

Biodiversity Conservation and Sustainable Use: USAID Project Profiles

U.S. Agency for International Development

ENRIC

Environment and Natural Resources Information Center

USAID



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The Environment and Natural
Resources Information Center
A Project of Datex, Inc.

November 1994

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The Environment and Natural Resources Information Center (ENRIC) is supported by the U.S. Agency for International Development (USAID). ENRIC's objective is to improve the Agency's strategic and programmatic decision making in the environmental sector. ENRIC provides USAID with information on plans and progress of environment-related activities and timely analysis of special environmental issues. ENRIC is a project of DATEX, Inc., under contract to USAID's Bureau for Global Programs, Field Support, and Research, the Environment Center. Contract No. DHR-5517-C-00-1075-00.

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Preface

USAID currently supports the largest biodiversity conservation effort of any bilateral donor. The current portfolio, which supports projects in more than 40 countries, totals \$74 million in 1994 and will represent more than \$400 million in assistance over the life of the projects.

This compilation of project profiles gives detailed descriptions of 42 USAID-supported projects active in 1994 that supported the conservation or sustainable use of biodiversity. In general, the projects profiled have at least 50 percent or \$500,000 of their funding devoted to biodiversity. Calculations of biodiversity funding percentages are based on USAID's project budget coding system. When projects also fund other USAID development goals, the profiles will describe those activities as well as the biodiversity activities.

A companion publication, *Biodiversity Conservation and Sustainable Use: USAID Program Overview* provides a summary of USAID's efforts to support biodiversity conservation and sustainable use.

These profiles are based on interviews with USAID project officers and project implementors, internal progress reports, and published materials. The profiles have been reviewed and approved by USAID and are current as of the date appearing after the author's name.

ENRIC gratefully acknowledges the cooperation of numerous USAID staff in providing project documentation, information, and reviews of draft reports and the numerous grantees, contractors, and collaborating agencies that generously lent their assistance.

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Peter Freeman, Director
ENRIC
Environment and Natural Resources Information Center
November 8, 1994

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ENRIC Environment Project Profiles provide overviews of USAID projects supporting the Agency's environmental objectives. Each profile includes highlights and sufficient detail in a few pages to describe key features and progress. The profiles reveal the diverse achievements of the spectrum of over 120 projects that presently form the core of USAID's \$650 million per year environmental portfolio.

Selected USAID Biodiversity Conservation and Sustainable Use Projects

Biodiversity Conservation and Sustainable Use: USAID Project Profiles

Africa

- 3 Policy Analysis Research and Technical Support (PARTS) Africa Regional
- 7 Natural Resource Management Southern Africa Regional
- 13 Natural Resource Management Botswana
- 17 Conservation of Northern Forests Congo
- 21 Natural Resource Conservation and Historic Preservation Ghana
- 25 Conservation of Biodiverse Resources Areas (COBRA) Kenya
- 29 Sustainable Approaches to Viable Environmental Management (SAVEM) Madagascar
- 33 Knowledge and Effective Policies for Environmental Management (KEPEM) Madagascar
- 37 Living in a Finite Environment (LIFE) Namibia
- 41 Action Plan for the Environment (APE) Uganda

Asia and the Near East (ANE)

- 47 Biodiversity Conservation Networks of US-AEP Asia Regional
- 51 Profitable Environmental Protection (PEP) South Pacific Regional
- 55 Pacific Islands Marine Resources (PIMAR) South Pacific Regional
- 59 Plant Genetic Resources India
- 61 Indonesian Biodiversity Foundation Indonesia
- 63 Natural Resource Management Indonesia
- 69 Natural Resource Management Philippines

Europe and the New Independent States (ENI)

- 75 Environment Policy and Technology Regional

Latin America and the Caribbean (LAC)

- 81 Regional Environmental and Natural Resource Management (RENARM) Central American Regional
- 87 Environment and Coastal Resources (ENCORE) Caribbean Regional
- 91 Parks in Peril (PiP) LAC Regional
- 97 Environment and Global Climate Change (E/GCC) LAC Regional
- 105 Neotropical Migratory Birds LAC Regional
- 109 Natural Resource Management and Protection Belize
- 113 Forest Conservation and Management (BOSCOSA) Costa Rica
- 117 Sustainable Uses for Biological Resources (SUBIR) Ecuador
- 121 Coastal Resources Management (CRMP) Ecuador
- 125 Environmental Protection (PROMESA) El Salvador

129	Maya Biosphere Reserve	Guatemala
133	Targeted Watershed Management	Harti
137	Environmental Protection Fund	Honduras
141	Protected Area Resource Conservation (PARC)	Jamaica
145	Development of Environmental Management Organizations (DEMO)	Jamaica
149	Natural Resource Management	Nicaragua
153	Natural Resource Management	Panama

Global

159	Environment Planning and Management
163	Coastal Resources Management
167	Conservation of Biodiversity
173	Forest Resources Management II
177	U.S.-Israel Cooperative Development Research Program
179	Innovative Scientific Research II

Individual copies of these USAID project profiles or the complete directory, *Biodiversity Conservation and Sustainable Use: USAID Project Profiles*, may be obtained by contacting:

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AFRICA



USAID



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



Africa

Regional

698-0478

Policy Analysis, Research, and Technical Support

To assist implementation of USAID's objectives in Africa for natural resource management and sustainable development, USAID's Africa Bureau has funded the *Policy, Analysis, Research, and Technical Support* (PARTS) project. This seven-year (FY 1992–98), \$74 million project continues support for activities similar to those begun under the Agency's *Natural Resources Management Support* (NRMS) project (FY 1987–94), including support for biodiversity conservation.

PARTS is designed to support the Bureau's Development Fund for Africa (DFA) objectives of achieving sustainable increases in income and/or productivity through better management of natural resources and African economies, strengthening competitive markets, and improving food security.¹ The project aims to meet these DFA goals by developing more effective strategies, policies, and programs in key agricultural and natural resource areas. Activities focus on research and analyses covering sectoral, cross-sectoral, and synthesis studies and impact evaluations, including biodiversity conservation research, analysis, and demonstration activities.

This profile reports only the biodiversity activities supported by the PARTS project.

Highlights for FY 1993–94

- Supports a Multidonor Secretariat (MDS) housed at the World Bank that coordinates donor activities in the environmental sector in Madagascar and supports development of national environmental action plans throughout Africa.
- Encourages development of new approaches to biodiversity conservation in Africa, for example, through studies on the utility of plant species in Mali's Baoule Belt Biosphere Reserve and on the impact on women of a community wildlife management program near Tanzania's Selous Game Reserve.
- Improving African expertise in addressing key issues in climate change and land use, for example, by supporting Zambian and U.S. researchers in generating data needed to estimate emissions from burning biomass in southern Africa.
- Supports collaboration between African and U.S. researchers through five National Science Foundation grants, for example, on species extinction in Madagascar, fish genetics in Kenya and Uganda, and tropical forest regeneration in Rwanda.

Project at a Glance

Funding: Life-of-Project \$74,000,000
Biodiversity Percentage 9%

Project Duration: FY 1992–98

Implementors:

Biodiversity Support Program
U.S. National Science Foundation
Land Tenure Center, University of Wisconsin
Environmental Policy and Training Project
U.S. Forest Service
World Bank

USAID Project Officer:

Carl Lawhead/USAID/Africa

Background

Biodiversity conservation is a matter of survival for many Africans. Their livelihoods depend on free and open access to a great variety of biological resources for food, fuel, medicines, housing materials, and economic security. Because the protection of biodiversity is necessary for the maintenance of the natural resource base, biodiversity is not an abstract or theoretical issue for Africans. The presence of diversity provides the ecosystem with the resilience necessary to cope with periodic stresses on the environment such as drought, climate change, and war—events that have been occurring in Africa with disturbing frequency in recent years. Biodiversity is declining at rapid rates throughout the world, and it will be felt dramatically in rural Africa, where most people depend on biological resources for basic subsistence and count on them for their future prosperity.

