive, it is yours to harvest As a result, there really wasn't any policing by community members to speak of, just attention to whom is harvesting which hive and some peer pressure on those who seem to be doing a wasteful job of it (Source Site Visit 9/97 from the 1998 Data text document) This has, apparently, changed a bit now that the honey hunters have been given legal permits to enter the Park and harvest wild honey without fear of being caught In return, they are expected to assist Park authorities if their are gross violations of illegal resource use (whether honey or any other product) witnessed by the honey hunters on their trips in to the Park (Source BC conversation w/ Duncan from the BCN, 1998 Data text document p33)

C Adaptive Management

1997 Information

Given the very large-scale threats facing LLNP – infrastructure development, commercial agricultural encroachment, etc – the TNC-IP staff have been very honest and realistic about the impact its enterprise-based approaches to conservation of the Park can have In other words, it has become clear to the staff that these efforts must be coupled with larger scale policy and income generation initiatives if the integrity of LLNP is not to be broken

Nonetheless, TNC-IP and its partners have made significant progress in working with the communities and ensuring that they are part of the process not only now, but also in the future – so that they are not lost in the mega-works of the ADB and Indonesian government

Second, TNC-IP and Sobek expeditions have teamed up to monitor the illegal harvest and trade of rattan coming out of the southern section of LLNP and, at the same time, starting a rafting enterprise down the Lariang River that specifically targets former illegal rattan gatherers for training as river guides, guest house operators along the river, etc Thus far, the number of people trained and, therefore, the direct impact on the illegal trade has been small, but TNC-IP feels it is an important step as they begin to affect the way people manage their resources and adapt to new information about the renewability of those resources

1998 Information

There are very explicit examples of adaptive management at the "small" scale Realizing that the BCN-funded honey hunting enterprise was generating enough revenue that more, untrained and less environmentally responsible farmers were going into the forest to gather the honey, TNC-IP, the communities, and local Indonesian Park officials worked together to devise a system whereby "passes" or identification cards are given to "accredited" honey hunters so that they can legally enter the Park, collect honey, and more sustainably manage the resource than would otherwise have been the case if open access continued This is a specific example where information from the project was used to make changes in resource use In addition, this permitting process has already been agreed to in principle for another site (coffee plantations in the Park), and may also be applied to rattan harvesting from the Park in the future (Source SCB98 from the 1998 Data text document)
The general feeling on the project is that the honey hunters are further along in managing their own enterprise than at any other site "The most successful enterprise has been the honey hunting, yet this has required the least management input Here, the community had an existing activity which was turned into a group enterprise by the simple expedient of lending the group a revolving cash fund " (Source SCB98) Also, "The Honey Enterprises have made great progress The most promising development is the formation of a honey hunters' group in Watutau, and the provision of a Rp 800,000 loan [to be repaid after July 1998] to establish a revolving purchase fund for honey in the village Honey hunters identified immediate cash needs as the reason they sold honey in the village at low prices [Rp2,000/bottle] rather than to wait to collect sufficient quantities to transport to Palu where it can be sold for twice the price The revolving fund allows the group to buy honey directly in the village and collect sufficient quantity to defray transport costs and still earn greater profit If successful, the same model will be used in other honey hunting villages such as Winawanga in the northern Napu Valley " And finally, "[T]his group has been making business recording by using cash-book, purchase and sales-book This is the only group that has made business recording The system of book-keeping introduced by TNC staff is simple and transparent " This record-keeping is done by a local teacher, Yonas, who volunteers his time and skills to keep the books, make the purchases and sales etc on behalf of the community and in his capacity as Treasurer of the Group (Sources TR3, Binara, SCB98 from the 1998 Data text document)

Honey hunters as a group have increased in capacity since the formation of their group in early 1997 "In this case, the strong incentive provided by increased incomes gave the group a strong identity, and facilitated agreements with the park authority " (Source SCB98) TNC staff feel that, while the group is still working on developing its structure and strengthening its role and membership, it has worked well enough to require the least amount of managerial oversight from TNC staff of all the project's enterprises "Farmers devised a system themselves to ensure regular attendance at monthly meetings

This system involves a monthly lottery or *arisan*, to which every member contributes Rp5 000, each member can only win once, so all of the investment is returned (without interest but in a useful lump sum) The date of meetings has now been set as the 9th of every month " (Source TR3)

There is a monitoring plan in place, and community members involved in the enterprise have already begun to assist TNC staff in locating and reporting on conditions in the Park (Source TR2) binara "In the purchasing book, it is also recorded the quantity of honey obtained from how many hives Thus the capacity of hives in the forest are monitored " "The hunters already know when the hives are considered ripe and need to be harvested Of course, they have their own ways how to check the amount of honey in a hive They catch bees from the hive and sting them to the parts of their bodies, usually arms If their arms feel painful and itchy, it means that the hive has not produced much honey They are careful in harvesting honey in order to minimize damaging of the environment It is impressed that they have been deeply concerned about the intact forest of LLNP They seem to have been aware of the damages of the forests of LLNP will cause negative impacts for their future economic resources However, some of them still use fire to clean up their fields by hand " (Source Binara)

As mentioned earlier, a revolving loan of Rp800,000 was started with BCN funds in Napu The money has been lent in small trenches at a 5% per month interest rate (quite high, quite entrepreneurial-- probably needs to change given that it is supposed to be a loan that has social and environmental "goods" attached to it) Nonetheless, the loans made to date have been repaid There is no information on what those loans were used for-- perhaps for honey hunting start-up capital but more likely for other things There was one report that the treasurer (Pak Jonas) in charge of the loan received a written "request" to loan some of the money to the UPPD's Head TNC is working with CARE to set up a more formal credit scheme (Sources TR3-4 from the BCN, 1998, Data text p43)

D References

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E Maps

1 Site Map

Maps sent in May 1998

2 Provincial/National Maps

These were delivered in May 1998

3 Global/Regional Maps

The Biodiversity Support Program s Biodiversity Conservation Network (BCN) Planning and Implementation Grants (produced by WWF-US Conservation Science)

Biological Distinctiveness of the Terrestrial Ecoregions of the Indo-Pacific (produced by WWF-US Conservation Science)

The Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 9 3 Bada Valley

A General Information

Site Name	9 3 Bada Valley
Province/State	Central Sulawesi Province
Country	Indonesia
Institutional Partners	The Nature Conservancy Indonesia Program (TNC-IP) CARE-Indonesia University of Guelph Sobek Expeditions

Biome	111 Sulawesi montane forest
Area Under Effective Management (ha)	11,000 ha
Total Project Area	11,000 ha

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

Sulawesi's Lore Lindu National Park (LLNP) encompasses 217,000 ha, 90% of which is covered in montane forests, and the other 10% comprised of rare and species-rich lowland rainforest (TNC 1998, p 4, TNC-IP 1995, p 4) LLNP is surrounded by three distinct valleys where TNC-IP is working Palolo (north), Napu (east), and Bada (south) As the main catchment and watershed for these valleys and the biological communities residing within them, LLNP's maintenance is critical to Central Sulawesi's ecological balance LLNP's habitat harbors most of Sulawesi's mammals (including some endemic, endangered species), birds (194 species, including 66 endemics), and a rich variety of rare butterflies (TNC-IP 1995, p 4 - 5, BCN 1998, p 57) For these reasons the World Parks Congress established Lore Lindu as a national park in 1982 and, in 1993, LLNP was declared a Man and Biosphere Reserve by UNESCO and nominated as a World Heritage Site by the Indonesian Government (TNC-IP 1995, p 5, BCN 1998, p 57)

The LLNP ecological setting is characterized by the Sulawesi montane forest ecoregion, an area considered "globally outstanding" in terms of its biological distinctiveness within the Indo-Pacific region It has subsequently been given the highest biodiversity conservation priority ranking on a global scale (Wikramanayake *et al* , 1998)

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information

Sustaining effective management of large, ecologically complex protected areas requires adequate sources of financial and human support The largest "investment" in conservation to date in and around LLNP has been from the BCN But because of its distinctiveness, LLNP has recently attracted the attention of several major donors The Asian Development Bank for example, is likely to loan the Indonesian government up to $40 million dollars over 5 years for conservation of the Park and its buffer zone It is expected that the BCN-funded sites and specific activities will continue to receive support from this arrangement in an effort to maintain funding for balanced development and

conservation initiatives In addition, TNC-IP is currently receiving funds from the USAID mission in Indonesia and other foundations to sustain the activities that have been started with BCN money, and to expand TNC-IP's mix of strategies for conservation in the Park (e g , in FY97, the BCN-funded monitoring activities were able to leverage US$8,000 from ANZDEC to produce satellite images and maps of LLNP, which will be used for regional planning purposes, including designating strict conservation and limited resource use zones in and around the Park, solidifying Park boundaries, determining where infrastructure development will have the least environmental impact, etc)

The cumulative impact of TNC-IP s (and other, local environmental NGOs) very visible presence in LLNP has been the postponement of plans to build a major a major hydroelectric dam within the Park boundaries (near Lake Lindu), the cancellation of plans to build an environmentally destructive road right along side the Lariang River, which borders the southwestern edge of the Park, and heightened awareness among community members working with TNC-I and CARE regarding agricultural encroachment into LLNP (particularly with coffee crops)

1998 Information

With regard to the Park, according to a social survey conducted, most villagers surveyed realize that the Park is not available for agricultural expansion and were willing to abide by that if they are given access to some of the other Park's resources Also, though the sampling size was small the survey does include some information which is indicative of local people's growing understanding about the project, the Park, conservation aims, and how community members themselves fit into the picture (BCN, 1998, Data text document p43)

C Adaptive Management

1997 Information

Given the very large-scale threats facing LLNP – infrastructure development, commercial agricultural encroachment, etc – the TNC-IP staff have been very honest and realistic about the impact its enterprise-based approaches to conservation of the Park can have In other words, it has become clear to the staff that these efforts must be coupled with larger scale policy and income generation initiatives if the integrity of LLNP is not to be broken

Nonetheless, TNC-IP and its partners have made significant progress in working with the communities and ensuring that they are part of the process not only now, but also in the future – so that they are not lost in the mega-works of the ADB and Indonesian government There are two very explicit examples of this and of adaptive management at the "small" scale First, realizing that the BCN-funded honey hunting enterprise was generating enough revenue that more, untrained and less environmentally responsible farmers were going into the forest to gather the honey, TNC-IP, the communities, and local Indonesian Park officials worked together to devise a system whereby "passes" or identification cards are given to "accredited" honey hunters so that they can legally enter the Park, collect honey, and more sustainably manage the resource than would otherwise have been the case if open access continued This is a specific example where information from the project was used to make changes in resource use

Second, TNC-IP and Sobek expeditions have teamed up to monitor the illegal harvest and trade of rattan coming out of the southern section of LLNP and, at the same time, starting a rafting enterprise down the Lariang River that specifically targets former illegal rattan gatherers for training as river

guides, guest house operators along the river, etc Thus far, the number of people trained and therefore, the direct impact on the illegal trade has been small, but TNC-IP feels it is an important step as they begin to affect the way people manage their resources and adapt to new information about the renewability of those resources

1998 Information

One part of adaptive management is the involvement of the government in the project As an example of how interested local government officials are to see their villages (and, at least indirectly, themselves) obtain alternative income sources, the local *camat* (government-appointed official) in Gintu wrote a letter to TNC and PT LLW to continue to pursue the rafting enterprise and all of the business training for local villagers (Source **TR4**)

In 1995, following TNC and BCN staff meetings with the Governor and other local officials in Central Sulawesi, a planned road along the Lariang River (and the southwestern border of the Park) was postponed indefinitely on grounds that it would run too close to the River, create soil erosion, act as a means for greater (perhaps illegal) exploitation of local resources, and damge the Lariang watershed As of mid-1998, the road still had not been built (Sources **SVR1 TR1**)

D References

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E Maps

1 Site Map

Map sent in May 1998

2 Provincial/National Maps

3 Global/Regional Maps

The Biodiversity Support Program s Biodiversity Conservation Network (BCN) Planning and Implementation Grants (produced by WWF-US Conservation Science)

Biological Distinctiveness of the Terrestrial Ecoregions of the Indo-Pacific (produced by WWF-US Conservation Science)

The Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 10 1 Arfak Mountains Nature Reserve

A General Information

Site Name	10 1 Arfak Mountains Nature Reserve (AMNR)
Province/State	Manokwari Regency, Irian Jaya Province
Country	Indonesia
Institutional Partners	Yayasan Bina Lestari Bumi Cenderawasih (YBLBC)

Biome	119 Vogelkop montane forests
Area Under Effective Management (ha)	29,130 ha
Total Project Area	268,000 ha

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

Irian Jaya hosts an extraordinarily rich concentration of biological diversity and high degree of endemism

> Biogeograpahically, Irian Jaya has by far the richest concentration of plant diversity in all of Indonesia, and – many botanists believe – perhaps in all the world, estimating some 16 000 spp of plants on the island of New Guinea, with greater than 124 genera of flowering plants being endemic But many botanists believe that further study may reveal as much as 90% of all flowering spp to be found no where else on earth Moreover, mountain ranges within Irian are essentially 'islands' separated by 'seas' of lowland forest area, resulting in extremely high montane biota endemism Under such parameters, conservation significance is obvious (BCN 1997a p 2)

The Arfak Mountains themselves, which are located in the Bird's Head peninsular region of northwestern Irian Jaya, reflect this extraordinary diversity and endemism Included within this area are 110 mammal species (including marsupials like tree kangaroos, bandicoots, and cuscus), 320 bird species (five endemic to the Arfak-Tamrau mountain region), and one endemic birdwing butterfly (*Ornithoptera*) species and two endemic sub-species (WWF-IP 1994, WWF-IP 1990) The Arfak Mountains are currently regarded as the center of evolution for Birdwing Butterflies Though small in area in comparison to other ranges within Irian Jaya, the Arfak Mountains rise up from the coastline with peaks of over 2500 m and represent an important catchment area for several regional river systems (WWF-IP 1994)

The Arfak ecological setting is characterized by the Vogelkop montane forest ecoregion, an area considered "globally outstanding" in terms of its biological distinctiveness within the Indo-Pacific region and which has subsequently been given the highest biodiversity conservation priority ranking on a global scale (Wikramanayake *et al* , 1998)

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information

While the project cannot realistically manage and monitor the entire Arfak Mountains Nature Reserve (68,325 ha), the project-supported butterfly enterprise has, according to project staff a direct link to and immediate impact on an estimated 17,420 ha of tropical montane forest According to the YBLBC project and field staff, the growth of a Birdwing butterfly farming business, with sales of US$63,000 and involving over 1,400 farmers in 1997, has provided communities with cash incentives that can counter threats to the area's biodiversity [e g , selective logging, increased shifting agriculture and encroachment into the Reserve to meet cash needs – to this point, evidence that this threat is being reduced as a result of the project is anecdotal (see YBLBC/WWF-IP, TR 3)] By monitoring the health of the ecosystem (the enterprise's stock of butterflies comes from the Reserve which represents its primary habitat), monitoring – for example – initial attempts by outside mining interests to assess the site, and stopping the illegal poaching of Birdwing butterflies by outsiders, the surrounding communities now effectively manage the natural area on which this conservation enterprise depends and consequently bolsters project partner management efforts of the Reserve itself