Project Implementation

Project activities are organized according to the Africa Bureau's analytical agenda, developed in response to the expressed needs of USAID missions, host-country governments, private volunteer organizations, and other development agencies, to provide information and technical analyses on various aspects of resource management. Activities supporting biodiversity conservation are carried out primarily through the *Biodiversity Support Program* (BSP). The project also funds research and analysis through the U.S. National Science Foundation, the Land Tenure Center at the University of Wisconsin, USAID's Environmental Policy and Training Project, the U.S. Forest Service's Forestry Support Program, and the World Bank. For example, PARTS supports a Multidonor Secretariat (MDS), housed at the World Bank's headquarters in

Washington, DC. Among other activities, the MDS coordinates all donor activities in the environmental sector in Madagascar and supports the development of national environmental plans throughout Africa. The MDS also publishes a quarterly newsletter and organizes an annual donor coordination conference in Madagascar.

Project Progress

Funding to the Biodiversity Support Program. This USAID-funded consortium of World Wildlife Fund (WWF), The Nature Conservancy (TNC), and World Resources Institute (WRI) is implementing several programs in Africa funded by PARTS. These include the *Biodiversity Analysis for Africa* (Phase II, which began August 1992), *Africa Global Climate Change* (Phase II, which also began August 1992), *Protected Area Conservation Strategy* (Phase II, October 1993–96), and *Analysis of Behavioral Motivation/Integrated Conservation and Development* (Phase II, which began July 1993).

Biodiversity Analysis for Africa (Phase II). This BSP effort is developing new approaches to setting priorities and testing strategies for biodiversity conservation in Africa. Biodiversity Analysis for Africa (BAA) is designed to assist the Africa Bureau, USAID missions in Africa, government agencies, and nongovernmental organizations (NGOs). Phase I of BAA advanced conservation of biodiversity while promoting sustainable development through analysis of existing strategies and innovative techniques. *African Biodiversity: Foundation for the Future, A Framework for Integrating Biodiversity Conservation and Development*,² the summary report of Phase I, identifies critical issues and provides an action program for conserving biodiversity in Africa. Phase II of BAA, also known as Biodiversity Monitoring and Evalua-

tion (BIOME), is developing a long-term program for analyzing lessons learned by field implementors on all BAA grants and other USAID-funded biodiversity conservation projects. Examples of BAA grants, with their implementors and purposes, include:

- *Namibia: community-based conservation.* Implemented by the government of Namibia's Environmental Planning Unit and WWF, this project aims to develop methods for monitoring the effectiveness of community-based conservation programs in Namibia to protect biodiversity in arid and semiarid areas and to analyze the programs for lessons learned in the field. This grant will support the Planning Unit of the Ministry of Wildlife Conservation and Tourism in its coordination of the national community-based conservation program. It will also support pilot activities at the field level in the region of Bushmanland.
- *Mali: multipurpose plant use.* This study implemented by the Association Maliene pour la Conservation de la Faune et de son Environment, seeks to determine the economic, nutritional, and pharmacological utility of plant species from the Biosphere Reserve of the Baoule Belt. The study will determine the exploitation and utilization of the species by the rural populations.
- *Tanzania: community-based natural resource management.* Cooperatively implemented by the Tanzanian Department of Fisheries, WWF-Tanzania, and WWF-United States, this project will design and test a community-based monitoring and evaluation system, refine the system, and strengthen the skills of government and community participants in the

design and implementation of monitoring and evaluation systems.

- *Tanzania: community wildlife management.* Implemented by Miriam O-Zacharia, this project assesses the impact of the Community Wildlife Management Program on the condition of women in the Mgeta River Buffer Zone of the Selous Game Reserve.

Africa Global Climate Change (Phase II). This project is designed to improve African expertise in analyzing deforestation and biomass burning to develop methods which mitigate the impact on the resource base. Innovative research grants have been awarded to U.S. and African scientists and NGOs addressing key issues in climate change and land use identified in the Central Africa Global Climate Change study (Phase I). Study results provide essential data for the development of policy on emissions and the potential negative impacts of land use and global climate change in Africa. Examples of activities funded under the project, with the implementors and purposes, are:

- *Central Africa: characterizing and monitoring seasonal forest.* This project, implemented cooperatively by the University of Maryland and NASA/Goddard Space Flight Center, used satellite data (AVHRR) to map the distribution of the seasonal forests and savannas of Central Africa. The research provides baseline data on key management issues related to global climate change and Africa.
- *Central African Republic: national park management.* Implemented by WWF, this project creates a research and education division within the Dzanga-Sangha Dense Forest Special Reserve and the Dzanga National Park's management structure for data collection on the forest and the effects of human uses. Data analysis provides information to develop and modify reserve management plans.
- *Zambia: estimating greenhouse gases*

and dust. This cooperative effort by Dr. E. N. Chidumayo of the University of Zambia and D. E. Ward of the Intermountain Forest and Range Experiment Station of the U.S. Forest Service classifies vegetation by woody biomass structure and assesses wood use and wood conversion to charcoal on a national level. The data are being used to provide estimates of emissions from burning biomass in southern Africa.

Protected Area Conservation Strategy (Phase II). The PARCS project seeks to increase effective management of protected areas in eastern, central, and southern Africa, where inadequately trained staff are often involved with increasingly complex development and conservation responsibilities. Phase I assesses the needs, skill levels, training opportunities, constraints, and priorities. Phase II provides for the dissemination of Phase I findings, develops in-country training plans and processes, implements field testing of innovative training techniques, provides for cross-regional workshops to exchange training experiences, and facilitates the dissemination of information documenting field-tested training techniques.

Analysis of Behavioral Motivations in Integrated Conservation and Development. This project is designed to provide a better understanding of the motivations affecting the adoption of sustainable natural resource management practices. The hypothesis is that when policymakers and implementors understand what motivates behavior in natural resource management issues, effective policy and programs can be designed to encourage sustainable practices.

Phase I of the project analyzes the present state of knowledge on behavioral motivation and modification. Phase II provides USAID and collaborative donors with Phase I findings and will conduct a workshop in Africa aimed at understanding and influencing

behavior. Technical assistance will be provided to practitioners to assist them in implementing test cases, the results from which will be disseminated.

National Science Foundation. In an effort to promote greater African participation in biodiversity research and to facilitate networking among African and U.S. professionals, PARTS provided \$200,000 funding for grants through the National Science Foundation (NSF). Through PARTS, the NSF and USAID are cofunding five collaborative research projects:

- *Madagascar: species extinction.* This project conducts an interdisciplinary study of the causes of large-scale extinctions. In particular, an attempt is being made to evaluate the effects of human land use versus climate change on patterns of biodiversity in the tropics.
- *Kenya and Uganda: fish genetics.* This study will use molecular approaches to estimate levels of genetic variability in fish populations of Lake Victoria. The results may suggest management strategies for conservation of genetic variability in fish and help in decisions about species conservation and the effects of genetic changes on eventual reintroduction of these fish into natural habitats.
- *Kenya and Uganda: fish species survival.* Information from this study will provide a better understanding of the Lake Victoria ecosystem and the processes that are causing a dramatic decline of native fishes.
- *Rwanda: tropical forest regeneration.* This project investigates the consequences of seed dispersal by fruit-eating animals on tree regeneration at two sites within the Nyungwa Forest, an African

montane tropical forest. The research concerns the theory of conservation biology and its application to tropical forest management.

- *Madagascar: fish survey.* This project will determine fish diversity and distribution in the remnant rain forest and coastal plains, assess the status of scientifically and commercially important native fish species, study fish ecology and physical and chemical characteristics of Madagascar rivers, produce a checklist and data base of the fishes of Madagascar for in-country conservation planning, and provide research and teaching collections to Madagascar and U.S. institutions for future biodiversity, molecular, systematic, and ecological studies.

Land Tenure Center. The Land Tenure Center is studying the relationship between resource tenure insecurity and conservation of biodiversity.³ The center is also searching for methods to determine if demographic dynamics interact with resource tenure issues to impede biodiversity conservation. Other study objectives include identifying the kinds of incentives appropriate for encouraging the participation of peripheral buffer-zone residents of protected areas in conservation of biodiversity and determining if general lessons about biodiversity conservation can be learned from the increasing examples of community natural resource management. By providing information to policymakers on these dynamic and emotional issues, informed decisions can be made on how to deal with the inevitable conflicts among activities in the same geographical space.

—Brad Williams, *Datex*
5/19/94

¹ U.S. Agency for International Development, Bureau for Africa, Office of Analysis, Research, and Technical Support, *Toward a Sustainable Future for Africa* (Washington, D.C.: USAID, 1993), p. 18.

² U.S. Agency for International Development, *African Biodiversity: Foundation for the Future, A Framework for Integrating Biodiversity Conservation and Development* (Washington, D.C.: USAID, 1993).

³ Peter C. Bloch, "Buffer Zones, Buffering Strategies, Resource Tenure, and Human-Natural Resource Interactions in the Peripheral Zones of Protected Areas in Sub-Saharan Africa" (Madison, Wis.: University of Wisconsin Land Tenure Center, 1994), pp. 15–17.



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



Africa

Southern
Africa

690-0251

Southern Africa Natural Resources Management Project

USAID's *Southern Africa Regional Natural Resources Management Project* (NRMP), launched in 1989, is a \$44 million, eight-year (1989–1996) effort to support the Southern Africa Development Community's (SADC's) regional, national, and local wildlife management and utilization initiatives. NRMP aims to (1) demonstrate that sustainable use and management of wildlife is a viable economic alternative for communities now farming marginal lands, (2) increase local employment and income-generating opportunities from community-managed natural resources, (3) expand the role of women in local economies and their access to income, and (4) improve the exchange of information on natural resource and especially wildlife issues in the region.

Highlights for FY 1993–94

- Enhanced communication among program representatives in southern African countries on community wildlife management through several regional workshops. Received an additional \$1.8 million over an original \$3 million to begin emphasizing community and private involvement in wildlife management in Zambia.
- Worked to improve the standard of living in several poor Namibian communities through sustainable natural resource use and in communities in Botswana through ecotourism, hunting quota transfers to community trusts, research, protected area management planning, and park staff training.
- Helped communities in Zimbabwe's North and South Matabeleland receive income from hunting fees and concessions, encouraging land use planning and reducing poaching. Zimbabwean District Councils began requiring that no less than 50 percent of a district's wildlife income be returned to local citizens. Zambia's revolving fund that distributes wildlife revenues to communities hired a financial manager in 1993 to improve its management; however, decreased safari revenues have depleted game management area budgets.
- Zimbabwe's parks department trained 32 future staff in sustainable wildlife use and protected area management. The Zimbabwe Trust (ZIMTRUST) trained

(continued)

Project at a Glance

Funding: Life-of-Project \$44,000,000
Biodiversity Percentage 100%

Project Duration: FY 1989–96

Implementors:

Southern Africa Development Community (SADC)

Zimbabwe: Department of National Parks and Wildlife Management, Zimbabwe Trust, University of Zimbabwe's Centre for Applied Social Sciences (CASS)

Zambia: World Wildlife Fund

Botswana: Chemonics International, Conservation International, Domestic Technology International

Namibia: Ministry of Wildlife and Tourism, World Wildlife Fund, World Learning Management Systems International, Rossing Foundation

USAID Project Officers:

Barbara Belding/USAID/Namibia

Charles Cutshall/USAID/Zimbabwe

Val Mahan/USAID/Zambia

Robert McColaugh/USAID/Botswana

Highlights (continued)

- small groups in monitoring wildlife, setting quotas for hunters, and maintaining equipment and trained residents in program skills such as gender analysis and budgeting.
- In Zambia, wildlife biologists were trained at the Nyamaluma Training Centre. Zambia's Nyamaluma Training Centre also developed community land use management plans and published a geographic information system (GIS) user's manual and computer programs to automate data processing of field information.
 - ZIMTRUST helped communities build a solar-powered fence to protect fields from elephants, helped establish a wildlife buffer zone between Hwange National Park and nearby villages, and developed a range of environmental materials and a proposal for wildlife management training in secondary schools.
 - Supported aerial surveys in both Zimbabwe and Zambia to monitor large mammal populations and environmental conditions in national parks. In Zimbabwe, one survey determined an increase of 1000 elephants in a year in the greater Hwange National Park.
 - Helped a community develop a community land use management plan for Zambia's lower Lumimba Game Management Area to help address resource use conflicts and various local resource issues.
 - Participants in a project-supported workshop for Zambia's Administrative Management Design for Game Management Areas (ADMAGE) program staff recommended ADMAGE increase community involvement in fund distribution and decision making.

Background

Southern Africa is a region endowed with great, roaming animal herds, vast expanses of grassland and savanna, and complex ecosystems, often crossing over manmade boundaries. Nations of the region share the benefits and responsibility of managing these resources. In 1988 SADC adopted a regional natural resource policy and development strategy to address common issues. Changing political realities in the region in 1994 have heightened the need for energetic application of the strategy in adapting natural resource management planning to new human demands.

Project Implementation

The project assists four SADC-member countries—Botswana, Namibia, Zambia, and Zimbabwe—on a bilateral basis and has regional functions in Malawi and Zimbabwe. Each country program is adapted to local needs yet shares a focus on community-based natural resource management, environmental education, and research and management planning for protected areas. Each also contributes to long-term regional wildlife management goals and participates in regionally managed program efforts.

Project Progress

Regional activities. This six-year (FY 1989–95), \$1.53 million regional component aims to coordinate information exchange and build cooperation in resource management among the bilateral components of this project. Malawi is the site of the program's regional activities coordination; USAID/Zimbabwe houses all regional administrative operations. The SADC Sector Coordinator for Forestry, Fisheries, and Wildlife, housed in Malawi's Ministry of Forestry and Natural Resources, and a USAID technical advisor coordinated several

regional workshops and information exchange activities in the project's first four years. A May 1993 workshop was held in Bulawayo, for example, to discuss the use of gender analysis and participatory rural appraisal for community planning. According to the Botswana project's midterm evaluation,¹ such efforts greatly enhanced bilateral programming on shared issues, particularly community-based natural resource management. Regional planning has slowed considerably, however, since the July 1993 departure of USAID's technical advisor in Malawi; this position remains vacant. Plans for future activities—spearheaded by Zimbabwean program staff in the interim—include a workshop on monitoring and evaluation techniques for nongovernmental organizations (NGOs) and an annual conference, which is scheduled for January 1995 in Botswana. The focus of the conference is "Where Do We Go From Here? NRM Phase II."

Bilateral activities. Country-level activities are under way in Botswana, Namibia, Zambia, and Zimbabwe.

- *Botswana.* The nine-year (FY 1988–96), \$19.9 million Botswana NRMP promotes community-based sustainable wildlife utilization through ecotourism, transfer of hunting quotas to community trusts, research and protected area management planning, environmental education, use and sale of grassland products, and personnel training for the Department of Wildlife and National Parks. (See separate profile on the Botswana NRMP.)

- *Namibia.* USAID and the Ministry of Environment and Tourism, World Wildlife Fund, and key Namibian NGOs have initiated activities under the six-year (FY 1992–97), \$10.7 million *Living in a Finite Environment* (LIFE) project. Focusing on three poverty-stricken areas in the north, the project is helping communities in threatened natural areas use local

resources to improve their economic situation, while preventing further environmental degradation. LIFE pays close attention to the impacts of local activities on women. In addition, the project is promoting national legislation to enable rural communities to retain the benefits of natural resource management initiatives. (See separate project profile on LIFE.)

• *Zimbabwe.* In Zimbabwe, wildlife, particularly elephants, has been managed for years through a program that grants select communities the right to sell elephant and other wildlife products. Established in the 1980s, the government's Communal Areas Management Program for Indigenous Resources, or CAMPFIRE, shifts authority for wildlife resource management to districts and local communities, especially those in proximity to parks and on marginal agricultural lands.

The six-year (FY 1989–94), \$7.6 million Zimbabwe NRMP aims to establish a resource management system in which rural communities and wildlife can coexist on an environmentally and economically sustainable basis and to improve governmental, community, and nongovernmental wildlife management abilities through training, education, protection, and technology transfer. Focused on parts of North and South Matabeleland, the project has helped local community members obtain dividends from hunting concession and trophy fees. These returns—Z\$150–195 per household in Tsholotsho District, Ward 3, where the program has been under way for several years—are helping to promote a deeper appreciation for wildlife, reduce poaching, and encourage land use planning in the community.²

Three organizations are implementing this project: the Department of National Parks and Wild Life Management, the NGO ZIMTRUST, and the University of Zimbabwe's Centre for Applied Social Sciences (CASS).

The department is responsible for training community scouts, monitoring resources, and helping District Councils to manage CAMPFIRE, a growing program.

• *Training.* During fiscal years 1993–94, department staff trained 32 community CAMPFIRE workers to educate residents throughout the project area on the sustainable use and management of wildlife. ZIMTRUST trained smaller groups in topics that included wildlife monitoring and quota setting, motorcycle repair to improve antipoaching patrols, and electrical fence maintenance. Two department ecologists are receiving ongoing training in GIS to enhance the department's scientific management capacity. In March 1994 their unit produced the "Hwange Woody Vegetation Survey Report," an early product of their GIS training examining baseline vegetative resource data from a project focus area.