1998 Information

The principal agent of primary and secondary forest habitat loss in the project site is encroachment, primarily for increasing local swidden agriculture needs as a result of a growing population but to a lesser degree for direct human settlement Encroachment is typically characterized by clearing of forest through slash and burn techniques During the September 1998 BCN site visit, two discussions occurred with participating community members from two different village regions (the northwestern and central-eastern geographic areas of the project) which allowed BCN staff to approximate the percent change to the project site's habitat of 18,000 ha as a consequence of forest encroachment The first discussion occurred with representatives from the northwestern geographic area of the AMNR, and included input from Minyambou/Mbenti, Mokwam, and Demaisi Village participants A second discussion with representatives from the central-eastern area of the AMNR (Warkapi Village), who are not regular participants in butterfly farming activities like residents from the northern villages, but who have nevertheless pushed the effective reserve boundary back two hours journey (only a few km) from its originally delineated position by WWF and government officials on the map Where there was once a fence running along the boundary near Warkapi, it has long since been torn out by local residents who say they became frustrated with the fact that they were neither consulted on the boundary delineation nor involved in the management of the reserve, and thus chose to ignore the designation and encroach two hours hike up into the reserve to make their gardens There are other contributing factors to this encroachment, including an exploding local population in Warkapi since the initial demarcation of the boundary Despite the disparate degree of project participation from the two village areas, both the Warkapi and northern village discussions suggest that while these two village areas represent a small proportion of the total reserve boundary, there has nevertheless been a small degree (estimated 15%) of encroachment within the project site (bufferzone and reserve forest areas) since the T-zero time period of late 1994/early 1995 More importantly, this encroachment appears to be occurring external to the influence of the project butterfly farming activities -- that is to say, it appears that the project's intervention is unable to adequately address the threat of further forest encroachment This assumption has been confirmed through independent input from project and community representatives (see TRA results)
(1998, BCN, Data text document p6)

C Adaptive Management

1997 Information

Biological monitoring work was first implemented with BCN's direct assistance during September 1997 Until this time monitoring had been implemented, but it was not inclusive of local community members and did not necessarily have a direct correlation to the environmental sustainability of the butterfly enterprise itself The monitoring skills and efforts which have been implemented since September 1997 – and which have been enthusiastically received by local villagers – are undertaken by a mix of YBLBC project staff and local community participants and are designed to document impacts which enterprise activities (i e , birdwing butterfly ranching and renewable living resource extraction) might have upon resident butterfly populations These butterfly populations are also being used as a proxy indicator of the area's unique biodiversity and general biological health

Because most enterprise activities occur outside the physical boundaries of the AMNR (communities have established foodplant stations near their villages which attract the butterflies from the forest) monitoring has been relatively confined within outlying village areas Occasional surveys have however, been completed within the Reserve and its buffer zone as 'control' sites (i e natural conditions) against which to compare findings found from within village areas (BCN 1997a, p 23) Monitoring surveys are now being completed on a quarterly basis by two community-participant teams within two distinct village areas west of AMNR

Because local project participants are actively assessing the impact of their butterfly ranching enterprise on *in situ* biodiversity, the ultimate goal of the monitoring plan is to generate information directly related to that enterprise which can then be analyzed and used to adapt current resource use practices The community members themselves are after all, both the land owners and decision-makers at the site, and are therefore best positioned to make informed choices about the future of the program As one consulting entomological expert put it, the local residents' "practical and on-site knowledge of the *Ornithoptera* and their food plants makes their own analysis of the results of data collection important" (Montgomery 1997, p 8)

The communities' biological monitoring lessons are, however, not strictly limited to results generated from the data gathered In fact, some of the most important outcomes are process-oriented lessons which reinforce stewardship practices connected to enterprise activities, as illustrated in BCN's 1997 Annual Report

> A key requirement of project staff is to assist in the interpretation of the [monitoring] results so that meaningful feedback is returned to the community from which it came, so the community can put the results to use For example, by taking a close look at the [larvae] foodplant and making a note of its health and vigor, farmers become more aware of the condition of their vines Noting whether vines were in fruit served as a reminder that the fruits would need to be planted to ensure larvae food plants One larvae was rescued from a completely eaten vine and replaced on a thriving one (BCN 1997, p 63)

1998 Information

Yoso Bumantoro and YBLBC staff have made the monitoring activities more participative, in which community members take an active role in conducting the biological monitoring through monitoring groups Monitoring at this site was expanded this year from three monitoring teams in the Fall of

1997 to 12 teams in 1998 This is an increase from 20 people involved up to 83 people now involved in the monitoring (BCN 1998 YBLBC 1998 Technical Report) The "involvement, interest level and commitment of the communities" is quite high (Montgomery 1997 p7) The community requested for BCN to come and train the community members on the use of the data so that they can learn from their involvement in the monitoring (BCN 1998)

D References

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E Maps

1 Site Map

See maps previously submitted to USAID during May 1998

2 Provincial/National Maps

3 Global/Regional Maps

Maps previously submitted to USAID, May 1998

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The Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 11 1 Saba

A General Information

Site Name	11 1 Saba (Biak Island)
Province/State	Biak Numfor District, Irian Jaya Province
Country	Indonesia
Institutional Partners	Yayasan Rumsram Yayasan Hualopu IDRC Canadian University Service Organization (CUSO)

Biome	205 Northern New Guinea and Coral Sea Marine Ecosystems
Area Under Effective Management (ha)	100 ha
Total Project Area	2,142 ha

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

Eastern Indonesia is home to the richest assemblage of marine biodiversity on Earth More specifically, Biak Island and its associated islands represent some of the most intact coral reef ecosystems in the Indo-Pacific region Results of surveys conducted in Biak and the Padaido Islands indicate that there are nearly 100 coral species and 155 teleost species representing 25 genera found in the nearshore reef systems This wealth of marine biodiversity places this geographic area near the top of eastern Indonesia's list of biologically significant marine sites (Yayasan Rumsram 1995, p 2 - 7, BCN 1997, p 65)

This marine ecoregion – including Biak and the Padaido Islands – was classified and designated by World Wildlife Fund (Olson and Dinerstein 1998) as one of the 200 most important ecoregions in terms of conservation significance

> The Global 200 targets biologically outstanding ecoregions that deserve special attention from conservationists By focusing on these 200 ecoregions, we can conserve the broadest variety of the world's species and habitats, and foster the persistence of the ecological processes that maintain the web of life

Saba has the most intact reef system of the three specific project sites (Wundi and Dauwi/Pasi being the other two), and the largest number of butterfly fish, which is being used as an indicator species to measure and monitor the project site's rich biodiversity (BCN 1997, the same method of using butterfly fish as an indicator species is being employed by WWF-IP and other Indonesia-based groups implementing marine-based conservation projects)

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information

Ongoing monitoring of the coral reefs is being conducted jointly by project staff and local community members who have been trained in reef monitoring methods – from fish catch surveys to underwater manta tows Results from surveys conducted over the past two years are indicative of habitat maintenance trends, as described by a Hualopu staff member in BCN's 1997 Annual Report

> Monitoring of coral reef health and biodiversity has been conducted twice The data show that all reefs being surveyed are in just as good or slightly better condition than they were at the beginning of the project Improvements can be seen in areas that were damaged in the past by blast fishing or by the earthquake and tsunami of 1996 Recovery is particularly rapid off Runi Island the site of extensive earthquake damage Monitoring shows that blast fishing is at an all-time low - in fact virtually non-existent - at all project sites because of increased awareness

It is expected that the highly successful outreach program in the Padaido Islands, Indonesia will be extended to another village in FY98, thus extending the sphere of influence of project efforts within the surrounding habitat Attendance at project meetings at the current sites has been very high, as many as 1,045 people (from three villages) regularly attended environmental and educational activities (this number represents almost 90% of the community members, including children who are part of the project) The project staff feels strongly that all of these community members are very involved in the outreach activities and that without this interest there would quite simply, be no project With the inclusion of the fourth village, Opiaref, into the project activities in FY98, the attendance at outreach activities may be as high as 1,495

1998 Information

There has not been any notable decline in coral reef habitat or health since monitoring began in February 1997 Saba's monitoring results confirm that live coral cover remains as high as 95% in some areas More notably, there also been reported improvements in live reef cover in some areas, and increased numbers of butterfly fish species, which are generally accepted as indicator species for coral health At Wundi island, initial live cover of monitored reefs was put at 1-7%, on average This was revised down in February 1998, but staff think it is not a matter of further declines in habitat since the project began, but in errors made during monitoring sampling A live coral transplantation project designed to encourage rejuvenation of previously dynamited reefs also successfully got underway during 1998 All of these activities contribute not only to restoration of habitat quality, but also quantity (Rumsram 1998, Marlessey 1998)

No sediment or notable run-off was detected as a result of Hotel Maraw There was, however, some damage done to live coral by 54 of the 68 cement blocks placed on the reefs by Indonesian marine biological researchers This damage was, of course isolated The trained scientists on the staff calculated an average of 86% live coral cover on some of the transects while the trained community members counted 81% The discrepancy seems to be a result of the community using too small a sample size The 86% figure prevails for the moment, and there is not a lot of variation across transects (Rumsram 1998)

At all transect sites, project staff counted more butterfly fish species in one year after the original baseline studies were done Project staff do report a positive, very consistent correlation between the greater variety of of butterfly fish species found and the health of the respective reefs (Rumsram 1998)

Rumpons (Fish Aggregating Devices, or FADs) have been set up off of Pasi/Dawi and Wundi to take pressure off of the reefs But, generally, fishermen only use them for night fishing Only about 5 6% of the Dawi catch (by number) comes from the *rumpons*, but 16 7% in weight, indicating that the size of the fish tends to be larger on the *rumpon* than on the reefs (another reason the project staff are trying to encourage *rumpon* use) *Rumpons* at Dawi are regularly used The ones at Wundi are not at all (Source BMR97) When discussing about the impacts of fishing methods on reef organisms with BCN during a 1998 site visit, participating communities explained that since they began using the BCN-funded FADs and stopped using dynamite and cyanide, the impact of their fishing activities now appears to be very low Catch monitoring results suggest that fishing near the Fish Aggregating Devices (FADs) also has had minimal impact on resident fish stocks In additon, their gill nets are of a large enough mesh size now to ensure that juvenile fishes will not be trapped in the nets and that coral reefs will not be impacted in comparison to nets employed through trawl techniques or smaller mesh sized gill nets (BCN 1998)

Replication of the community-based marine resource management model employed in the Padaidos is being encouraged through a publication on the subject, produced during 1998 by the International Center for Living Aquatic Resources Management (ICLARM) ICLARM invited Rumsram and its partners to contribute a chapter in their coral reef management publication, highlighting the techniques lessons, and concrete conservation successes experienced to date on site (BCN 1998)

C Adaptive Management

1997 Information

Biological monitoring training was a major focus of project activities in the Padaido Islands in FY97 Yayasans Hualopu and Rumsram worked closely with over 30 people from the three project sites and villages to transfer skills in doing fish counts at designated reef monitoring sites and at the Fish Aggregating Devices (which are being used to reduce pressure on the reefs), and in running underwater transects, setting quadrants, etc Throughout FY97, villagers were involved in the monitoring, to the extent that they were able to produce information and data that has been presented to other donors and practitioners (e g , the World Bank/Indonesia, Kehati, University of Rhode Island), who have been surprised and laudatory of the work done (BCN 1997) Two training sessions were conducted in FY97 and another is planned for FY98

The result of this monitoring has been one of the clearest examples of adaptive management to date The project staff have very explicitly worked to ensure that the data is gathered and understood by the people living at the sites and utilizing the resources The communities have, in turn, used this information to get a government-recognizedbut locally-developedand enforced ban on the use of dynamite, cyanide, small-mesh gill nets, and crowbars by local fishermen The starkest example is Wundi, where blast fishing has decimated the surrounding reefs to the point that they represent the least percentage of live coral in the project site The people of Wundi have begun a campaign not only to ban destructive fishing practices, but are now working with Yayasans Rumsram and Hualopu to start a re-coralization program Because they learned through project monitoring that the most important source of destructive fishing practices was coming from a neighboring island, the people of Wundi are now taking their message and their work to that community to include them in the process of rehabilitation All of this – and more – is a result of gathering useful information, learning, and adapting practices, many of which are based on traditional *nasisen* rules and regulations, not government-imposedlaws

1998 Information

BCN's site visit during 1998 allowed BCN to discuss threat reduction with project participants in the Padaidos, and how project learning was able to react to exisiting threats One threat previously identified in Saba is the large tourist restort, Hotel Maraw, sitting adjacent to Saba village In particular, wastewater run-off from the resort damaging Saba's reefs has been reported to be of great concern to Saba residents During 1998, BCN learned that although there is no action taken yet to address the waste dumped by Hotel Maraw, the community is discussing the possibility to take sample from the waste effluent near their village and send the sample to Jakarta for sufficient laboratory examination They are wondering if they could use BCN funds for this type of examination, and if there is a possibility that BCN could be extended to allow for additional threat reduction activities (BCN 1998)

All internal threats have been met, according to Saba residents, except for the use of detergent in the intertidal zone during washing They report that the impact of this has not yet become noticable, and point out that people are moving up into the hills as a result of fear of another Tsunami, which should reduce the problem However, they are aware that they should educate people about the impact of detergent on their reefs and water supply The internal threat of anchorage on live coral is no longer a problem since people will not tolerate mooring of boats on their reefs and have installed mooring bouys on site as an alternative (BCN 1998)

The Saba reef conservation group has provided the project with hard evidence of increased community awareness and the solidarity of local government with project goals In August 1997, national research institute scientist without consultation with the community, set up a permanent reef monitoring transect on Saba reef Unfortunately this transect consisted of heavy concrete blocks tied together with high test fishing line and resting on top of living coral Recognizing the threat to the reed, the local conservation group removed the blocks The damage inflicted was documented photographically by Dr Novaczek and the photos were taken both to the regional office of the research institute in Ambon and to Biak government offices The community, with help from Rumsram, also sent a representative to a national meeting where a complaint was made to the parties responsible and their funder In the course of the resulting controversy the Biak Bappeda office and Tourism departments sided with the community and in the end the village of Saba received an apology from the research institute (BCN 1998)

Tera Baransano, the head of conservation group of Saba village, has been very active and articulate in explaining how destructive fishing threats affect Saba He explained that the effect of cyanide will carried along the water because the hazardous substance remains after usage The effect of cyanide, therefore could affect larger area subsequently until the poisonous substance faded away Considering this logic, Tera believes that the destruction of habitat areas is considerably wide over a slow rate of time (BCN 1998)