• *Environmental education.* ZIMTRUST developed draft guides for teachers interested in environmental education, published a CAMPFIRE edition of its youth magazine *ACTION* in March 1994, and developed a syllabus for primary schools and a proposal for wildlife management training in secondary schools to forward to the Ministry of Education.

• *Community development.* ZIMTRUST focuses on building institutional capacity at the community level to plan, implement, monitor, and evaluate resource management efforts in a participatory fashion. For example, ZIMTRUST held community workshops during 1993 and 1994 on business skills, gender analysis and impacts monitoring, conflict resolution, CAMPFIRE management, budgeting, and project planning, monitoring, and evaluation. The trust is monitoring the impacts of training activities on an ongoing basis and helping communities build basic infrastructure needed to establish new protected areas. For

example, in Binga District ZIMTRUST helped construct sections of a solar-powered electric fence to enclose fields and granaries susceptible to elephant intrusion. They organized public meetings of village, ward, and district wildlife committees to publicize and discuss local issues. In Tsholotsho, ZIMTRUST helped establish a wildlife buffer zone between Hwange National Park and nearby communities.

Early in FY 1993, District Councils in Zimbabwe adopted revenue-sharing guidelines ensuring that no less than 50 percent of a district's CAMPFIRE income be paid to producer communities in the form of dividends or projects. Wildlife income has in recent years been significant. For example, in Binga District in 1993, Z\$1.3 million in wildlife revenues was earned, most of which ward leaders designated for schools and income-generating projects such as grinding mills.³

• *Research.* CASS is chiefly responsible for the research component, which incorporates socioeconomic surveys from focus areas, institutional issue studies (e.g., human migration in and out of focus areas), advice on solving technical and other kinds of problems, and monitoring of institutional changes over time. One formal publication on the economic potential for nonconsumptive use of wildlife (such as photo safaris) in Hwange and Binga Districts⁴ has been produced; others are in review. A CASS review of "Interorganizational Dynamics in Natural Resource Management"⁵ contributed extensively to the midterm evaluators' findings on the project.

The Department of National Parks and Wild Life Management also completed annual animal and vegetation surveys as part of their monitoring effort; they found 36,000 elephants in the greater Hwange Park area in 1993—an increase of approximately 1,000 animals from the previous year. A corresponding survey of vegetation destruction suggested the need to translocate elephants from this area.⁶

Zimbabweans, who face difficulties with the number of elephants in their country, do not consider elephants endangered. Yet the Convention on International Trade in Endangered Species places African elephants in this category for the continent as a whole. Thus, Zimbabwe—which historically granted rights to communities to sell elephant products in return for their monitoring of poaching and other problems—has in recent years had to emphasize CAMPFIRE and provide alternative income sources for rural people. As noted in the Zimbabwe NRMP midterm evaluation, aspects of the regional NRMP that emphasize cross-border elephant management are, therefore, perceived as less important in Zimbabwe than are, for example, aspects emphasizing community-based activities.

• *Zambia.* Zambia's wildlife protection system covers 31 percent of the country and consists of 19 national parks, 34 game management areas, and numerous multiple-use zones adjacent to parks.⁷ Wildlife also roams widely, in and out of protected areas, covering extensive territory in their seasonal search for water and forage. Increasingly, wild animals compete with cattle herders and farmers for rangeland and cropland, and many, especially elephants and rhinoceroses, are seriously threatened by poachers.

National Parks and Wildlife Service personnel, overburdened and underexperienced, were unable to cover this area adequately and tended to use traditionally strict wildlife protection practices without regard to local needs, causing Zambia to seek new ways to protect and manage its wildlife resources. In the early 1980s the service initiated a pilot project, similar in concept to Zimbabwe's CAMPFIRE program, in its Lower Lupande Game Management Area. This program, (ADMADE), aimed to demonstrate the economic values of wildlife use and management, help communities gain governance authority

over wildlife resources, set up a self-sustaining program of natural resource management, strengthen institutional decision-making processes, improve communities' social welfare, and direct wildlife revenues to communities.

The Zambia NRMP is a six-year (FY 1990–95), \$4.8 million USAID effort to expand the success of ADMADE to additional geographical areas, and integrate its principles of community participation into other government environmental programs. The project supports the establishment of a Wildlife Conservation Revolving Fund, proposals for legislative changes to support community-based and private sector natural resource management, land use planning, training and research to improve field-level wildlife monitoring and protection, and community support. In 1993 USAID added \$1.8 million to the original grant of \$3 million to help shift program emphasis away from testing community-based natural resource management programs to increasing the involvement of communities and private partners in wildlife management. The project is being implemented through a \$1.1 million cooperative agreement with World Wildlife Fund. ADMADE also relies heavily on specially trained scouts—paid out of the Wildlife Conservation Revolving Fund—to carry out its program.

• *Research.* In 1993–94 the National Parks and Wildlife Service conducted an aerial survey of the game management area next to Kafue National Park and is censusing all large mammals. The service's research department is conducting environmental surveys on select game management areas; already, the service has compiled a data base on hunting in two areas over the last two seasons, and reports on other areas are being prepared. GIS data bases for land use planning have also been established for two game areas. For example, transects (cross-sectional analyses of sample ecosystem contents) for wildlife and ecological monitoring

were completed in November 1993 to demarcate Mumbwa Game Management Area; plans include building a GIS data base there as well. Staff will collect data on vegetation cover, soils, water resources, infrastructure, human activities, and more, processing the information at Nyamaluma Training Centre and eventually using it for land use planning and monitoring efforts.

The service's senior wildlife research officer is producing a field guide to Zambia's national parks and game management areas.

• *Community revenue sharing.* Activities to promote revenue sharing for community initiatives are an important part of Zambia's portion of the NRMP. In 1993 the Wildlife Conservation Revolving Fund, responsible for distributing revenues to communities, hired a financial manager to improve the fund's management. Unfortunately, revenues from safari-hunting income decreased in 1993, down 50–60 percent from 1992, leaving the Game Management Area budgets, which depend on these revenues, depleted. Maintenance funds for the management areas and funds for community projects were, therefore, nonexistent in recent months.

A workshop was held in November 1993 for community development assistants, the field-level representatives of the ADMADE program, to evaluate overall program operations for the year. They recommended continuing the program and suggested ways to increase community involvement in decision making, particularly in the use of revenues distributed by the revolving fund. They found that, although communities are slated to receive 35 percent of the hunting revenues from their area, these funds are often not used with community-defined needs in mind.

• *Training and monitoring.* Training efforts are aimed at building long-term, in-country capabilities in natural resource management. The Nyamaluma

Training Centre was the scene of a number of activities, including planning and implementation of ADMADE's bookkeeper training, held in April 1994; orientation and training for wildlife biologists; publication of a GIS user's manual and computer programs to automate data processing of field information; publication of a safari-hunting guidebook for Zambia; and development of community land-use management plans. One of these plans, developed for the lower Lumimba Game Management Area in eastern Zambia, is a community attempt to identify and resolve resource use conflicts and develop plans to address local issues, including fishing, forestry, water use, education, tourism, and food security.

Using ongoing data from annual game monitoring and hunting quotas, ADMADE's computer analyst established a hunting license data base in 1993. The data base will compare licenses being sold in local communities to the overall quota for the area in question, making license verification from the field easier.

—Kara Page, Datex
7/14/94

¹ Tropical Research and Development, Inc., *Midterm Evaluation of the Botswana Natural Resources Management Project*, presented to USAID/Botswana (Gainesville, Fla.: TR&D, July 1993).

² ULG Consultants Ltd., *Midterm Evaluation of the Zimbabwe Natural Resources Management Project* (Harare, Zimbabwe: ULG Consultants Ltd., January 1994).

³ USAID/Zimbabwe, *Semi-Annual Portfolio Report: 10/92-3/93* (Harare, Zimbabwe: USAID, 1993).

———, *Semi-Annual Portfolio Report: 4/93-3/94* (Harare, Zimbabwe: USAID, 1994).

⁴ Richard Hasler, "Political Ecologies of Scale and the Multi-Tiered Co-Management of Zimbabwean Wildlife Resources" (Harare, Zimbabwe: University of Zimbabwe's Centre for Applied Social

Sciences, 1993).