D References

Biodiversity Conservation Network (BCN) 1997 *Annual Report Getting Down to Business* Biodiversity Support Program, Washington, DC

Biodiversity Conservation Network (BCN) 1998 *Padaido Islands Analytical Data text Document* Biodiveristy Support Program, Washington, DC

Implementation Grant Proposal (IP) 1995 Original Monitoring Plan, 12/95

Marlessy, Cliff 1998 *Community-Based Marine Resource Management in the Padaido Islands Biak Island Irian Jaya* Paper presentation at the 1998 Meeting of the Society for Conservation Biology, Sydney, Australia

Olson, D M , and E Dinerstein In press The Global 200 A Representation Approach to Conserving the Earth's most Biologically Valuable Ecoregions *Conservation Biology*

Yayasan Rumsram 1995 *Sustainable Community Based Marine Resource Management and Conservation in Padaido Islands Biak* Yayasan Rumsram, Biak, Indonesia

Yayasan Rumsram (Rumsram) 1998 *May 1998 Biological Monitoring Report* Yayasan Hualopu, Ambon, Indoneisa

Yayasan Rumsram (Rumsram) 1997 *October 1997 Biological Monitoring Report* Yayasan Hualopu, Ambon, Indoneisa

E Maps

1 Site Map

See Maps previously submitted to USAID during May 1998

2 Provincial/National Maps

3 Global/Regional Maps

Maps previously submitted to USAID during May 1998

The Biodiversity Support Program s Biodiversity Conservation Network (BCN) Planning and Implementation Grants (produced by WWF-US Conservation Science)

Biological Distinctiveness of the Terrestrial Ecoregions of the Indo-Pacific (produced by WWF-US Conservation Science)

The Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 11 3 Pasi/Dauwi

A General Information

Site Name	11 3 Pasi/Dauwi (Padaido Islands)
Province/State	Biak Numfor District Irian Jaya Province
Country	Indonesia
Institutional Partners	Yayasan Rumsram Yayasan Hualopu IDRC Canadian University Service Organization (CUSO)
Biome	205 Northern New Guinea and Coral Sea Marine Ecosystems
Area Under Effective Management (ha)	650 ha
Total Project Area	2152 ha

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

Eastern Indonesia is home to the richest assemblage of marine biodiversity on Earth More specifically, Biak Island and its associated islands represent some of the most intact coral reef ecosystems in the Indo-Pacific region Results of surveys conducted in Biak and the Padaido Islands indicate that there are nearly 100 coral species and 155 teleost species representing 25 genera found in the nearshore reef systems This wealth of marine biodiversity places this geographic area near the top of eastern Indonesia's list of biologically significant marine sites (Yayasan Rumsram 1995, p 2 - 7, BCN 1997, p 65)

This marine ecoregion – including Biak and the Padaido Islands – was classified and designated by World Wildlife Fund (Olson and Dinerstein 1998) as one of the 200 most important ecoregions in terms of conservation significance

> The Global 200 targets biologically outstanding ecoregions that deserve special attention from conservationists By focusing on these 200 ecoregions we can conserve the broadest variety of the world's species and habitats and foster the persistence of the ecological processes that maintain the web of life

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information

Ongoing monitoring of the coral reefs is being conducted jointly by project staff and local community members who have been trained in reef monitoring methods – from fish catch surveys to underwater manta tows Results from surveys conducted over the past two years are indicative of habitat maintenance trends, as described by a Hualopu staff member in BCN's 1997 Annual Report

> Monitoring of coral reef health and biodiversity has been conducted twice The data show that all reefs being surveyed are in just as good or slightly better condition than they were at the

beginning of the project Improvements can be seen in areas that were damaged in the past by blast fishing or by the earthquake and tsunami of 1996 Recovery is particularly rapid off Runi Island, the site of extensive earthquake damage Monitoring shows that blast fishing is at an all-time low - in fact virtually non-existent - at all project sites because of increased awareness

It is expected that the highly successful outreach program in the Padaido Islands, Indonesia will be extended to another village in FY98, thus extending the sphere of influence of project efforts within the surrounding habitat Attendance at project meetings at the current sites has been very high, as many as 1,045 people (from three villages) regularly attended environmental and educational activities (this number represents almost 90% of the community members, including children, who are part of the project) The project staff feels strongly that all of these community members are very involved in the outreach activities and that without this interest there would, quite simply, be no project With the inclusion of the fourth village, Opiaref, into the project activities in FY98, the attendance at outreach activities may be as high as 1,495

1998 Information

There has not been any notable decline in coral reef habitat or health since monitoring began in February 1997 Saba s monitoring results confirm that live coral cover remains as high as 95% in some areas More notably, there also been reported improvements in live reef cover in some areas, and increased numbers of butterfly fish species, which are generally accepted as indicator species for coral health At Wundi island, initial live cover of monitored reefs was put at 1-7% on average This was revised down in February 1998, but staff think it is not a matter of further declines in habitat since the project began, but in errors made during monitoring sampling A live coral transplantation project designed to encourage rejuvenation of previously dynamited reefs also successfully got underway during 1998 All of these activities contribute not only to restoration of habitat quality, but also quantity (Rumsram 1998, Marlessey 1998)

No sediment or notable run-off was detected as a result of Hotel Maraw There was however, some damage done to live coral by 54 of the 68 cement blocks placed on the reefs by Indonesian marine biological researchers This damage was, of course, isolated The trained scientists on the staff calculated an average of 86% live coral cover on some of the transects, while the trained community members counted 81% The discrepancy seems to be a result of the community using too small a sample size The 86% figure prevails for the moment, and there is not a lot of variation across transects (Rumsram 1998)

At all transect sites, project staff counted more butterfly fish species in one year after the original baseline studies were done Project staff do report a positive, very consistent correlation between the greater variety of of butterfly fish species found and the health of the respective reefs (Rumsram 1998)

Rumpons (Fish Aggregating Devices, or FADs) have been set up off of Pasi/Dawi and Wundi to take pressure off of the reefs But, generally, fishermen only use them for night fishing Only about 5 6% of the Dawi catch (by number) comes from the *rumpons*, but 16 7% in weight, indicating that the size of the fish tends to be larger on the *rumpon* than on the reefs (another reason the project staff are trying to encourage *rumpon* use) *Rumpons* at Dawi are regularly used The ones at Wundi are not at all (Source BMR97) When discussing about the impacts of fishing methods on reef organisms with BCN during a 1998 site visit, participating communities explained that since they began using the BCN-funded FADs and stopped using dynamite and cyanide, the impact of their fishing activities

now appears to be very low Catch monitoring results suggest that fishing near the Fish Aggregating Devices (FADs) also has had minimal impact on resident fish stocks In additon their gill nets are of a large enough mesh size now to ensure that juvenile fishes will not be trapped in the nets and that coral reefs will not be impacted in comparison to nets employed through trawl techniques or smaller mesh sized gill nets (BCN 1998)

Replication of the community-based marine resource management model employed in the Padaidos is being encouraged through a publication on the subject produced during 1998 by the International Center for Living Aquatic Resources Management (ICLARM) ICLARM invited Rumsram and its partners to contribute a chapter in their coral reef management publication, highlighting the techniques, lessons, and concrete conservation successes experienced to date on site (BCN 1998)

Fishermen around Dawi complains that the fish stock is not as many as before the Tsunami period They catch less fish for the same amount of time to sail off to the sea In the old days they could catch 200 kgs easily as a group in a day Now they have to collect 200 kg in two days This was the reason why they wanted to have the chest box badly so that they could store the first day catch before they could transport them to Biak for sale according to their calculation, the costs of transportation to Biak are too high to cover (BCN 1998)

C Adaptive Management

1997 Information

Biological monitoring training was a major focus of project activities in the Padaido Islands in FY97 Yayasans Hualopu and Rumsram worked closely with over 30 people from the three project sites and villages to transfer skills in doing fish counts at designated reef monitoring sites and at the Fish Aggregating Devices (which are being used to reduce pressure on the reefs), and in running underwater transects, setting quadrats, etc Throughout FY97 villagers were involved in the monitoring, to the extent that they were able to produce information and data that has been presented to other donors and practitioners (e g , the World Bank/Indonesia Kehati, University of Rhode Island), who have been surprised and laudatory of the work done (BCN 1997) Two training sessions were conducted in FY97, and another is planned for FY98

The result of this monitoring has been one of the clearest examples of adaptive management to date The project staff have very explicitly worked to ensure that the data is gathered and understood by the people living at the sites and utilizing the resources The communities have, in turn, used this information to get a government-recognizedbut locally-developedand enforced ban on the use of dynamite cyanide, small-mesh gill nets, and crowbars by local fishermen The starkest example is Wundi, where blast fishing has decimated the surrounding reefs to the point that they represent the least percentage of live coral in the project site The people of Wundi have begun a campaign not only to ban destructive fishing practices, but are now working with Yayasans Rumsram and Hualopu to start a re-coralization program Because they learned through project monitoring that the most important source of destructive fishing practices was coming from a neighboring island, the people of Wundi are now taking their message and their work to that community to include them in the process of rehabilitation All of this – and more – is a result of gathering useful information, learning, and adapting practices, many of which are based on traditional *nasisen* rules and regulations, not government-imposedlaws

1998 Information

The community is very involved in the biological monitoring In addition to the training that took place following a BCN planning session, village representatives continuously and genuinely stressed their appreciation of how monitoring generated useful information and the utility of application of this information within their fishing livelihoods and harvest behaviors They claimed that their involvement to date has already been useful, and are eager to learn additional skills to continue improving monitoring ability At present, there are 4 fully trained biological monitoring volunteers from Pasi/Dawi and 1 each from Wundi and Saba In addition, 17 fishermen are monitoring catch rates, types of fish, size, and number While some fishermen have requested payment for such counts, Rumsram encourages the counts to still happen on a volunteer basis The project partners have assisted local particpants in setting up and encouraging the use of mooring buoys at the various reef/snorkeling sites, and it now appears that even the church groups are organizing to monitor each other's destructive fishing practice behaviors (this is already the case on Pasi where the church members have already alerted local leaders of bomb use off their coasts) (BCN 1998)

But challenges to the conservation objectives still continue During our site visit meetings, the people of Wundi were accused of still using dynamite fishing techniques, as was generally acknowledged throughout the Padaidos in the past An explicit link to the monitoring was made in the hope that it will help those who continue to employ destuctive fishing practices to understand the impacts and change their behavior, and point to new technologies or alternative income generating activities (BCN 1998)

D References

Biodiversity Conservation Network (BCN) 1997 *Annual Report Getting Down to Business* Biodiversity Support Program, Washington, DC

Biodiversity Conservation Network (BCN) 1998 *Padaido Islands Analytical Data text Document* Biodiveristy Support Program, Washington, DC

Implementation Grant Proposal (IP) 1995 Original Monitoring Plan, 12/95

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Yayasan Rumsram (Rumsram) 1998 *May 1998 Biological Monitoring Report* Yayasan Hualopu, Ambon, Indoneisa

Yayasan Rumsram (Rumsram) 1997 *October 1997 Biological Monitoring Report* Yayasan Hualopu, Ambon, Indoneisa

E Maps

1 Site Map

Map sent May 1998

2 Provincial/National Maps

3 Global/Regional Maps

The Biodiversity Support Program s Biodiversity Conservation Network (BCN) Planning and Implementation Grants (produced by WWF-US Conservation Science)

Biological Distinctiveness of the Terrestrial Ecoregions of the Indo-Pacific (produced by WWF-US Conservation Science)

The Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 12 1 Bendum

A General Information

Site Name	12 1 Bendum Ancestral Domain
Province/State	Bukidnon Province
Country	Philippines
Institutional Partners	Institute of Environmental Science for Social Change (ESSC)

Biome	101 Mindanao montane forests
Area Under Effective Management (ha)	2926 5 ha
Total Project Area	2926 5 ha

Note Project area changed from 1997 to 1998 because of the refined definition of the project site in the CADC application

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

The Pantaron range forms one of the last remaining blocks of old growth and secondary forests in Mindanao The range is critical in securing water resources as it recharges rivers in at least three provinces of Mindanao (1) Bukidnon, (2) Agusan del Sur, and (3) Davao The headwaters of both the Pulangi (which provides hydroelectric power for the national grid and major irrigation) and Agusan rivers are sourced in the range It is one of the few natural features that provide a corridor between the north and south regions of Mindanao The Philippine Eagle, its range now severely restricted to isolated pockets, was sighted in early 1993 between Calabugao and Bendum The range is a link between two known breeding sites at the Calabugao plain and Mt Apo Many of the species found in Mt Kitanglad National Park are present on the range although the existence of endemic species has not been explored yet There remains significantly large blocks of Dipterocarp/Almaciga primary forest, the logged over forest acting as a buffer zone against agricultural encroachment (Walpole 1994)

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information Reported

The Lumads together with ESSC have been able to identify various components they feel are important in monitoring biodiversity at the three sites The first of these is rattan, which Lumad guides have estimated in 1995 to be at around 615 plants per hectare At present , the communities still do not feel that there is enough rattan for commercial harvest and as a result are still monitoring its regeneration and the regeneration of the forest The communities have also been able to identify five different types of forest classifications (1) *Saldab* – thick mossy forest, (2) *Lagit* – mossy forest, (3) *Puwalas* – primary forest, (4) *Lubas Kagulangan* – old regenerating forest, and (5) *Kagulanagn* – regenerating forest (ESSC 95,96)

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In terms of threat reduction, the main fight has been the acquisition of tenurial rights through the acquisition of a Certificate of Ancestral Domain (CADC) for each site All requirements have been submitted to the Department of Environment and Natural Resources (DENR) as of 1997 However, an ongoing disagreement regarding the inclusion of these three sites into a larger CADC claim of an adjacent community has delayed approval (ESSC 1998, BCN 1998)

1998 Update

The project has completed the mapping of the area, integrating the community and technical maps which document that there has been no change in vegetative cover

C Adaptive Management

1997 Information Reported

The Lumads in the course of the project have formed and merged together their forest and water committees in order to finalize their resource use policies based on community and bio-monitoring feedback A good illustration of this concerns the banning of hunting of woodpeckers, hornbills doves and pigeons that still exist in the area Although such fauna are recognized by the community as an important source of protein, the Lumads growing understanding of the important role of these birds in seed distribution and forest regeneration has led the committee to formulate a policy that prohibits the hunting of these dove species (ESSC, BCN 97)

However, the joint committee inevitably had to revisit some of their existing policies and make modifications accordingly as different issues arose

> Other setbacks were identified during a policy evaluation session that people were cutting trees for houses and then asking permission During the discussions the difference between policy and laws were identified, the local policies were then evaluated in terms of relevance, basis of formulation and their effects on the community Modifications were made to some especially for those relating to the use of chainsaws to ensure its use in the community was legal (ESSC 1997)

The project has likewise been able to collect socio-economic data regarding the abaca enterprise at the three sites Based on this data ESSC has revisited some assumptions in their original model regarding the enterprise