⁵ Leslie King, "Interorganizational Dynamics in Natural Resource Management: A Study of the Implementation of CAMPFIRE/NRMP in Matabeleland, Zimbabwe" (Harare, Zimbabwe: Centre for Applied Social Sciences, University of Zimbabwe and University of Vermont, unpublished report, 1993).

⁶ U.S. Agency for International Development, *USAID/Zimbabwe Semi-Annual Portfolio Report: April 1, 1993–March 31, 1994* (Harare, Zimbabwe: USAID, 1994).

⁷ World Wildlife Fund, Africa and Madagascar Program, "Support for the ADMADE Program, 4/94" (Washington, D.C.: WWF, 1994).

———, *Second Quarterly Report: Year Four, NRM Management Programme, Zambia, 11/93-2/94* (Lusaka, Zambia: WWF, 1994).



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



Africa

Botswana

690-0251.33

Natural Resources Management Project

In 1989 USAID initiated the nine-year, \$14.4 million Botswana *Natural Resources Management Project* (NRMP), one component of a regional USAID effort in southern Africa totaling \$44 million and spanning nine years (FY 1989–97). The Botswana project has four primary components: pilot community-based resource use projects that allow both men and women to gain income, protected area management planning, environmental education, and training and technical assistance to build staff capacity at the Department of Wildlife and National Parks (DWNP). In addition, project staff participate in and contribute to regional activities as part of their mandate. (See separate project profile on *Southern Africa Regional Natural Resources Management Project* for more information on the regional aspects.) The NRMP is helping specific communities organize to submit proposals to fund activities such as a local wildlife-based, income-generating project or a marketing project for a local plant-based product. It is also providing training on topics such as community relations and problem animal control to the DWNP and promoting environmental education in schools. The project also aims to help develop management strategies that will serve to protect the country's parks and reserves over the long term.

Highlights for FY 1993–94

- Provided substantial encouragement for government passage of laws promoting wildlife tourism and wildlife and park conservation.
- Established demonstration project in Chobe Enclave, where five villages organized to use hunting quotas to generate sustainable income, earning nearly \$12,000 in 1993.
- Helped the DWNP begin setting up a community wildlife extension service and established a participatory system to monitor and evaluate project impacts.
- DWNP began implementing management plan for Chobe National Park and the Moremi Game Reserve.
- Supported study by University of Botswana and nongovernmental organization (NGO) Thusano Lefatsheng to assess impact of marketing the grapple plant, a protected native species, used in making herbal teas. Resulting marketing projects would help primarily women, who make the teas.
- Funded teacher training on educating students on wildlife conservation at Gabarone Game Reserve.
- Supported production of videos by the Television Trust for the Environment for classroom use to promote

(continued)

Project at a Glance

Funding: Life-of-Project \$14,400,000
Biodiversity Percentage 100%

Project Duration: FY1989–97

Implementors:

Department of Wildlife and National Parks
Chemonics International
Conservation International
Domestic Technology International

USAID Project Officer:

Robert McColaugh/USAID/Botswana

Highlights *(continued)*

dialogue on Botswana's principal environmental issues.

- Helped DWNP's Botswana Wildlife Training Institute begin revamping a staff training curriculum in community relations, legislation, and other topics.
- May 1993 evaluation recommended establishing an NGO-strengthening component.

Background

Botswana's northern wetlands and widespread dry savannahs provide the nation's wildlife with a broad range and extent of habitat. Leopards, cheetahs, elephants, hippopotamuses, and zebras abound. Yet, rapid encroachment into western and northern Botswana from eastern livestock-grazing regions threatens to degrade more than half of the country's land area;¹ overgrazing and fencing practices already seriously impinge on the free range of wildlife populations. Local residents in wildlife areas also face conflicts between their need for short-term economic gain from such activities as farming and hunting and the need for sustainable long-term use of resources.

Project Implementation

Botswana government policy and NRMP objectives support each other. In 1993 Botswana passed two new laws promoting wildlife tourism and wildlife and parks conservation. The DWNP's Conservation Education Unit is working with project staff and private partners to develop materials that explain current wildlife and environmental policy to all sectors of the government and to residents of areas most likely to benefit from the changes.

In cooperation with the DWNP, USAID's primary contractor, Chemonics International, has a nine-person technical assistance team working in-country, including one person advising the Botswana Wildlife Training Institute, and an environmental education specialist working with the Ministry of Education. Two U.S.-based subcontracting organizations, Conservation International and Domestic Technology International, are contributing three technical staff to this team.

In May 1993 USAID conducted a midterm evaluation of the project.² Evaluators found that the project's original plan incorporated several flawed assumptions and that intervening events, such as drought, changed other assumptions. Planners assumed that methods of community-based natural resource governance had been tested and proven, wildlife numbers were sufficient to allow community members to harvest small amounts, and a network of NGOs existed to organize communities in sustainable management activities. They also found that, although one project objective is to improve the participation and role of women in resource management programs, progress has so far been slow in the traditionally male-dominated domain of wildlife management. Evaluators concluded, nevertheless, that the project and the government agencies working with it had laid a strong foundation on which sustainable community wildlife management could be established. Major recommendations included extending most contracted positions through the end of the project, adding three new long-term experts—one each in sociology, nonformal education, and policy—and adding a new component to strengthen NGO capacities. USAID/Washington is considering supporting these recommendations with an extension of the project through the end of FY 1997, despite the possible closing of the Botswana mission in 1995.

Project Progress

Community resource management demonstration projects. During FY 1993–94, demonstration activities designed to promote the links between conservation and development were quite successful in getting under way. Projects in two new areas were established. In the northern Chobe Enclave I, five villages organized the Chobe Enclave Conservation Trust to help them implement a community wildlife management project that utilizes hunting quotas to generate sustainable income. The trust helped them sell the quotas to a safari operator, who used only a small portion of the quota in 1993, the first year. Local citizens opted not to use the majority of the quota, deciding that improved incomes depended more on maintaining the wildlife resource. The trust earned nearly \$12,000 in 1993 and is expected to earn more than \$32,000 in 1994. Ninety percent of these amounts will be returned to the communities and 10 percent will go to meet expenses of the Trust's Board.³ Another activity is a three-year grant to the western Kuru Development Trust that will assist local communities to break into the international cochineal dye market with a natural red-dye product made from insects that live on cacti. As part of a multiple donor grant, USAID's support provides for technical assistance on cactus plantation establishment, production, and dye marketing for 230 Bushmen families. These projects are being carefully monitored to measure their long-term impact on household and individual socioeconomic status.

Community relations training at the Department of Wildlife and National Parks. Project support has gone to help the DWNP strengthen its community activities program in areas such as developing guidelines for communities and entrepreneurs on developing resource-based businesses in rural areas.⁴ It has received assistance in setting up a community wildlife

extension service, which communicates with nongovernmental and community organizations, advises residents on game ranching, advises safari and tourism business owners on working in communities, controls damaging animals, and advises entrepreneurs on the sale of wildlife products.

The project team's rural sociologist is helping the department set up a participatory monitoring and evaluation system to collect information on project impacts and feed it back into community-strengthening efforts. Participatory rural appraisal, a methodology developed with USAID support in Kenya and other countries, has been adopted by the DWNP to help communities assess and plan local natural resource management. Four department staff have been trained in the methodology at Egerton University in Kenya, and intensive training sessions were held in the Chobe, Ghanzi, Kgalagadi, and Ngamiland districts for local officials and nongovernmental representatives.

The project also supported studies examining the feasibility of using specific natural resources. Working with the local NGO Thusano Lefatsheng, consultants from the University of Botswana have, for example, assessed the environmental and socioeconomic impact of marketing the grapple plant, a protected species native to Botswana's veld (savanna). Its tubers are used commonly for herbal teas and medicines throughout southern Africa. Women, who do most of the work in veld commodity production, will be the primary beneficiaries of projects developed with Thusano Lefatsheng through these studies.

To help them prevent and respond to problems created by wildlife for farmers and ranchers, department staff are also being trained through courses on problem animal control.

Planning and applied research. This component, designed to use basic research and monitoring and evaluation

on focal project areas for long-term planning, is involved in developing management plans for protected areas in three northern districts in Botswana. It is monitoring impacts of community-level pilot projects for income-generation and plans to cycle results back into community- and department-level planning efforts.

During FY 1993-94, terms of reference for contracts to fulfill management plans for all Wildlife Management Areas in Ghanzi, Kgalagadi, and Ngamiland Districts were approved. Developed by consultants to the Kalahari Conservation Society, the plan for Chobe National Park and the Moremi Game Reserve are being implemented by the DWNP. The terms of reference to integrate Makgadikgadi Game Reserve with Nxai Pans National Park and their peripheral wildlife management areas have been approved. USAID awarded a grant to the Southern Africa office of the World Conservation Union to draw up this integrated management plan.

Impacts of project activities on households are being monitored for changes in income. For example, in the Chobe Enclave, where baseline monitoring data were collected in 1992, the department's sociologists, supported by the project, will use participatory rural appraisal in each village and a socioeconomic survey to understand people's perceptions of the project so far and to revisit and monitor changes that have occurred since community wildlife quotas were implemented. They will also feed this information back to improve the department's own approach to community-based natural resource management and build the communities' ability to plan their own development.

Environmental education. The project helped fund a major environmental education conference in 1991, which led to recommendations for the Ministry of Education's current environmental education planning. USAID support also produced assess-

ments of curriculum development needs for Botswana's primary and secondary levels in both the formal and nonformal education sectors. The ministry is reviewing these to select priority actions for the coming years.

Annual training courses, funded by the project, are being held at Gabarone Game Reserve to train teachers in techniques for using the reserve to teach students about wildlife conservation. They are very popular with teachers, because they bring educators and wildlife officers together in a realistic field setting. Overall progress on teacher training, although slow, is gaining momentum and effectiveness through better coordination between the Department of Teacher Training and Development and project staff. A grant to the Television Trust for the Environment was made to produce videos on the main themes of Botswana's National Conservation Strategy. These videos, with accompanying teacher's notes, are aimed at maintaining debate and dialogue about the country's principal environmental issues. Videos for classrooms were begun in 1993; a first product will be finished in late 1994.

Personnel planning and training. A 1991 Chemonics International assessment of the Botswana Wildlife Training Institute, the department's training division located in the northern part of the country, provided recommendations that the department has accepted for reorganizing the institute and for strengthening the department's human resource development capacity. A project advisor, working with institute faculty to revamp its training curriculum in topics such as community relations, legislation, and problem animal control, will be joined by two new project instructors in the coming months. Another advisor is working in department headquarters to help reexamine the department's career development structure and ensure the best placement of trainees.

—Kara Page, *Datex*

6/23/94

¹ World Resources Institute, *The 1994 Information Please Environmental Almanac* (Boston, Mass.: Houghton Mifflin, 1994), p. 380.

² Tropical Research and Development, Inc., *Midterm Evaluation of the Botswana Natural Resources Management Project* (Gainesville, Fla.: TRD, Inc., July, 1993).

³ Nicholas Winer, *A Botswana Case Study: Why Communities Should Manage Their Wildlife Resources* (Washington, D.C.: Chemonics International, forthcoming).

⁴ Botswana Department of Wildlife and National Parks, *Joint Ventures: A Guide to Developing Natural Resource-Based Business Ventures in Community Areas* (Republic of Botswana: Botswana DWNP, 1993).



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



Africa

Congo

679-0008

Congo Forest Conservation Project

In 1991 USAID awarded a six-year (FY 1991–96), \$3.3 million grant to the Wildlife Conservation Society to implement the *Congo Forest Conservation* (CFC) project. The initiative aims to protect the northern forests of the Congo by taking a two-track approach. The first track supports a series of management activities in the core and buffer zones of the Nouabalé-Ndoki National Park. These activities include developing a legal framework to officially establish the protected area, building base camps for park management and research, conducting baseline ecological studies, and incorporating local communities into management actions. The second track sponsors conservation initiatives at the national level to strengthen the Congo's environmental policy and institutional capacity, such as training for local scientists, publicizing environmental management issues, and supporting nascent nongovernmental organizations (NGOs).

Highlights for FY 1993–94

- Supported creation of Nouabalé-Ndoki National Park, legally established by government in January 1994.
- Completed construction of a 13-building base camp for park managers and began building a smaller camp along the park's border.
- Completed baseline technical studies for developing a park management plan.
- Worked with four buffer zone communities to use natural resources sustainably. Created economic opportunities for conservation, providing \$23,400 in salaries to 24 employees in Bomassa village.
- Provided technical assistance to the government and environmental NGOs. Launched environmental training component with local scientists and university students. Conducted successful media campaign to promote forest conservation throughout Congo.

Project at a Glance

Funding: Life-of-Project \$3,300,000
Biodiversity Percentage 60%

Project Duration: FY 1991–96

Implementors:
Wildlife Conservation Society
Ministère des Eaux et Forêts et de la Pêche

USAID Project Officer:
Robert Hellyer/USAID/Africa

Background

The biologically diverse rain forest of the Nouabalé-Ndoki National Park is one of Africa's last unspoiled wilderness areas. The 448,000-hectare protected area is roughly the size of Delaware and boasts some of the highest densities of lowland gorillas, chimpanzees, and other large mammals in the world. In addition, Nouabalé-Ndoki is part of a potential 1 million-hectare reserve complex that also includes the Dzanga-Sangha National Park in the Central African Republic to its northwest and contiguous forest in Cameroon to its west. The trinational complex, which is about half the size of New Jersey, has been designated a top priority on the international conservation agenda because it contains the highest density of African forest elephants ever recorded.

Although the Nouabalé-Ndoki region is very remote and sparsely populated—creating unusually favorable conditions for preserving the park—four villages lie 32 to 40 kilometers from the protected area's border; the 700 inhabitants traditionally have hunted ivory for income and game for food. Hunting by local residents and outside poachers from the Central African Republic poses the greatest risk to elephants and other wildlife in the park.

Project Implementation

The Wildlife Conservation Society (WCS) began spearheading efforts in 1989 to protect Nouabalé-Ndoki when the area was still designated a forest logging unit awaiting concession to a timber company. Over the last three years, WCS has worked closely with the Ministère des Eaux et Forêts et de la Pêche (Ministry of Water, Forests, and Fisheries) on several fronts. It reached a number of hard-won milestones despite the Congo's ongoing political and economic instability, which delayed project cofinancing

from other international donors and resulted in the premature evacuation of five Peace Corps volunteers assigned to the initiative. The project's approach to protecting northern Congo's biodiversity has been twofold: carrying out a series of management activities in the core and buffer zones of the Nouabalé-Ndoki National Park and sponsoring conservation initiatives at the national level to strengthen the Congo's environmental policy and institutional capacity.

Project Progress

Nouabalé-Ndoki National Park. The project reached its most significant milestone in January 1994 when the Congolese president officially decreed or "gazetted" Nouabalé-Ndoki as a national park, the first to be established in that country since its independence from France in 1960. The short two-year time frame to gazette the park was especially noteworthy since political turmoil, including frequent personnel changes within governmental ministries, could have caused numerous delays. The presence of key governmental officials and project staff championing the effort, Nouabalé-Ndoki's high national and international profile, and the existence of international donors committed to financing park management activities were pivotal factors in securing the official decree on schedule, according to a 1994 evaluation of the project.¹ To the Congolese government, the park's establishment meant that one of its richest wildlife zones would be protected and that stable revenue and jobs would be infused into the economically depressed region.

In the Nouabalé-Ndoki region itself, most project activities in 1993 were directed toward building two permanent camps to serve as focal points for park management and research. Despite the park's remoteness and logistical difficulties, construction of Nouabalé-Ndoki's 13-building base camp—consisting of an office, lodges,

kitchen, storage areas, solar- and gas-powered generators, and common areas—was completed on schedule in December 1993. The camp accommodates some 20 staff and is sited on the outskirts of the village of Bomassa, which is accessible only by river and is located roughly 32 kilometers from the park itself. Construction of a smaller, more rustic field research camp began on a clearing along the Ndoki river at the park's border in September 1993.

Project staff also worked closely with Congolese researchers and Peace Corps volunteers to conduct botanical inventories, bird and large mammal surveys, studies on game hunting and trade, and socioeconomic assessments of local populations. The results will help in formulating a management plan for the area in the next two years. Further studies were conducted in the regions bordering the park. A series of transects in the Likoula Swamp found, contrary to expectations, very large populations of lowland gorillas, suggesting that the gorilla population in this part of Africa is probably much higher than previously estimated. Forest ecology studies provided valuable baseline information and showed that the age of trees cut by logging companies on concessions south of the park averaged 300 to 400 years, with the oldest exceeding 900 years. An elephant study in the trinational region identified over 1,750 individual elephants that visited one forest clearing and analyzed skin samples from almost 80 of them to assess the population's genetic diversity.