> Evaluation of the abaca enterprise is [now] by family group, reflecting the different purchasing patterns The original business plan counted labor as a cost however this is not how the community works Discounting labor reflects more the cash flow situation for the Lumad, which is critical to establishing overall measures of success (ESSC 1997)

1998 Update

In 1998, the community received its CADC, completing the process In addition, the project and community were successful in stopping further land conversion due to migrant encroachment and unregulated agricultural expansion (ESSC 1998)

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D References

Biodiversity Conservation Network 1997 (BCN 97) *Annual Report 1997 Getting Down to Business* Biodiversity Support Program, Washington DC

Environmental Research Division (ERD) 1997 *Fourth Interim Technical Report to BCN* Manila, Philippines

Environmental Research Division (ESSC) 1998 *Final Technical Report to BCN* Manila, Philippines

Walpole, P 1994 *Bendum Pantaron Forest Management Project* Implementation Grant Proposal to BCN

E Maps

1 Site Map

See maps sent to USAID in March 1998

2 Provincial/National Maps

3 Global/Regional Maps

The Biodiversity Support Program s Biodiversity Conservation Network (BCN) Planning and Implementation Grants (produced by WWF-US Conservation Science)

Biological Distinctiveness of the Terrestrial Ecoregions of the Indo-Pacific (produced by WWF-US Conservation Science)

The Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 14 1 Kalahan

A General Information

Site Name	14 1 Kalahan Reserve
Province/State	Nueva Vizcaya and Pangasinan
Country	Philippines
Institutional Partners	Kalahan Education Foundation Inc (KEF)

Biome	100 Luzon montane forest
Area Under Effective Management (ha)	14 730 ha
Total Site Area	14,730 ha

Note that the area of the site has decreased from 15,000 ha in 1997 This decrease is due to the fact that we now have a more accurate estimate of the project area based on the land survey done as part of the Certificate of Ancetral Domain Certificate (CADC) application process

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

The Kalahan Reserve is one of the few remaining intact blocks of forest in Northern Luzon It is located at the junction of the Cordillera and the Caraballo mountain range which supplies water to the Pangasinan and Cagayan Valley basins (Rice 1994)

During the preliminary biological inventory, it was found to contain at least 30 species of birds and 10 species of other animals, mostly bats and reptiles, that are either on the CITES or IUCN lists of endangered species [It is interesting to note that the additional 4 species of birds that were identified are not on any of the official bird listings] The number of endangered species contained in the reserve has since increased to 40 (KEF 1996)

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information Reported

Aside form the identification of endangered flora and fauna, there are other bio-monitoring activities that involve the measurement of land-use change over time Initial estimates of changes in forest classifications indicate an increase in total forest of 1,935 hectares (source KEF land use maps)

Forest Class	Area (ha) in 1994	Area (ha) in 1997
Mossy Forest	263	186
Primary Forest	723	557
Secondary Forest	6,139	7,401
Sanctuary Forest (protected)	3 159	4,076

TOTAL	10,284	12,220

Within these forest, the KEF has established numerous Timbers Stock Improvement (TSI) sites in order to determine the optimal quantity of lumber to extract without damaging the ecology of the forest In terms of the fruit production, measurements on three of the most popular species, Guava, Dawey and Dikay reveal estimated annual yields of 66,444 kg, 45,387 4 kg, and 8 838 kg respectively It is estimated that the community will harvest up to 75% of these fruits in a year Of these, around 10-20% are sold to KEF for the jams and jellies enterprise, while the rest are usually consumed (KEF 1997, BCN 1997)

1998 Update

The results of the 1997 and 1998 land-use survey indicate that the forest biodiversity areas in the Reserve are at least staying constant if not improving (KEF 1998) In addition, data from the Timber Stock Improvement Plots indicates that an increase in the stock of timber in the reserve

C Adaptive Management

1997 Information Reported

The people of Kalahan are beginning to modify their everyday attitudes and behavior based on what they've discovered through the increasingly popular Food Web seminars facilitated by the project staff Through these workshops, the participants from the five different *barangays* were able to increase their understanding of the inter-relatedness of the different ecological components of the reserve-watershed, and recognize their role in protecting and developing it As a result, community members stay away from chemical fertilizers and do their best to protect or not to kill insects and animals they once considered as pest (KEF 1997)

In addition, the Ikalahans are using the bio-monitoring data to fight the construction of the proposed national hi-way that is supposed to cut through reserve linking the provinces of Nueva Vizcaya and Pangasinan together In challenging the EIA that was conducted August of 1995, KEF, among other many arguments, has explicitly stated the permanent destruction of forest resources and the sanctuaries of these endangered fauna as one of the reasons to cancel the project (KEF 1996)

1998 Update

In 1998, the community was able to demonstrate adaptive management of the Reserve

One notable example was that the project was able stop the construction of a major highway through the center of the Kalahan reserve They negotiated an alternative route with the national government A major factor in the discussion was the monitoring information that the project team was able to collect The documentation of the endangered species present in the reserve helped strengthen the case for relocating the highway

A second example was the completion of the CADC process KEF received the CADC in mid-1998 which will enable them to continue full management of the reserve past 1999 and also assume management rights over a much larger area of land surrounding the reserve As part of this process, the community is completing their land-use plan for the CADC (BCN Site visit information)

D References

Biodiversity Conservation Network 1997 *Annual Report 1997 Getting Down to Business*

Kalahan Education Foundation 1996 Third Narrative Report to BCN November 1996

Kalahan Education Foundation 1997 Fourth Narrative Report to BCN, November 1996

Kalahan Education Foundation 1998 Unpublished data on land-use and timber stock improvement

V Maps

A Site Map

See enclosed map

B Provincial/National Maps

C Global/Regional Maps

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BCN Site 15 1 Herowana (Crater Mountain WMA)

A General Information

Site Name	15 1 Herowana (Crater Mountain Wildlife Management Area)
Province/State	Eastern Highlands and Chimbu Provinces
Country	Papua New Guinea
Institutional Partners	Wildlife Conservation Society (WCS) Research and Conservation Foundation of PNG (RCF-PNG)

Biome	128 Papuan Highlands montane forest
Area Under Effective Management (ha)	21,000 ha
Total Site Area	23,700 (260,000 for entire WMA)

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

The Herowana site is located within the Crater Mountain Wildlife Management Area (WMA) which covers 2,600 sq km and spans three provinces The WMA contains a full range of biodiversity, much of which is unique to Papua New Guinea The area is home to 220 bird species, of which 49 are endemic and 84 mammal species, of which 15 are endemic (RCF 1994)

Parts of the Crater Mountain WMA were listed as *very important* priorities for conservation as part of the BSP sponsored PNG Conservation Needs Assessment (BSP 1993) In particular, the report states

> Crater Mountain comprises wet lower montaine forest and Pleistocene Volcanoes The Crater Mountain ecosystem is chosen because of a large expanse of original forest and large populations of a diverse array of birds of paradise including the rare Black Sicklebill *(Epimachus fastuosus)*and Blue Bird of Paradise *(Paradisaea rudolphi)* (BSP 1993 p 201)

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information Reported

Monitoring work being undertaken by the RCF project team shows that threats are being reduced at the Herowana site In particular, the team has had some success in meeting threats from mining companies and from timber companies (BCN Site Visit, 1997) In addition, the project team reports "While economic indicators are rising, preliminary [monitoring] results do not indicate a proportional change in the biological or natural resource use indicators" (BCN 1997, pp 82) However, the team has noted some increase in use of forest lands around Herowana village (RCF 1998)

1998 Update

The communities have had some success in countering external threats However, there have been some difficulties with regard to internal threats The project reports

> We are observing an increased amount of forest clearing for food and coffee gardens in a growing ring around the village as the Herowana population increases there is a notable expansion of gardens to the other side of the Wara Fio river within the last year (RCF 1998 p 29)

C Adaptive Management

1997 Information Reported

The project has worked to help the residents of Herowana set up a Management Committee that creates natural resource law and acts in an official capacity to enforce them (BCN 1997) This committee is comprised of men drawn from the different clans The Committee works in conjunction with other committees including the Business Committee and the Woman's Committee

The project team has been working with the Management Committee and other community residents to gather and analyze both biological and enterprise data in order to test whether the enterprise activity is adversely affecting the natural resources of the site For instance, the project team reports

> To assess change over time, ten economic indicators are being monitored by the project and community representatives To assess the hypothesized linkage between eco-enterprise success and conservation of biodiversity, project staff and community representatives monitor seven natural resource indicator species including changes in sensitive biological indicator species and in natural resource use (BCN 1997 pp 81-82)

The ability of the Management Committee to change tactics to solve a problem is demonstrated by their approach to getting previously uncooperative government offices involved in recognizing the community resource laws

> Over the last three years, despite the Crater Mountain landowner management group s conscientious effort to draft and enforce natural resource laws within the boundaries of the WMA, they have received limited assistance from government departments when prosecution of violations is requested To try to improve matters in May 1997, the project staff and landowner committee representatives from four WMA communities staged the first provincial briefing for public officials from Eastern Highlands and Simbu provinces (BCN 1997, p 82-83)

1998 Update

In general, the residents of Herowana seem to be taking some effective action against "external threats" including outside hunters and large companies They are having more trouble, however, with "internal threats "

There are, however, some signs that the clans are still very interested in the conservation aims of the project For example, the project team reports "increased interest by two clans to set aside land for a "park" after participating in a sutyd tour to Gahavsuka Park outside of Goroka in September " Furthermore, 'USPC volunteers returning to Herowana after a three year absence commented that they noticed increased self-confidence in many sectors of the community "

This fits with the overall impression of the project staff that

> We feel that the resident training presence of RCF and WCS field staff in WMA villages over the past years has been one of the variables which has led to increased understanding by clan leaders to appreciate the value of their natural resources and has consequently built confidence of leaders to more vigorously manage and defend natural resource use (TR #4 p 27)

D References

Biodiversity Conservation Network (BCN) 1997a *Annual Report Getting Down to Business* Biodiversity Support Program, Washington, DC

BCN Site Visit 1997 Site visit to RCF offices by Nick Salafsky and Chiranjeev Bedi

BCN Site Visit 1998 Site visit to RCF offices by Nick Salafsky in July

Biodiversity Support Program (BSP) 1993 *Papua New Guinea Conservation Needs Assessment* Biodiversity Support Program, Washington, DC

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E Maps

1 Site Map

See maps provided to USAID during May 1998

2 Provincial/National Maps

3 Global/Regional Maps

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Biological Distinctiveness of the Terrestrial Ecoregions of the Indo-Pacific (produced by WWF-US Conservation Science)

The Global 200 Ecoregions (produced by WWF-US Conservation Science)

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BCN Site 15 2 Haia (Crater Mountain WMA)

A General Information

Site Name	15 2 Haia (Crater Mountain Wildlife Management Area)
Province/State	Gulf, Eastern Highlands, and Chimbu Provinces
Country	Papua New Guinea
Institutional Partners	Wildlife Conservation Society (WCS) Research and Conservation Foundation of PNG (RCF-PNG)
Biome	128 Papuan Highlands montane forest, 130 Southern New Guinea Lowland Forest
Area Under Effective Management (ha)	59,860 ha
Total Site Area	69,960 (260,000 for entire WMA)

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

The Haia site is located within the Crater Mountain Wildlife Management Area (WMA), which covers 2,600 sq km and spans three provinces Haia is composed of ten different clans (RCF 1998) Members of eight of the clans are working at the Wara Sera Research Station Their collective land encompasses 59,960 hectares Land controlled by the other two clans is approximately 10,000 hectares The WMA contains a full range of biodiversity, much of which is unique to Papua New Guinea The area is home to 220 bird species of which 49 are endemic and 84 mammal species, of which 15 are endemic (RCF 1994)

Parts of the Crater Mountain WMA were listed as *very important* priorities for conservation as part of the BSP sponsored PNG Conservation Needs Assessment (BSP 1993) In particular, the report states

> Crater Mountain comprises wet lower montaine forest and Pleistocene Volcanoes The Crater Mountain ecosystem is chosen because of a large expanse of original forest and large populations of a diverse array of birds of paradise, including the rare Black Sicklebill *(Epimachus fastuosus)*and Blue Bird of Paradise *(Paradisaea rudolphi)* (BSP 1993, p 201)

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information Reported

Monitoring work being undertaken by the RCF project team shows that threats are being reduced at the Haia site, although some new threats are now developing In particular, the team has had some success in meeting threats from mining companies and from timber companies (BCN Site Visit, 1997)

1998 Update

The communities have had some success in countering both internal and external threats Regarding changes in land use, the project reports "there has been no observed changes in garden land use practices (TR 4, p 29) "

C Adaptive Management

1997 Information Reported

The project has worked to help the residents of Haia set up a Management Committee that creates natural resource law and acts in an official capacity to enforce them (BCN 1997) This committee is beginning to become more effective

1998 Update

In their latest technical report, the project team writes

> The Management Committee has gained notable confidence in enforcement o' WMA laws which threaten natural resource use by individuals from outside the WMA The most notable case was the confrontation of the Committee with Karimui government officials who entered onto Pawaiin lands to hunt Normally intimated by government officials the management committee apprehended the hunting party notified them of the WMA laws and collected a fine for the violation (RCF 1998 p 27)

This fits with the overall impression of the project staff that

> We feel that the resident training presence of RCF and WCS field staff in WMA villages over the past years has been one of the variables which has led to increased understanding by clan leaders to appreciate the value of their natural resources and has consequently built confidence of leaders to more vigorously manage and defend natural resource use (TR #4, p 27)

D References

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BCN Site Visit 1997 Site visit to RCF offices by Nick Salafsky and Chiranjeev Bedi

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The Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 15 3 Maimafu (Crater Mountain WMA)

A General Information

Site Name	15 3 Maimafu (Crater Mountain Wildlife Management Area)
Province/State	Eastern Highlands and Chimbu Provinces
Country	Papua New Guinea
Institutional Partners	Wildlife Conservation Society (WCS) Research and Conservation Foundation of PNG (RCF-PNG)

Biome	128 Papuan Highlands montane forest
Area Under Effective Management (ha)	25,600 ha
Total Site Area	27,000 (260,000 for entire WMA)

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

The Herowana site is located within the Crater Mountain Wildlife Management Area (WMA) which covers 2,600 sq km and spans three provinces The WMA contains a full range of biodiversity, much of which is unique to Papua New Guinea The area is home to 220 bird species of which 49 are endemic and 84 mammal species, of which 15 are endemic (RCF 1994)

Parts of the Crater Mountain WMA were listed as *very important* priorities for conservation as part of the BSP sponsored PNG Conservation Needs Assessment (BSP 1993) In particular the report states

> Crater Mountain comprises wet lower montaine forest and Pleistocene Volcanoes The Crater Mountain ecosystem is chosen because of a large expanse of original forest and large populations of a diverse array of birds of paradise, including the rare Black Sicklebill *(Epimachus fastuosus)*and Blue Bird of Paradise *(Paradisaea rudolphi)* (BSP 1993, p 201)