The project did not direct all of its activities to infrastructure or studies. To grapple with the serious threat of poaching, project staff worked with local communities in the buffer zone to create a hunting exclusion zone and to permit only small-scale hunting and resource exploitation by local residents in agreed-on areas. (Congolese law forbids hunting in the park itself.) In Bomassa, site of the park headquarters, economic and social incentives are being used to convert the hunting-

based economy into one that benefits from compliance with antipoaching regulations. In 1993 the project provided \$23,400 in salaries to 24 full- and part-time Bomassa employees, almost one family member per household. Verbal agreements with villagers on park management issues emerged following a series of meetings. In addition, project financial support of a school and pharmacy has been linked to compliance with resource-use restrictions. These outreach efforts, while difficult to quantify, have raised villagers' standard of living, stabilized their economic base, and fostered good will toward the project.

On the eastern side of the park, in more remote villages where the project's presence is smaller, plans are under way to finance another school, local pharmacy, and small store to encourage compliance with park regulations. Also, the project will hire and train park guards to maintain border patrols and deter elephant and other large-scale commercial hunting. Moreover, staff plan to open a dialogue with Central African Republic officials to develop a bilateral strategy for preventing illegal poaching in both Nouabalé-Ndoki and Dzanga-Sangha National Parks.

National initiatives. As part of the project's effort to strengthen the Congo's ability to manage its forest resources and wildlife rationally, frequent consultations have been held with officials on a range of conservation issues. The results of project baseline biological surveys of three potential reserve sites in northern and

central Congo are now being used by the government and other international donors to further conservation efforts in the areas. The project also has ongoing studies on the dwarf crocodile trade and elephant genetic diversity and migration.

The project's training program has focused on providing informal, applied instruction in conservation and sociology to Congolese scientists, who often are well educated in the scholastic sense but lack practical field and research experience. Six Congolese professionals have taken on apprenticeships with project expatriate counterparts to encourage on-the-job learning. Three university interns have learned field methodologies by working with project staff on gorilla and dwarf crocodile studies and on a census of the population in Bomassa. These participatory approaches have been complemented by short courses in English and computer literacy and by funding to attend international conferences on the African elephant and crocodiles and on natural resource management.

Another outreach effort is a highly successful publicity campaign to promote forest conservation, particularly the Nouabalé-Ndoki park, and to raise environmental management issues at the national level. Project staff have been interviewed frequently for national and international television, radio, and print media. They have produced newsletters for distribution to ministries and NGOs, posters, T-shirts, and brochures. One program high point came in July 1992 when *Time* magazine featured Nouabalé-Ndoki as a

cover story. Another one came in September 1993 when a National Geographic Society crew spent three months in the region for an upcoming magazine article and TV program.²

The project's support of nascent environmental NGOs has taken several forms. Staff regularly provide informal technical assistance and advice to several groups. The project sponsored a meeting with the Congo's 20 environmental groups to provide a forum to exchange information about ongoing NGO activities and to share ideas on new directions for the conservation movement. One group, the Alliance National pour la Nature, was given a small grant for conservation education in the capital city. The group has taken schoolchildren to the Brazzaville zoo, assessed visitor perceptions regarding conservation, and designed educational panels to improve animal exhibits. Another group, the Sangha Action Biodiversité, received children's environmental newsletters published by another Congolese NGO, Les Amis de Ngovou, to sell in Ouesso as a way of raising funds for other environmental projects.

—Michele Zador, *Datex*
6/15/94

¹ David S. Wilkie, Amy Vedder, Rufin Oko, and Bryan Curran, *Second Year Evaluation of the Congo Forest Conservation Project/Nouabalé-Ndoki Project* (New York, New York: The Wildlife Conservation Society, draft report, 1994).

² E. Linden, "The Last Eden," *Time*, July 13, 1992, pp. 64–68.



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



Africa

Ghana

641-0122

Natural Resource Conservation and Historic Preservation

The four-year (FY 1992–95), \$5.6 million *Natural Resources Conservation and Historic Preservation* project is a unique program designed to protect selected important national assets and build a core of tourist sites in the Central Region of Ghana. USAID is supporting the establishment and development of the new Kakum National Park and the stabilization of three historic structures: Elmina Castle, Cape Coast Castle, and Fort St. Jago. All are classified as World Heritage sites by the United Nations Education and Scientific Organization. The Portuguese castle at Elmina, for example, was built in 1482 and is the oldest European structure in sub-Saharan Africa. The project also complements ongoing United Nations Development Programme (UNDP) and other donor efforts to support integrated development across Ghana's Central Region.

Highlights for FY 1993–94

- Helped establish Kakum National Park, formally opened by Ghana's president in March 1994. The new park's exhibit area presented a butterfly new to science and named for the park, *Diopetes kakumi*.
- Collected data for Kakum management plan. Initiated surveys on forest use, primates, birds, elephants, and hoofed animals.
- Held workshop in early 1994 to produce park's development plan. Ghanaian and U.S. expert participants declared park would put "Ghana on the world map of ecotourism."
- As part of restoration efforts, the U.S. Committee of the International Council on Monuments and Sites studied several historic castles and a fort and documented processes used in their construction from the 15th to 18th centuries.
- Helped Ghanaian scholars develop culturally sensitive interpretive services for the park and castles, for example, a video for tourists, several exhibits, and a brochure.
- Installed geographic information system for mapping and evaluating park resources.
- Established a library at Kakum National Park containing more than 400 items on conservation, development, and Ghanaian history.

Project at a Glance

Funding: Life-of-Project \$5,600,000
Biodiversity Percentage 48%

Project Duration: FY 1992–95

Implementors:

Midwestern Universities Consortium for International Activities
Conservation International
Smithsonian Institution
University of Minnesota Tourism Center
U.S. Committee of the International Council on Monuments and Sites

USAID Project Officer:

Denise Rollins/USAID/Ghana

Background

Ghana's Central Region holds several of the country's most precious natural and cultural treasures. Prominent among these are Kakum National Park, the adjoining Assin Attandanso Resource Reserve (formerly a game production area), and 26 historic forts and castles along the West African coast. Kakum, located 20 kilometers north of Cape Coast, covers 360 square kilometers of biologically diverse, threatened forest. It is also the watershed for numerous critical rivers and streams that supply water for local and urban population centers. The Central Region is of particular historical importance as well, being the first area of contact between European colonizers and the peoples of West Africa.

Project Implementation

The Midwestern Universities Consortium for International Activities is coordinating several U.S.-based organizations to carry out project activities. They include the University of Minnesota Tourism Center, Conservation International (CI), the Smithsonian Institution, and the U.S. Committee of the International Council on Monuments and Sites (US/ICOMOS).

The project's two primary components, protected area development and historic site preservation, are supported by marketing, promotion, and planning of tourism activities in the Central Region and interpretive services to help the public understand these natural and cultural resources. To secure Kakum's preservation, CI is advising and working with Ghana's Central Region Tourism Development Scheme and the Department of Game and Wildlife in developing the park, studying its wildlife, and setting up management systems for the park and its buffer zone. CI's four primary activities are (1) assessing park

resources and identifying steps toward its conservation, (2) assessing local socioeconomic conditions and the expectations of local residents and incorporating these assessments into park development plans, (3) developing park infrastructure, including a visitor center and staff facilities, and (4) developing short- and long-term park management plans.

The historical preservation and supporting subcomponents of the project, led by US/ICOMOS and the Smithsonian Institution, focus on restoring key rooms and stabilizing exterior structures on Elmina, Cape Coast, and Fort St. Jago as well as establishing historical exhibits to interpret past events for the public. Funding for the project was originally to be supplemented with local currency generated through debt swaps. Of USAID's contribution, the project was allocated \$1.9 million to leverage \$4 million in Ghanaian cedis. Ghana's economy began to improve rapidly, however, encouraging debt holders to keep their debt in the hope that they would be repaid. Project organizers were, therefore, not able to purchase as much debt as they had hoped. This situation left participants and the government's Central Region Development Commission, which managed the local currency fund for in-country project activities, with far fewer resources than planned. A "blocked currency" transaction with the Shell Oil Company converted US\$250,000 to \$1 million in Ghanaian cedis for the project. Participating organizations also provided matching funds. A midterm evaluation in May and June 1994 will help USAID/Ghana determine whether additional resources should be made available to accomplish the project's objectives.