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information Reported

New site for 1998

1998 Update

Overall, the project is managing to maintain the status of the vast areas of forest that the community members control For example, the project team reports

> Independent research by the IUCN tree kangaroo and cuscus census (PI- DR Lisa Dabek) at a study site two days walk from Maimafu area reports initial findings of healthy populations of both as compared to a similar census in the Huon Penninsula (TR 4, p 31)

There are some problems, however, associated with both land clearing near the villages and an increased hunting pressure As the project team writes

> It is unfortunate to know that the traditional methods of sustainable hunting has greatly disintegrated with the breaking down of traditional customs and practices In its stead there exists an apparent struggle between the older generations who are adherent loyalists to the traditional practices of the past against an ignorant and care-free younger generation (TR 4, p 31)

C Adaptive Management

1997 Information Reported

New site for 1998

1998 Update

As is the case earlier with the Haia and Herowana sites, the project has worked to help the residents of Maimafu set up a Management Committee that creates natural resource law and acts in an official capacity to enforce them (BCN 1997) This committee is comprised of men drawn from the different clans The Committee works in conjunction with other committees including the Business Committee and the Woman's Committee

The project team has been working with the Management Committee and other community residents to gather and analyze both biological and enterprise data in order to test whether the enterprise activity is adversely affecting the natural resources of the site For instance, the project team reports

> To assess change over time ten economic indicators are being monitored by the project and community representatives To assess the hypothesized linkage between eco-enterprise success and conservation of biodiversity project staff and community representatives monitor seven natural resource indicator species including changes in sensitive biological indicator species and in natural resource use (BCN 1997, pp 81-82)

The communities have been under severe pressure from external threats For example, the community has developed a policy that permits no forms of mineral, oil, and timber prospecting to take place in the WMA This law is still in place, but there are tensions between the community members who want to enforce this and those who don t These tensions were evident at an impromptu hearing that occurred when two mining company officials and a representative of the PNG Mining Wards office dropped in on Maimafu to discuss whether to review an exploration liscense granted to McMinn company Two of the men said "they were against the continuation of the exploration ' A third said that he was "for the exploration liscense if McMinn could sort out the compensation issue and make sure that Maimafu got their fair share" (RCF Memo 14 July 1998)

Although there are still many problems, the overall impression of the project staff is that

> We feel that the resident training presence of RCF and WCS field staff in WMA villages over the past years has been one of the variables which has led to increased understanding by clan leaders to appreciate the value of their natural resources and has consequently built confidence of leaders to more vigorously manage and defend natural resource use (TR #4, p 27)

D References

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The Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 17 4 Mu

A General Information

Site Name	17 4 Mu
Province/State	East New Britain Province
Country	Papua New Guinea
Institutional Partners	Pacific Heritage Foundation (PHF)
Biome	135 New Britain / New Ireland lowland moist forests
	136 New Britain / New Ireland montaine forest
Area Under Effective Management (ha)	1,920 ha
Total Site Area	2,000 ha

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

The Mu site is located in East New Britain The land owned by the Mu communities was listed as being a *very important* priority for conservation as part of the BSP sponsored PNG Conservation Needs Assessment (BSP 1993)

> Little surveyed, but apparently biotically rich Lowland rainforest and montane forest including areas of forest dominated by Lithocarpus and Nothofagus developed on limestone substrate The largest high altitude area in the Bismarck Archipelago (BSP 1993 p 18)

A biological survey conducted by members of the Christensen Research Institute during the BCN-funded planning grant also revealed high levels of biodiversity (see Balun et al 1996) Current project reports estimate that the clans control 2,000 hectares of forest land (PHF 1997)

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information Reported

Monitoring work being undertaken by the PHF project team shows that threats are being reduced at the Mu site – a Threat Reduction Assessment conducted by BCN staff members scored the Mu site at 99 5%, indicating virtually complete threat reduction (BCN Site Visit 1997) In particular, the team has been able to meet the threats from timber companies (BCN Site Visit, 1997)

1998 Update

Despite the problems, none of the villages has yet sold out their forest to the large scale logging compaines, the primary threat

Furthermore the project states that for all projects

- Land was cleared for gardening, but most of the areas being cleared are secondary forest and old salvage areas

- The amount of land being cleared for gardening may be used for a very long time before moving on to a new area
- No large scale logging in projects except in Arabam
- No area being cleared for plantations (PHF 1998b, p 12)

The project team reports that the community enterprises are starting to do some monitoring, looking in particular at

- Transect mapping
- Number of seedlings in a mill site monitored for regeneration and natural re-growth
- Discus and discourage brushing and cutting of seedlings in the mill site
- Monitor the number of trees felled in 1 ha areas
- Tree selection and felling methods

As a result, "the sawmill operators are now beginning to understand what monitoring is all about (sustainability)" (PHF 1998b, p 12)

In addition, a study by an outside researcher at an adjacent site also found that forest logged with a portable sawmill had a substantially higher degree of tree biodiversity than a forest cut by an outside timber company, although both had less biodiversity than primary forest (Lindemalm 1997)

C Adaptive Management

1997 Information Reported

The Mu clan members have banded together to purchase a plantation on land that the clan "sold" in the earlier part of the century They are now just in the process of completing the purchase of this land (BCN Site Visit 1997) As reported in the most recent PHF technical report, the clan members are concerned about maintaining the forests To this end, they have set aside two hectares of their land for conservation and six hectares of old garden land for reaforestation (PHF 1998b)

1998 Update

As of 1998, none of the villages has yet sold out their forest to the large scale logging companies, the primary threat Furthermore, as the project staff states "The Communities have selected or identified areas for conservation, this means that natural re-growth and regeneration can now take place or happen without disturbance" (PHF 1998b, p 11)

D References

Balun, Lawong, Emrik, and Larry Orsak 1996 *A Study on Plant Species Diversity and Spatial Patterns in Rain Forest Communities from Sulka Area in New Britain Island Papua New Guinea* Unpublished report to BCN, Pacific Heritage Foundation, Rabaul, Papua New Guinea

Biodiversity Conservation Network (BCN) 1997a *Annual Report Getting Down to Business* Biodiversity Support Program, Washington, DC

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Biodiversity Support Program (BSP) 1993 *Papua New Guinea Conservation Needs Assessment* Biodiversity Support Program, Washington, DC

Lindemalm, Frida 1997 *Forest Certification and Community Forestry as a Means of Preserving Biodiversity in a Natural Tropical Production Forest* Swedish University of Agricultural Sciences, International Office, Uppsala, Sweden

Pacific Heritage Foundation (PHF) 1998a *Technical Report January 1998*

Pacific Heritage Foundation (PHF) 1998b *Technical Report May 1998*

E Maps

1 Site Map

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2 Provincial/National Maps

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BCN Sites 18 1 and 18 2 The Arnavons Marine Conservation Area Waghena and Sire

A General Information

Site Name	18 1 & 2 Arnavons Marine Conservation Area – Waghena and Sire
Province/State	Choiseul and Isabel Provinces
Country	Solomon Islands
Institutional Partners	The Nature Conservancy (TNC) Solomon Islands Ministry of Forests, Environment, & Conservation International Center for Living Aquatic Resources Management (ICLARM)

Biome	Northern New Guinea & Coral Sea Marine Ecosystems
Area Under Effective Management (ha)	2,235 ha
Total Project Area (ha)	470,000 ha

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

On a Global scale the waters encompassing the Arnavons Marine Conservation Area (MCA) are held within a marine ecoregion which has been classified and designated by World Wildlife Fund (Olson and Dinerstein 1998) as one of the 200 most important ecoregions in terms of conservation significance

> The Global 200 targets biologically outstanding ecoregions that deserve special attention from conservationists By focusing on these 200 ecoregions, we can conserve the broadest variety of the world s species and habitats, and foster the persistence of the ecological processes that maintain the web of life

Surveys conducted since the 1970s have consistently shown the Arnavon Islands to be the most significant rookery in Solomon Islands for the endangered Hawksbill turtle (Mahanty 1998) Regionally, this area is of the most critical rookeries in the Pacific, serving home to one of the largest nesting populations of the species in the world (Marquez, 1990, Mahanty 1998) As a consequence of this biological distinctiveness, the Solomon Islands National Environment Management Strategy has identified the Arnavon Islands as one of the most important areas to be included within a national system of conservation areas

The Arnavons are also ecologically important in other respects Their coral reefs have in the past supported economically important populations of sedentary marine resources, including various shell and beche-de-mer species A rapid ecological survey in 1993 concluded that the coral reef system of the Arnavons was in excellent condition with a diverse array of corals, fish and marine invertebrates, however commercially important invertebrates such as trochus, beche-de-mer, giant clams, and black lip and gold lip pearl oysters were severely depleted (Mahanty 1998) As the islands themselves are uninhabited, this depletion is attributed to heavy harvesting by neighboring villages, particularly in

the Posarae and Waghena areas of south-east Choiseul, and Kia in western Santa Isabel The resources of the Arnavon Islands are known to have economic, subsistence and cultural importance to these groups

The islands themselves are remarkably diverse in terms of their terrestrial plant and animal life with 104 species of land plants, 41 species of bird, of which 8 are endemic to the Solomon Islands, 6 species of bat and at least 7 species of terrestrial reptile being recorded (Mahanty 1998) The islands are also a nesting ground for the rare Sanford's Sea Eagle, Brahmany Kite, Ospreys, Megapodes two species of Pigeon, and many seabird species (TNC)

Second only to Papua New Guinea, the Solomon islands have the greatest diversity of terrestrial vertebrate species of all the Pacific Island nations For example, the Solomon Islands are home to 173 species of land birds and about 50 species of sea, shore and migratory birds The level of endemism is extremely high and many endemic species are restricted to only one island in the archipelago Therefore the Solomon Islands are extremely important for conservation of biodiversity in the Pacific (Enterprise Analysis of the Fisheries Centers in the Arnavon Islands, Solomon Islands pg 6)

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information Reported

The Arnavon Islands Marine Conservation Area (AMCA) designation falls under the governmental jurisdiction of the Isabel Province As a consequence, the Management Plan for the AMCA has been formalized under provincial law (specifically under the Isabel Province Wildlife Sanctuary Ordinance of 1995's Executive Regulations)

Another relevant regulation in relation to the designation of the AMCA include the National Fisheries Act 1972, which has been amended over the years to include

a) A seasonal ban on turtle and turtle egg harvest, and a complete ban on commercial use of turtle and turtle products,

b) A ban on the export of blacklip and goldlip pearl oyster shell, and

c) A ban on certain species of beche-de-mer

All of these resources have been actively harvested from the Arnavon area in the past, but are now protected under national law as well as Isabel Provincial ordinances relating specifically to the Arnavons area The AMCA designation additionally empowers the Arnavons Management Committee (made up of local community stakeholder representatives and government representatives) with the responsibility of creating AMCA regulations which, subject to Provincial executive approval, have legal status under the Isabel Provincial Wildlife Sanctuary Ordinance of 1995

Project-related biological monitoring of keystone marine invertebrate resources is being conducted by ICLARM and The Ecology Lab Pty Ltd (an Australian-based consulting company) with technical support from TNC and the Solomon Islands Government Ministry of Forests, Environment and Conservation The basic framework for monitoring the impact of the project involves comparing invertebrate fishery populations in the AMCA versus control sites in adjacent non-protected areas and other control sites over time using an ANOVA (analysis of variance) model (Lincoln Smith et al , 1996) The initial closure of the fisheries in the MCA in 1995 was timed so as to immediately follow

the completion of a highly sophisticated biological monitoring study to document the status of the invertebrate populations within both the area to be protected under the AMCA and non-protected areas prior to the actual implementation of the AMCA It is hoped that through this baseline study, changes within fishery populations in the AMCA versus non-protected areas can thus be compared against this original study and the management efficacy of the AMCA closure evaluated over a three-year time period While it is not clear at this point whether the three-year time period for the designation of the AMCA itself will sufficiently allow for a significant increase in target species populations over and above normal population fluctuations, the study represents a state-of-the-art attempt to address this important issue

Initial results from the baseline data show that invertebrate stock abundances within both MCA and non-protected waters of were at a similar, low level The baseline study was completed prior to the AMCA declaration in 1995 and has the statistical power to detect small to moderate population increases (Lincoln Smith, Bell, and Mapstone 1996) Two interim surveys were completed during 1996 and 97, with the final set of surveys planned for 1998 (TNC 1997) While data collected during 1996 and 97 have been analyzed by ICLARM, results have yet to be distributed to BCN, although they are expected within the next technical report submission to BCN from The Nature Conservancy during May 1998 Preliminary verbal reports obtained by BCN's Program Officer at a September 1997 meeting with TNC project staff and during an April 1998 visit to the Solomon Islands, however indicate that there has been an increase in marine invertebrate populations inside the AMCA, although the increase may not be statistically significant It is not clear, however, to what degree this effect is the result of the BCN-funded enterprise interventions It is also not clear how effective the AMCA has been in actually enforcing fishing restrictions which could potentially confound the study results

1998 Update

1998 was a truly challenging year for project partners in their efforts to maintain the conservation momentum established over the last few years For example, an increase in poaching by both locals and outsiders during 1998, coupled with the strike of Conservation Officers from the Field Station and their policing posts, resulted in a decrease in the overall are under effective management during 1998 (note that BCN has reported a SO-1 area reduction from 8,000 ha reported during 1997 to 2,200 ha for 1998) Project partners are very aware of the problems, and as a consequence have actively addressed these shortcomings, as reported in their submission for BCN's 1998 Annual Report

> Unfortunately, isolated segments of the community have made attempts to poach reef invertebrates which are sold commercially This has been a growing problem especially over the past year Initially, during the early years of the project the few times that individuals were caught they readily admitted their guilt and shame and were very open to hear what our conservation officers had to tell them about the rules and reasons for the regulations enforced in the conservation area One incident this past year did not follow this trend A group of five men diving for a valuable shell in the conservation area were approached one night by two of our officers Shining powerful underwater flashlights in the officer's faces, a hostile attitude was displayed and violence was threatened A radio call for backup was placed , but by the time other officers arrived in a second boat, the poachers had fled This occurrence raised two concerns in our minds First, a concern for the safety of the conservation officers, and a second question of whether this display of defiance and open hostility would intimidate our officers such that they would be reluctant to approach boats sighted in the conservation area Six weeks later, a boat was sighted in the area and without hesitation our officers stopped the boat They insisted the boat follow them back to the field station where they then searched the boat

> confiscated marine products recorded names and attempted to provide awareness and education on the potential impact on this type of activity in the conservation area
>
> Unfortunately, one of the major causes that support and foster these occurrences of poaching is the difficulty we have had following through with prosecution of offenders We have outstanding cases that are more than two years old The conservation officers do their part, apprehending and gathering evidence against these individuals The police have done their part following procedures, processing these complaints and passing them along to the judicial branch of the government We have not yet been able to bring a single case to court yet due to a lack of magistrates to hear the cases and serve judgment
>
> As a response to this growing problem in the conservation area, several meetings were organized and held in the community that seems to be the source of most of these activities Representatives from all of the major partners were present as well as local policemen from both of the adjacent provinces Everyone reiterated the importance of the project, what it meant to the country in general as a model for conservation effort, what it meant to the local communities and how a protected area affects a much larger area by providing a protected habitat in which animals can safely attain adulthood and reproduce It was further pointed out that the few bags of marine products illegally harvested from the conservation area were jeopardizing the potential benefits that were earmarked for the entire community (TNC 1998a)

However, the overall project design and successful MCA implementation remain of high interest to marine resource managers in the region As a result of the conservation success (particularly with the protection of the turtle nesting beaches) achieved to date by the project and its participating communities, discussions are now underway to explore the possibility of replication of the project's community-based MCA approach, both within the Solomon Islands and other external nations with tropical nearshore resources As described by the project staff, the discussion regarding this expansion has already commenced in regard to other potential sites within the project Provinces

> The interest expressed by local landowners in expansion of the conservation ethic and sustainable utilization of resources over a much larger area is an indication that the concept has taken root Discussions are currently taking place with landowners about the expansion of the conservation area to expand and encompass the northwest end of Isabel Province and the southeast end of Choiseul Province This expansion will not be modeled on the AMCA (Arnavons Marine Conservation Area) restrictions but rather will operate under a management plan whose goal will be to sustainably manage and protect resources through controlled harvest and/or nondestructive utilization of the habitat (TNC 1998b)

C Adaptive Management

1997 Information Reported

Arnavons MCA Enforcement

Effective enforcement of the AMCA regulations continue to challenge project participants Since the opening of the area there have been 5 official reports by COs of poaching in the area, but several canoes have been seen in the area which leave before the COs can reach them (Mahanty 1998)

Enforcement of the community-based AMCA closure has been carried out by democratically elected representatives, called Conservation Officers (COs), from each of the three communities On such occasions, the community-assigned COs may talk directly with people concerned in instances where

poaching is suspected or discovered and explain that they are breaking resource use rules for the area They often also inform the Waghena Management Committee members of the incident who may approach the individuals to discuss the matter On a few occasions the COs have involved Isabel police in enforcement, which is possible because of the legal status of the resource use rules Discussions are underway to empower the COs as 'constables' to be able to make arrests and prosecute individuals who break resource use rules for the area (Mahanty 1998)

The management rules are due for review in 1998, and the February meeting opened up the question of how this review will be conducted The question of how any dissenting groups are involved in this review will be an important one in determining the character of any revised rules, and the level of community acceptance of these rules There may be a trade off between achieving a stronger consensus on the rules and promoting conservation objectives

Scope of Project Learning as a Consequence of Biological Monitoring Efforts
Continued steps were made during 1997 toward ensuring adaptive management within the project monitoring context, particularly in regard to the completion of interim biological monitoring surveys of marine invertebrates and coral health completed annually since the initial 1995 study (TNC 1997) Should the follow-up studies (especially the planned 1998 series) show an increase in the abundance and/or size of protected invertebrate species within the MCA relative to non-protected areas, the implications for the replication of such community-managed marine protected areas as the Arnavons MCA and its application of limited-term fishery closure could be significant to both the participating communities and international conservation community

However, caution should be used in assuming that such elaborate biological studies paired with the application of a community-managed marine protected area could be feasible or economically sustainable across most other potential project sites without the technical support of partner organizations willing to take on the responsibility of carrying out such studies To this end BCN has encouraged many of its partners to make attempts to reduce biodiversity monitoring costs and involve local community participation in such activities by simplifying such studies and encouraging a participatory approach toward monitoring efforts with community support from the outset

1998 Update

Scope of Project Learning as a Consequence of Biological Monitoring Efforts
Monitoring efforts are on-going within AMCA, as evidenced through the following anecdotes reported by project staff in regard to their biological monitoring progress

> The biological data will be used this year to revise the AMCA (Arnavons Marine Conservation Area) management plan and make decisions about the future of the project This was the goal of the three year term of the experiment It was believed that three years would be sufficient time to observe and evaluate the results of closure of a region on recovery of over-harvested marine resources

> The main indicator [of whether the local communities see other options and benefits aside from the renewed harvest from the protected area] will be the biological monitoring that is taking place at present This will give useful information on the effects of the project on particular species in conservation area habitats This information can be used by other land owners or individuals with customary rights over resources to put into practice rehabilitation efforts in over harvested areas This initiation of closed-to-harvest or protected areas over the next few years

> will indicate whether the information has been appreciated and utilized by the local communities
>
> Although on-site monitoring usually carried out by the Conservation Officers is going ahead in a reduced manner, much that may have been done over the past year has been neglected due to the fact that their attention was diverted by the need for intensive patrolling in an attempt to prevent poaching The data collected include turtle nesting activity, megapode nesting activity beach profiling and vegetation surveys, as well as cursory observations on reef invertebrate populations (TNC 1998b)

While biological monitoring continues, during the 1998 site visit it was clearly communicated by participating communities to BCN a degree of dissatisfaction with the failure of the project partners to report back their biological monitoring results or management implications from consequential learnings (BCN 1998) BCN continues to encourage project partners to find a solution to meaningfully communicate monitoring results with local communities in order to ensure that adaptive management based off analyzed data can occur in the future

Arnavons MCA Enforcement

While this project clearly has a documented history of conservation success, as mentioned previously 1998 brought with it critical challenges to be addressed In particular the project continues to be tested in its ability to patrol and enforce the enormous area included within project waters with limited manpower and resources, and learn how to cope with such shortcomings As is commonly experienced during the course of many conservation initiatives, improving the conservation status of a biologically rich area can indirectly result in this area becoming a primary target by poachers, who take advantage of the replenishment benefits from such conservation actions In the Arnavons poaching is not a new phenomenon in this sense During its 1998 site visit, BCN learned of the latest incidences of poaching, which were subsequently addressed through a post-visit memorandum sent to the project partners

> Poaching by local participants continues in the Marine Conservation Area (MCA) In addition, outsiders (including an Indonesian vessel) have been shark finning in the MCA, and despite the Conservation Officers filing police reports and cutting their long lines they continue to return to the Arnavons Those outsiders or local poachers that have been caught and reported have yet to be prosecuted by provincial authorities, who are understaffed and reluctant to travel on site to investigate poaching incidences Conservation Officers charged with patrolling the MCA claim that they are insufficient in number to police and report all poachers both local and external The overall result is poor enforcement capability, a fact well known by would-be poachers and participating communities (BCN 1998)

As a result of such challenges, an emergency AMCA management committee meeting was held during June 1998 to discuss and propose actions to address issues relating to poaching and related enforcement issues An outcome of this emergency meeting was that representatives from the respective participating communities returned to their homes and held village meetings to encourage open and frank discussion of the poaching problem and allow individuals to speak in a voice which would be heard directly by the project and management committee These meetings have subsequently begun the process of reevaluation of project activities and objectives as they relate to enforcement of the MCA waters It was noted during BCN's site visit in July that this open forum of discussion and reevaluation had culminated in honesty and sincerity when addressing the issue at the local level

D References

Biodiversity Conservation Network (BCN) 1997 *Annual Report 1997 Getting Down to Business* Biodiversity Support Program, Washington DC

Biodiversity Conservation Network (BCN) 1998 *Site Visit Summary Memorandum to The Nature Conservancy* Biodiversity Support Program, Washington DC

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The Nature Conservancy (TNC) 1997 *Third Technical Report* Honolulu, Hawaii

The Nature Conservancy (TNC) 1998a *Arnavon Islands 1998 Story from the Field* Honolulu, Hawaii

The Nature Conservancy (TNC) 1998b *Draft Fourth Technical Report* Honiara, Solomon Islands

E Maps

1 Site Map

See maps provided to USAID during May 1998 Marine conservation area delineation as provided in Project Proposal (TNC 1995) Project staff claim that no changes have been made to this area over the life of the project

2 Provincial/National Maps

3 Global/Regional Maps

Maps previously provided to USAID

The Biodiversity Support Program s Biodiversity Conservation Network (BCN) Planning and Implementation Grants (produced by WWF-US Conservation Science)

Biological Distinctiveness of the Terrestrial Ecoregions of the Indo-Pacific (produced by WWF-US Conservation Science)

The Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 19 1 Warihito

A General Information

Site Name	Warihito
Province/State	Makira-Ulawa Province (San Cristobal Island)
Country	Solomon Islands
Institutional Partners	Conservation International (CI) Solomon Islands Development Trust (SIDT) Maruia Society

Biome	139 Solomon Islands Moist Forests
Area Under Effective Management (ha)	4,500
Total Project Area (ha)	44,500

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

The Solomon Islands are home to an enormous array of biological diversity

> Second only to Papua New Guinea, the Solomon islands have the greatest diversity of terrestrial vertebrate species of all the Pacific Island nations For example the Solomon Islands are home to 173 species of land birds and about 50 species of sea shore and migratory birds The level of endemism is extremely high and many endemic species are restricted to only one island in the archipelago Therefore, the Solomon Islands are extremely important for conservation of biodiversity in the Pacific (BCN 1998)

The project site's ecological setting is characterized by the Solomon Islands tropical moist forest ecoregion, an area considered "globally outstanding" in terms of its biological distinctiveness within the Indo-Pacific region and which is considered to be a high priority conservation priority on a regional scale (Wikramanayake *et al* , 1998) In part because of its own distinctive faunas, a review (by Arthur Dahl, 1986) of potential protected areas ranked Makira as having the 13th highest conservation significance of 226 Pacific islands (Gale de Villa 1992)

Makira is of significant biogeographical importance even relative to the other five major islands within the Solomons archipelago, due to its relative isolation, even during times of low sea levels

> Makira has an unusual ecology It is believed that unlike the other large islands in the Solomons it has always been isolated by deep water Perhaps because of this many unique (endemic) birds are found in its forests Out of a total of 76 bird species, ten are found nowhere else One of these unique species, the keea or Makira mountain rail (*Pareudiastes sylvestris*) may now be extinct The distinctiveness of the Makiran ecology extends to its insects - there is a very high percentage of endemic or unique insects on Makira As well, two species of fig have been identified as being found only on Makira, *Ficus cristobalensis* and *Ficus illiberalis* The endemic plants and animals of Makira add greatly to the value and importance of proposed protected forest areas on the island (Lees 1991)

> Of the 163 land bird species that breed in the Solomon Islands, 72 (44%) are endemic A further 62 species (38%) occur elsewhere but are represented in the Solomons by unique subspecies There is no other place in the world, not even te Galapagos Islands, where the biological phenomena of speciation and population variation among islands is so marked A number os species whose populations are globally threatened are believed to occur in the Solomons (Gale de Villa 1992)

Many of the representative species in Makira have colonized from the east, away from the other five major islands The result has been the rarity or absence of these organisms from the majority of the Solomon Islands to Makira's west, including the pink-spotted dove (*Ptilinopus richardsii*) and the Solomons' only population of the lowland tree *Planchonella guillauminii*, from Vanuatu (CI 1993)

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information

The project site's conservation management area continues to reject logging as an economic activity to be pursued regardless of increasing logging threats and activity on Makira (CI 1997) Unlike FY1996 revenues generated from the sale of ngali nut oil covered operating expenses during 1997, and as a result the project enterprise and participating communities experienced a net operating profit of SBD$9,830 99 (CI 1997)

1998 Update

Project efforts have focused on the maintenance and/or improvement of the habitat area with minimal change overall on site Nevertheless, there has been a slight decrease (less than 1%) in the habitat area as a result of forest encroachment from the cutting of primary forest in the expansion of subsistence gardens, (James 1998)

The project site's conservation management area still continues to reject logging as an economic activity to be pursued

> The people in the conservation area are still turning away logging companies This is both a major source of pride and a measure of success in terms of local attitudes to conservation and enterprise (CI 1998)

C Adaptive Management

1997 Information

Spring 1997 marked the second year of the Project's ngali nut *(Canarium indicum)* monitoring approach by local community members under the methodology recommended by tropical forest ecologist consultant Julian Ash during his site visit in May 1996 Two years of results of growth, seedling recruitment, and yield studies conducted under this monitoring approach by local project residents within the Warihito site were collectively analyzed and then presented back to the broader participating community and management committee audience through a group meeting on April 13, 1997 Use of these data by participating residents following the disclosure of monitoring results can be summarized as follows

> Through the process of group interpretation and discussion over the T=0 and T=1 survey results, three specific points were identified as being collectively voiced by those residents present during the meeting 1) The most important point coming from the meeting was that yield

> information is of greatest value to the resource holders, particularly in relation to the maturation and phenology of medium size class trees 2) Another common theme throughout the three hour discussion was the frustration felt over the knowledge that the benefits of growth and regeneration monitoring would not be recognized for many years given the rate at which size class changes and seedling recruitment occur within the local ngali population 3) It was clearly and repeatedly acknowledged that a somewhat more formalized' data collection and evaluation approach to keeping watch over natural resources is useful to community residents because it allows them to recognize the effects of impacts prior to the point at which a resource would be lost for good (BCN 1997)

Caution is advised in concluding that ngali monitoring activities have led to a documented management success or behavior changes

> It is still too early to know if the monitoring information will change local behaviors and attitudes However, the act of doing the monitoring work has raised the profile of the enterprise Local people are interested in the monitoring work and there is a sense of excitement over the work (CI 1997)

The ngali nut enterprise committee remains organized and active at this site They are presently concerned about the sustainability of ngali nut resources including keeping careful records of all transactions involving sales of ngali nuts to the ngali nut press

1998 Update

On going monitoring by both project partners and the local communities continues, with the expectation that replicate surveys will provide a foundation for project learning and adaptation

> The analysis of the household survey data will be used in the design of the future program on Makira Along with the biological data and production data from the ngali nut press the data-set forms vital baseline information which will be used to measure future changes and impacts of the program (CI 1998)

More importantly, project partners are currently reevaluating the utility in the community-based ngali nut tree monitoring protocol, as staff fell that the objectives of tracking changes in growth, yield, recruitment, and size class distribution may be obtained through less rigorous and more productive methods than those presently employed Staff and participants alike have reached this realization through their evaluation of the first few years of survey data and their belief that the fairly intensive survey methods presently used may actually be discouraging regular participation locally (BCN 1998) BCN commends the project partners, as it is firmly believed that as project re-iterate on their monitoring and evaluation processes, 'fine tuning' and adaptation of management tools employed must occur to allow a 'best fit' to a particular project at a particular site

D References

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James, Roger 1998 Personal communication (as reported in BCN's 1998 Makira Analytical Data Text Document)

Lees, Annette 1991 *A Representative Protected Forests System for the Solomon Islands* Maruia Society Nelson, New Zealand

Wikramanayake E , E Dinerstein, P Hedao, D M Olson, L Horowitz, and P Hurley In preparation *A Conservation Assessment of the Terrestrial Ecoregions of the Indo-Pacific Region* World Wildlife Fund, Washington, DC

E Maps

1 Site Map

See maps provided to USAID during May 1998

2 Provincial/National Maps

3 Global/Regional Maps

Maps previously provided to USAID

The Biodiversity Support Program s Biodiversity Conservation Network (BCN) Planning and Implementation Grants (produced by WWF-US Conservation Science)

Biological Distinctiveness of the Terrestrial Ecoregions of the Indo-Pacific (produced by WWF-US Conservation Science)

The Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 19 2 Hauta

A General Information

Site Name	Hauta
Province/State	Makira-Ulawa (San Cristobal Island)
Country	Solomon Islands
Institutional Partners	Conservation International (CI) Solomon Islands Development Trust (SIDT) Maruia Society

Biome	139 Solomon Islands Moist Forests
Area Under Effective Management (ha)	40,000
Total Project Area (ha)	44,500

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

The Solomon Islands are home to an enormous array of biological diversity

> Second only to Papua New Guinea, the Solomon islands have the greatest diversity of terrestrial vertebrate species of all the Pacific Island nations For example, the Solomon Islands are home to 173 species of land birds and about 50 species of sea shore and migratory birds The level of endemism is extremely high and many endemic species are restricted to only one island in the archipelago Therefore the Solomon Islands are extremely important for conservation of biodiversity in the Pacific (BCN 1998)

The project site's ecological setting is characterized by the Solomon Islands tropical moist forest ecoregion, an area considered "globally outstanding" in terms of its biological distinctiveness within the Indo-Pacific region and which is considered to be a high priority conservation priority on a regional scale (Wikramanayake *et al* , 1998) In part because of its own distinctive faunas, a review (by Arthur Dahl, 1986) of potential protected areas ranked Makira as having the 13th highest conservation significance of 226 Pacific islands (Gale de Villa 1992)

Makira is of significant biogeographical importance, even relative to the other five major islands within the Solomons archipelago, due to its relative isolation, even during times of low sea levels

> Makira has an unusual ecology It is believed that unlike the other large islands in the Solomons it has always been isolated by deep water Perhaps because of this many unique (endemic) birds are found in its forests Out of a total of 76 bird species, ten are found nowhere else One of these unique species the keea or Makira mountain rail (*Pareudiastes sylvestris*) may now be extinct The distinctiveness of the Makiran ecology extends to its insects - there is a very high percentage of endemic or unique insects on Makira As well, two species of fig have been identified as being found only on Makira, *Ficus cristobalensis* and *Ficus illiberalis* The endemic plants and animals of Makira add greatly to the value and importance of proposed protected forest areas on the island (Lees 1991)

> Of the 163 land bird species that breed in the Solomon Islands 72 (44%) are endemic A further 62 species (38%) occur elsewhere but are represented in the Solomons by unique subspecies There is no other place in the world not even te Galapagos Islands where the biological phenomena of speciation and population variation among islands is so marked A number os species whose populations are globally threatened are believed to occur in the Solomons (Gale de Villa 1992)

Many of the representative species in Makira have colonized from the east away from the other five major islands The result has been the rarity or absence of these organisms from the majoritv of the Solomon Islands to Makira's west, including the pink-spotted dove (*Ptilinopus richardsii*) and the Solomons' only population of the lowland tree *Planchonella guillauminii*, from Vanuatu (CI 1993)

b Documentation Showing that Environmental Quality is Maintained or Improved

1997 Information

Formation of the Hauta Highlands Conservation Committee A conservation committee has been formed in the highland villages to deal with habitat protection in light of the success of the ecotourism venture The community is concerned that there not be over-exploitation of the resources particularly birds

During 1997, one highland community adjacent to where ecotour operations are active which initially did not want to join in conservation initiative activities has changed their minds, and 'are now fully involved in the ecotour" after recognizing the local benefits being generated from tourism (CI 1997) Proposed project expansion areas are also being petitioned within the Wainoni region the east of the project area, by communities also interested in benefiting through project activities

1998 Update

Project efforts have focused on the maintenance and/or improvement of the habitat area, with minimal change overall on site Nevertheless, there has been a slight decrease (less than 1%) in the habitat area as a result of forest encroachment from the cutting of primary forest in the expansion of subsistence gardens, (James 1998)

The project site's conservation management area still continues to reject logging as an economic activity to be pursued

> The people in the conservation area are still turning away logging companies This is both a major source of pride and a measure of success in terms of local attitudes to conservation and enterprise (CI 1998)

A publication written by BCN staff details how the ecotourism enterprise has resulted in conservation

> [T]he tour has generated conservation impacts such as the turning away of logging companies from Makira Monitoring of ngali nut trees has been instituted in the conservation area and is carried out by local people At least one pigeon hunter has put away his gun More work needs to be done to fully assess conservation impact, however, and to help build institutions that will be able monitor and manage resources Thus, John [Waihuru, local leader] and Roger[James CI] are starting the process of Village Resource Management Planning in late 1998 (Russell and Stabile, 1998)

C Adaptive Management

1997 Information

Roger James has presented the results of his pigeon monitoring study to the communities involved This included discussion of the impacts of hunting practices and the need to change attitudes and behaviors in order to reduce the impact on pigeon numbers The workshops that Roger held have had some influence on hunting and there are further workshops planned for the coastal communities in relation to pigeons (CI 1997)

Roger James' work on monitoring pigeons has been communicated back to the villages involved in his study As a result, some attitudes and behaviors toward hunting have been modified and local rules to limit pigeon hunting may follow Roger noted that "people I have never met before from villages outside the conservation area have been approaching me to come to their village to tell them about 'life blong kuvwau' (native pigeon) " John Waihuru, one of the few gun owners in the highlands, is now forbidden by his daughters to shoot pigeons anywhere near Hauta, as a result of the pigeon project (CI 1997)

There is widespread concern over the state (or lack) of freshwater fish in the Ravo River, and the realization that something needs to be done (CI 1997)

Rules have been developed for tourists visiting the Makira highlands This was done as part of a general village meeting with a tourism consultant (CI 1997) These rules aim to protect natural and cultural attributes of the site Old man Francis, an elder of a Makiran highland village, said that he wants to set aside all his land on the other side of the Ravorigi River for permanent conservation (BCN 1997)

1998 Update

Socioeconomic and enterprise data have been collected, and the project staff are now making use of such data by incorporating it into comprehensive planning programs

> The available data (from the Makira household survey) are already being used in the design of future programs and approaches As further analysis is made available this will be incorporated into project design (CI 1998)
>
> As part of the ecotour the visitors fill in a small survey which records their perceptions of the communities and tour This information provides the project with the tourists' views on community aspects of the program Through the Village Resource Management Planning process we will be gathering the views of the villagers themselves (CI 1998)

Russell and Stabile (1998) have captured some of the learning generated from the projects evaluation to date of its ecotourism approach to conservation as follows

> We have seen that the Makira ecotour follows the best practices of ecotourism set out in the literature Strong leadership careful planning and a relatively undisturbed and homogenous community contribute to its success to date Threats to the ecotour affect the conservation area as a whole, and these can only be combated by wide discussion and debate supported by community-based research Makiran communities cannot step outside of history but they can learn from history Ecotourism can contribute not only to the enhanced well being of local

communities but to the transformation of tourists worldviews As such it can be a powerful tool for building a more sustainable world

D References

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Wikramanayake E , E Dinerstein, P Hedao, D M Olson, L Horowitz, and P Hurley In preparation *A Conservation Assessment of the Terrestrial Ecoregions of the Indo-Pacific Region* World Wildlife Fund, Washington, DC

E Maps

1 Site Map

See maps provided to USAID during May 1998

2 Provincial/National Maps

3 Global/Regional Maps

Maps previously provided to USAID

The Biodiversity Support Program s Biodiversity Conservation Network (BCN) Planning and Implementation Grants (produced by WWF-US Conservation Science)

Biological Distinctiveness of the Terrestrial Ecoregions of the Indo-Pacific (produced by WWF-US Conservation Science)

The Global 200 Ecoregions (produced by WWF-US Conservation Science)

BCN Site 20 1 Verata

A General Information

Site Name	Verata
Province/State	Tailevu Province
Country	Fiji
Institutional Partners	The University of the South Pacific (USP) The South Pacific Action Committee on Human Ecology & the Environment (SPACHEE) Tikina of Verata Rainforest Alliance

Biome	208 South Pacific Marine Ecosystems
Area Under Effective Management (ha)	1 200 ha
Total Project Area (ha)	29,000 ha

B Environmental Quality

a Significance of the Site for Biodiversity Conservation

Fiji'a marine ecoregion has been classified and designated by World Wildlife Fund (Olson and Dinerstein 1998) as one of the 200 most important ecoregions in terms of conservation significance

> The Global 200 targets biologically outstanding ecoregions that deserve special attention from conservationists By focusing on these 200 ecoregions we can conserve the broadest variety of the world s species and habitats and foster the persistence of the ecological processes that maintain the web of life

A wide range of biologically diverse coastal and marine ecosystems occur in Fiji, ranging from extensive tracts of mangrove forest to various coral formations and other near shore habitat types

> The western Pacific has the highest marine biodiversity in the world and Fiji has one of the best developed coral reef systems in the Pacific All major reef systems are represented There has been a small amount of work to date looking at the biological (pharmacological) activity of terrestrial plants and marine organisms A number have shown interesting activity and one marine sponge extract is undergoing trials of its anti-cancer activity (Aalbersberg 1994)

> The coastal zone is vitally important to Fiji s society and its national development It brings together a unique assemblage of resources such as reefs mangroves water agriculture seafood and attractive landscapes Every significant town in Fiji most villages the vast majority of the population and all industry ands commerce are located in the coastal zone The current estimate is that approximately 42,000 ha of mangrove forest remain of an original resource of about 45,000 ha Coral formations include fringing and platform reefs and two barrier reefs Marine and coastal ecosystems support both subsistence and a growing commercial fisheries sector (Gale de Villa 1992)

The Fiji islands are also characterized by diverse terrestrial ecosystems, including significant areas of natural forest

> Fiji has a rich vegetation and wildlife The floristic diversity of the forests has not been adequately documented but is in excess of 100 species per sq km People have done little collecting in most of the interior forested areas The tropical moist forest has a high level of endemism and genetic importance Some ecosystems such as the beach forest have virtually disappeared through clearing The area of remaining indigenous forest is estimated to be 750,000 ha Both vegetation and wildlife have great scentific, heritage and potential tourism values
>
> Fiji's vegetation and wildlife are relatively small in number but are of exceptional scientific and genetic interest due to the high proportion (50%) of endemic species The floristic diversity of the forests is estimated in excess of 300 species per square mile
>
> A local tree *Homalanthus nutans*, is one of three plants worldwide whose anti-HIV activity has the greatest potential Two other endemic plants from the same family have also shown anti-viral activity (Aalbersberg 1994)

The site also has great social significance as a demonstration area for conservation efforts in Fiji

> Verata is a *tikina* or county comprised of eight villages within the province of Tailevu on the eastern shore of Viti Levu It is a highly important locale in Fiji being one of the first sites where Fijians consider their ancestors to have settled—the equivalent of Plymouth Rock in the United States The chiefly families retain great prestige, and Verata people maintain ties to many other *mataqali* throughout the land (Aalbersberg et al 1998)

Through several workshops and collaboration with the Fijian Affairs Board and WWF-South Pacific, the lessons on conservation, monitoring and enterprise development from the Verata site are being spread

b Documentation Showing that Environmental Quality is Maintained or Improved

1998 Information Reported

There have been many important developments since the grant implementation which illustrate the level of on-the-ground conservation happening on site

1. A ban on coral harvesting was initiated based upon work at the site This ban influenced other areas as well, and the coral harvesting operation has shut down The fact that coral harvesting no longer takes place certainly indicates improvement in the habitat
2. A review of fishing licenses took place to limit number of licenses and control who gives out licenses The result is fewer outsiders fishing in Verata waters
3. Plant and marine organism collection is ongoing, based upon resource inventory carried out previously Sixty-five plants were collected in one day and a half of the first meeting, and another forty on a collection day a few months later (Aalbersberg et al 1998)
4. Two *tabu* (no-take) marine sites set up by local leadership are being maintained up to the present

1998 Update

Replication of the project's community-based marine reousrce management and monitoring approaches was a proof of conservation success during 1998 Hailed as a major victory during 1998, an eighth village contained within the project site area joined the other participating villages in Tikina Verata in their conservation efforts This allowed for project expansion and an increased conservation impact An additional marine *tabu* (no-take) area has been declared by the *turaga-ni-*

koro (mayor) of Naivuruvuru Village Tevita Nawadra This represents both an addition to the monitoring sample size as well as an increase in the total area of habitat being actively conserved Replication of the project community-based marine resource monitoring approach is also occuring outside of the project site World Wide Fund for Nature's South Pacific Programme (WWF-SP) has enlisted the help of a few Verata community leaders as well as project staff to act as trainers for community-based marine resource monitoring at and share their expertise At present, this "Verata Model' is already being implemented by Verata residents through WWF-SP at their project site in Draluwalu, Kadavu Island, Fiji Recently, WWF enlisted the help of a few Verata community leaders as well as project staff to act as trainers for community-based marine resource monitoring

C Adaptive Management

1997 Information Reported

During the first year of project implementation (1997), BCN consultant John Parks of Ecotrack Consulting, together with SPACHEE and WWF/South Pacific, held a workshop to train community members in biological monitoring This workshop employed local concepts of resource use, ecological principles, and scientific sampling and analysis to develop a monitoring program that would be totally implemented by the community teams Participants identified local marine resource management problems, developed action plans to meet these challenges and established monitoring plans to judge the success of these interventions (BCN 1997)

Because a semi-structured, highly participatory methodology was used to develop the Community Action and Village Resource Management Plans during the initial phases of the project, the community was prepared for the more technical phases of the project, such as project monitoring and evaluation (M&E) and sample collection training The structure of the biological monitoring workshop completed during 1997 was intentionally built on that of the earlier PRA workshops Previous outputs such as the Community Action and Village Resource Management Plans were revisited in order to provide a community-developed framework from which to discuss M&E and bring about a seamless integration among community exercises

The monitoring program attracted the interest of NGOs and government officials who were unaware that community members could learn and practice skills involving scientific measurement and data analysis (Aalbersberg et al 1998)

1998 Update

The expansion of no-take fishery zones on site and subsequent monitoring of this area is allowing for the direct observation of marine resource replenishment by local participants

> It is also exciting for the Verata people to be taking their own initiative in setting up new *tabu* areas One village has also started replanting sea grapes (*nama*) which is an important nutritional and cultural food that disappeared from Verata some years ago due to over exploitation for commercial purposes The women of Kumi village buy it from the market, eat the grapes and then plant the stems Although the data from biological monitoring is not enough to make any definitive conclusions, it has been noted that in the original *tabu* site, areas that were bare rock before are now covered with a sandy substrate preferred by *kaikoso* (a cockle) and also that *nama* seem to be starting to grow in this area All this has been attributed by the community to leaving the area undisturbed (Aalbersberg, 1998 Stories From the Field)

There has been a regeneration of *kaikoso* (cockle) populations due to these *tabu* areas Monitoring has shown that there is heavy recruitment in the *tabu* areas vs areas open to harvesting, thus demonstrating population restoration (USP 1998) It is this observed replenishment which is encouraging local decision makers to replicate and rotate no-take zones, and thus allowing for adaptive management of resident marine resources dependent on their relative abundance in a given area

A number of initiatives have been developed by the communities that should, in theory, reduce the threat to their marine environment (See SO-2 documentation) All indicators are that these initiatives are being followed by the communities In a recent community meeting in Ucunivanua, coastal erosion, perhaps due to sea-level rise, has been discussed

D References

Aalbersberg, W A 1994 *Grant Proposal Submitted to BCN* Suva, Fiji

Aalbersberg, W A 1998 Personal communication (as recorded within Fiji's Analytical Data Text Document)

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Wikramanayake E , E Dinerstein, P Hedao, D M Olson, L Horowitz, and P Hurley In preparation *A Conservation Assessment of the Terrestrial Ecoregions of the Indo-Pacific Region* World Wildlife Fund, Washington, DC

E Maps

1 Site Map

See maps provided to USAID during May 1998

2 Provincial/National Maps

3 Global/Regional Maps

Maps previously provided to USAID

The Biodiversity Support Program s Biodiversity Conservation Network (BCN) Planning and Implementation Grants (produced by WWF-US Conservation Science)

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The Global 200 Ecoregions (produced by WWF-US Conservation Science)

Strategic Objective 2 BCN's 1998 Documentation

Below are the narratives to support the **XX** reported policy successes in FY98 for those policies that reached the 'Improved Conservation' policy benchmark in FY98 They are numbered only for convenient reference

Policy Success #1 Policy for the Formation of a District-Level Federation of Community Forest User Groups

Project 1 Essential Oils from the Alpine Areas of Humla, Nepal
Narrative As an output from a three day BCN-funded workshop held during late 1997 by project partners, community forestry efforts on-site are being formalized at the district level through participating Community Forest User Groups and government decision-making representatives

> 56 community members representing 29 different Community Forest User Groups in the district as well as the District Development Committee and District Forest Office participated in the meeting The major outcome of the workshop was a decision by those attending to form a district level federation of community forest user groups A district federation was seen as a way of strengthening the community forestry concept and information sharing at both the district and national level (as the district federation will seek to join up with the national federation of community forest user groups) and increase the influence these groups have in shaping forestry and conservation policy An 11 member ad hoc executive committee was formed and a draft constitution was accepted by the participants of the workshop The executive committee subsequently finalized the federation constitution and started the registration process in the months following the workshop The Humla Community Forest User Group Federation is now registered as a district level organization While this organization is receiving technical support from HCDA it is functioning as an independent institution and is widely viewed as a positive development in the district by both communities and district level government officials The Federation remains active in moving forward the community forestry process and continues to pressure the District Forest Office to act in a timely manner on the handing over of forests (ATI Sixth Technical Report, 1998, p 7)

Policy Success #2 Anti-Poaching Policy Enforced by Kumrose Community User Group

Project 2 Ecotourism in the Forests and Grasslands of Nepal
Narrative The following is an example of on-going, on-the-ground conservation in both Baghmara and Kumrose The community implemented a policy of plantation patrols to monitor and respond to threats This policy proved to be successful in averting the killing of area rhinos and tigers The project team wrote

> Perhaps the most important achievement of the project is the change in attitude of the local people When poachers, attracted by the increasing numbers of wildlife attempted to kill rhinos by digging pits near Baghmara, the community members not only informed authorities, but also filled the pits so that no wildlife would be killed Even when livestock were killed by a tiger in Kumrose, the people did not complain because they know that tourists come expressly to see tigers Now that locals are receiving direct benefits from tourism they can afford to be more tolerant In fact, in many instances now, the community forest decreases the loss of property due

to wildlife In a KMTNC survey 79% of people mentioned that the community forest is helping to buffer crop land and also mentioned that crop depredation has been decreased after establishment of the community forest in Baghmara (BCN 1997 p 31)

Sources 1998 BCN Project Officer Site Visit, BCN's 1997 Annual Report

Policy Success # 3 Local Institutions for Forest Management in Garhwal

Project 3 Tasar Silk and Honey in the Mountains of Garhwal India
Narrative The Project has been approached by people in the adjoining Mansuna Valley to help them set up the same enterprises Since Van Panchayats do not exist in the valley, the project will be strengthening other villages institutions that manage the forest resources

Sources BCN Program Officer reports, BCN 1998 Site Visit

Policy Success #4 Enterprise Permit (GHNP, for all three sites Leuiwjamang, Citalahab, and Ciptarasa)

Project Ecotourism in the Rain Forest of Western Java, Indonesia
Narrative Similar to the permits received for guest house construction, the GHNP Consortium had to receive permits to actually establish a revenue-generating activity in and around the Park, one that it is hoped, will sometime in the near future be owned and operated by local community members Such permits are new to the Park, since until now permits have only been given to outside groups such as the Nirmala Tea Estate to utilize and encroach upon the Park Until now, direct-- but limited-- use of Park resources for guest house construction, trail development and such was barred or limited to indigenous enclave communities In 1997, this policy was overturned and opportunities are opening up now for more direct utilization and management by local community members

Source BScC 1998 Technical Report

Policy Success #5 Honey Gathering Licenses Granted to Local Residents

Project Rafting, Honey and Butterflies in the Rain forest of Sulawesi, Indonesia
Narrative A traditional use agreement was negotiated with Balai Taman Nasional Lore Lindu in December 1997, resulting in a Survai Ijin Pemanfaatan, or SIPMAN, Permit, to gather honey in the Park In short, honey hunters, with the support of TNC, successfully obtained permission to harvest honey from the Park These hunters are given Identification Cards and have been asked to work with Park officials to identify people illegally utilizing resources in the Park This permitting process has already been agreed to in principle for another site (coffee plantations in the Park), and may also be applied to rattan harvesting from the Park in the future As a result of these licenses honey hunters have reportedly begun to manage the resource more effectively and have even reported cases of encroachment to Park officials

Sources NRM 1998 Newsletter, TNC Paper Presentation at the 1998 Meeting of the Society for Conservation Biology

Policy Success #6 Signing of the Memorandum of Understanding for Community Logging

Project Community Logging in the Bufferzone of Gunung Palung National Park in West Kalimantan, Indonesia
Narrative With the MOU signed, the project is able to implement its monitoring system more thoroughly and to start documenting conservation impacts of the project's *proposed* plans (e g , documentation of conversations with handloggers and their intentions regarding timber exploitation in the project area) Also, in late 1997, project staff completed a baseline study to gather data to allow for a comparison between disturbed and undisturbed forest This exercise also provided a trial run for inventory of the community forest area during 1998 and 1999

Sources BCN 1998 Project Officer communication and Site Visits

Policy Success #7 Enforcement of Destructive Fishing Bans in Padaido Islands

Project Dive Tourism off the Reefs of the Padaido Islands, Irian Jaya
Narrative Last year, BCN reported how bans placed on the use of small-mesh gill net, sodium cyanide, and dynamite fishing techniques within the Padaido Islands project site area resulted in coral reef conservation During its 1998 site visit, BCN learned that this policy has evolved from a local decree to an enforced, *de facto* regulation BCN staff spoke with two community leaders from the villages of Saba and Pasi/Dauwi who provided vivid descriptions of consistent, local policing actions taken throughout the project waters and community meetings, and how the status quo is shifting within these communities to allow for enforcement of the fishing bans with local authorities once a violation has been documented Enforcement of a local decree is not an easy task in Indonesia, as the government officially has little recognition of such regulations However, the project and participating communities have successfully captured enough local support both on site and off to effectively ensure that destructive fishing bans are being observed and enforced

Sources BCN 1998 Site Visit Notes, as detailed within the Rumsram Analytical Data Text Document

Policy Success #8 Formation of a Community Fisheries Cooperative in Pasi/Dauwi

Project 11 Dive Tourism off the Reefs of the Padaido Islands, Irian Jaya
Narrative A community cooperative fishing venture is now underway in Pasi/Dauwi as a result of local communities deciding to consolidate their fishing efforts into a cooperative to address the competitive fish markets in Biak to which local fishermen sell Promoting their sustainable fishing techniques and use of FADs, the cooperative as organized and streamlined its efforts in delivering a quality product to market, and now has enough strength to begin addressing the monopolistic price-fixing which occurs with buyers of these markets, even opening up opportunities to sell to other fish markets in Irian Jaya if local markets are not accommodating This action is allowing the residents of these islands to build a fishing coalition built on sustainable practices through which lucrative market opportunities are secured Pulling the resident fishermen together in this type of venture is seen as a major victory for the project and a policy designed to add market incentives to the sustainable fishing practices being encouraged on site

Source BCN 1998 Site Visit Notes, as detailed within the Rumsram Analytical Data Text Document

Policy Success #9 Completion of CADC Process for Kalahan Education Foundation

Project 14 Forest Fruits from Central Luzon, Philippines
Narrative The Certificate of Ancetstral Domain Claim (CADC) program in the Philippines enables local communities to gain legal management title over their ancestral lands The BCN-fiunded project was able to complete the CADC process in 1998 They received the certificate that gives them the rights to continue to manage the Kalahan reserve plus an additional 35,000 ha around the reserve As part of this process, the community is also developing their own detailed land-use management plan

Source BCN 1998 Site Visit

Policy Success #10 Rerouting of a Major Highway Threatening Biodiversity

Project 14 Forest Fruits from Central Luzon Philippines
Narrative The project was able stop the construction of a major highway through the center of the Kalahan reserve They negotiated an alternative route with the national government A major factor in the discussion was the monitoring information that the project team was able to collect The documentation of the endangered species present in the reserve helped strengthen the case for relocating the highway

Source BCN 1998 Site visit

Policy Success #11 Crater Mountain WMA Community Laws

Project 15 Ecotourism in the Rain Forests of Crater Mountain Papua New Guinea
Narrative There is extensive documentation of the success of the community laws in regulating the enterprise activities and reducing threats to biodiversity This documentation is the result of the community enforcing the rules, adjudicating violations, and making records of this process In 1998, these policies were continued For example, on December 19, 1997, two Simbu provincial government officials from outside the WMA were found hunting with a shotgun on Haia clan lands near the village of Haia Haia management Committee representatives confiscated the shotgun cartridges and the officials were fined 20 kina for hunting with a shotgun in the WMA which is against the law #6

Source Wildlife Conservation Society's 1998 Technical Report, p 7

Policy Success #12 Mineral Rights Policy at Crater Mountain

Project 15 Ecotourism in the Rainforests of Crater Mountain, Papua New Guinea
Narrative Large scale mineral extraction is one of the major threats facing Crater Mountain Wildlife Management Area The clans that own the land are developing policies to meet these threats

> On the northern boundary of the WMA, industrial and government requests to explore for gold and copper deposits have divided clans of the same language group Those within the WMA have cautiously examined the options, requesting more information and guidance from NGOs on how proposed activities will effect their current eco-enterprise and conservation activities Related clans outside of the WMA boundaries, within the same mineral exploration area, have applied intense pressure on their neighbors to submit to the requests for further exploration and possible exploitation of mineral deposits At times over the last year the tense negotiations between clans have led to tribal fights Can the young Management Committees within the WMA maintain consensus on such volatile environmental issues? Representatives from all 21 clans have agreed that no such large-scale exploitation of natural resources in the WMA will be permitted (BCN 1997, pp 83-84)

In 1998, this law is still in place, but there are tensions between the community members who want to enforce this and those who don't These tensions were evident at an impromptu hearing that occurred when two mining company officials and a representative of the PNG Mining Wards office dropped in on Maimafu to discuss whether to review an exploration license granted to McMinn company Two of the men said "they were against the continuation of the exploration " A third said that he was 'for the exploration license if McMinn could sort out the compensation issue and make sure that Maimafu got their fair share '

Source Research Conservation Foundation Memo, 14 July 1998

Policy Success #13 Local Decrees on Forest Use in the Highlands of Makira

Project 19 2 Nut Oil Processing and Ecotourism from the Forests of Makira, Solomon Islands
Narrative Based on Village Resource Management Planning work conducted by SIDT and CI during 1998, participating communities in the highlands of Makira decided to pass a series of local resource use decrees during 1998 Key among these local decrees is the instatement of bird hunting rules, both for sport and for subsistence, expanded this year from an initial set of rules on fruit pigeon hunting to include other regulations over many of the avifauna which make Makira so biologically distinct In addition, highlands community members have banned the use of DDT in their rivers as a fishing technique to harvest freshwater eels and other aquatic organisms as a result of awareness of the negative environmental and health impacts such practices can result in

Source BCN's 1998 Site Visit Notes, as reported in the CI-SI Analytical Data Text Document p 25

Policy Success #14 Nearshore Habitat Restoration Initiative Declared throughout the Seven Villages of Tikina Verata

Project 20 1 Biodiveristy Prospecting in the Seas around Tikina Verata, Fiji
Narrative A large habitat restoration initiative was declared by the paramount chiefs of Tikina Verata during 1998 The implementation of this mandate during 1998 has included the following actions 1) planting of mangrove seedlings within degraded coastal forests, 2) the transplantation and propagation of an edible sea weed ("sea grapes"), 3) the removal of rubbish from the coastal zone and implementation of a waste management plan, 4) the expansion and addition of existing marine resource 'no-take' replenishment zones, and the 5) replanting of seagrasses (BCN's 1998 Site Visit Notes, as reported in the Verata Analytical Data Text Document) The overall restoration initiative is

bolstered with the on-going biological monitoring activities underway The results of these and other management activities have been reportedly positive

> The Verata BCN project is widely seen as a very successful example of a community which with minimal targeted assistance, designed and is carrying out a simple marine management plan Other areas of Fiji and the Pacific are showing an interest in the "Verata model" and asking project participants to advise and be part of new initiatives
>
> It is also exciting for the Verata people to be taking their own initiative in setting up new "tabu" areas and also sharing their experience via the Vunibokoi primary school's "Library Week" presentation One village has also started re-replanting sea grapes, which is an important nutritional and cultural food that disappeared from Verata some years ago due to over exploitation for commercial purposes The women of Kumi village buy it from the market, eat the "grapes" and then plant the stems Although the data from biological monitoring is not enough to make any definitive conclusions, it has been noted that in the original "tabu" site that areas that were bare rock before are now covered with a sandy substrate preferred by "kaikoso" and also that sea grapes seem to be starting to grow in this area The community has attributed all this to leaving the area undisturbed (USP 1998)

Sources USP's Draft 1998 Story from the Field p 4, BCN's 1998 Site Visit Notes, as reported in the Verata Analytical Data Text Document