Project Progress

During the project's first year, private sector investments were stimulated in area hotels, food services, and resorts.

USAID coordinated activities with other donors through the Central Region Development Commission tourism development program funded by the government of Ghana, the UNDP, and the private sector. The number of visitors to both Kakum National Park and Cape Coast and Elmina Castles has grown, and, particularly in the park and Cape Coast Castle, the ratio of Ghanaian to foreign visitors is well over 60 percent.¹

Protected area management. Over the FY 1993-94 period, CI has helped to protect Kakum National Park by making it a more publicly recognized repository of Ghana's natural heritage. At the park's opening ceremony in March 1994, for example, the project received the support of Ghana's president, Jerry Rawlings, Jr. A new megafauna exhibit, developed by CI and the Smithsonian, proved popular with the Ghanaian press. The exhibit included a display of butterfly species found in the park, including one new to science, *Diopetes kakumi*, named after the park. This success is due in part to the efforts of CI's in-country advisor, who for the last 18 months has worked directly with the Department of Game and Wildlife to organize construction of park facilities, training of Ghanaian staff, and collaboration with other participants. Brief descriptions of this component's progress in priority areas follow.

Research. CI has initiated surveys on park fauna and flora, including forest use, primates, birds, elephants, and ungulates (hoofed animals), and hopes to initiate studies on native plants and the water catchment areas soon. A recently installed library, compiled by CI over several years, contains over 400 items on conservation, development, and the history of park management at Kakum. It also includes a geographic information system for mapping and evaluating park resources. Under a different USAID project, CI is also currently analyzing the results of a study it conducted on nontimber forest use in Ghana.²

Community outreach. Project staff set up a program to address the needs of residents in park buffer zones. CI, in cooperation with nongovernmental organization (NGO) and private partners, is working with a local NGO and private sponsors to train villagers in wildlife husbandry and to build primary schools in two nearby villages, organize environmental education events, and investigate the potential for marketing cocoa to raise local revenue. One local chief has supported the project with a donation of land as a site for the new park headquarters.

Park management plans. Early on, CI focused solely on training Department of Game and Wildlife (DGW) park staff but quickly found that they are frequently rotated; CI began to use specialist staff for specific project work instead. CI has trained seven DGW staff in primate survey techniques and sent two senior staff to attend the Smithsonian Institution's biodiversity-monitoring course in Virginia and to an inspection of tourism sites in Costa Rica. CI recently finished construction of the park's temporary visitor center and headquarters, initiated plans to establish a long-term trust fund to maintain the park and historic sites, and held a workshop organized with the American Society of Landscape Architects (ASLA) in January 1994 to produce a Kakum development plan. Workshop participants, including Ghanaian and U.S. architects, landscape architects, and zoological park designers (with U.S. participants attending on a pro bono basis) pronounced the park to be a potential tool for putting "Ghana on the world map in ecotourism."³

Historic preservation, tourism development, and interpretive services. US/ICOMOS has carried out the first steps to stabilizing the three monuments: architectural, engineering, and building material studies and archeological reconnaissance surveys for the buildings; procurement of stabilization materials; and documentation of the original construction processes from archives in England, the Netherlands, and Ghana. The exterior work is now focusing mainly on the enormous Cape Coast and Elmina Castles, and less so on Fort St. Jago.

Increased efforts to build tourist facilities and awareness of the Central Region's attractions laid the groundwork for this project's success. Difficult immigration procedures, lack of telecommunications services, and absence of a promotional tourism policy, however, may impede true progress in increasing international tourism. Nevertheless, participating organizations such as the University of Minnesota Tourism Center have been very active. The center performed a coastal resource assessment in December 1993 and identified possibilities for deep-sea fishing and resources requiring environmental protection. Its counterpart, the Ghana Tourist Board, organized a training session for nearby hotel owners in hospitality and another session on pricing and business management. Plans have been made for a consultant to work with Ghanaian officials in May 1994 to determine impacts of tourism development on local culture.

Focusing on the structure at Cape Coast, the Smithsonian Institution worked with Ghanaian scholars and

historians on the development of plans and culturally sensitive treatment for interpretive services at the park and castle. The Smithsonian Institution has contracted a renowned Ghanaian film maker to produce a video to orient participating individuals and tourists to the site, trained two Ghanaian architects and other professionals in the procedures of museum development and exhibit presentation, and developed several exhibits and a brochure. One of these exhibits, as mentioned before, opened with great fanfare at Kakum in March 1994. Another at Cape Coast Castle, treating the historical significance of the site, will open in December 1994 to coincide with PANAFEST, the biannual Pan-African festival of the arts. The Smithsonian Institution will be working with CI to build a more permanent natural history exhibit at Kakum in coming months. The Smithsonian Institution's training of museum professionals and building of an exhibit production workshop should leave the Ghanaians with strong exhibit skills and the ability to contract out exhibit work for other African park/museum initiatives. Over time, this work should help cover the project's costs.

—Kara Page, *Datex*

5/26/94

¹ Conservation International and University of Minnesota Tourism Center estimates.

² Brent Bailey, "Survey of Nontimber Forest Product Use Around Kakum National Park, Ghana," (Accra, Ghana: USAID/Ghana, forthcoming).

³ *Daily Graphic*, Accra, Ghana, Jan. 22, 1994.

USAID

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



Africa

Kenya

615-0247

Conservation of Biodiverse Resource Areas

USAID's five-year (FY 1992–96), \$7 million *Conservation of Biodiverse Resource Areas* (COBRA) project is helping the Kenya Wildlife Service (KWS) implement its community development and wildlife conservation program. The service's approach, outlined in its 1990 policy framework and development plan, popularly known as the "Zebra Book," assumes that if communities obtain direct benefits from the presence of wildlife, they will perceive it as a necessary and important resource offering greater benefits than costs. COBRA is designed to help the KWS develop the capability to mobilize communities, groups, and individuals to derive benefits from wildlife-related economic enterprises and tourism. COBRA is assisting the KWS to:

- Establish a functioning Community Wildlife Service (CWS) unit with headquarters and field staff capable of coordinating, supervising, and monitoring the community conservation program
- Design and implement mechanisms for sharing revenue from protected-area gate receipts with local communities, especially in areas surrounding Amboseli/Tsavo West, Laikipia, the Coast, Samburu, and Narok/Masai Mara protected areas
- Provide management training in communities receiving funds and technical assistance for those wishing to develop wildlife-related enterprises
- Support and create community and nongovernmental organizations (NGOs) in wildlife management, training, and development activities
- Further define key policy issues and engage the government in policy dialogue on wildlife-related management.

Highlights for FY 1993–94

- Helped build a health clinic in Taita-Taveta and assisted a ranch in maintaining water points near Amboseli Protected Area with funds from COBRA's revenue-sharing program.
- Supported a Community Wildlife Service (CWS) training committee to coordinate graduate courses in tropical resource ecology, short courses on various topics, and internships for CWS field coordinators.
- Completed survey of knowledge of and attitudes and practices toward wildlife of over 3,300 group ranch members, farmers, and ranchers in three areas to understand wildlife uses and stakeholder rights.
- Set up monitoring and evaluation committee, which helped organize workshop for senior KWS and CWS staff, training for field and headquarters staff, and tracking of CWS field activities.
- Progress on the COBRA project slowed during the transition to a new KWS director in the spring of 1994.

Project at a Glance

Funding: Life-of-Project \$7,000,000
Biodiversity Percentage 100%

Project Duration: FY 1992–96

Implementors:

Development Alternatives, Inc.
African Wildlife Foundation
Management Systems International
Kenya Wildlife Service

USAID Project Officer:

Dennis McCarthy/USAID/Kenya

Background

Kenya's widely diverse ecosystems, which include Africa's highest montane forests and grasslands and most extensive tropical coastal ecosystems, contain a rich abundance of wildlife species. Elephants, rhinos, antelopes, and giraffes have for centuries ranged freely across the plains. Until recently, utilization of rangelands by pastoralists conflicted little with wildlife. As human and livestock populations have increased and government attempts to settle nomadic groups and convert rangeland to agricultural land have succeeded, relationships among pastoralists, farmers, and wildlife have become more and more conflictive. Although wildlife in parks is numerous, many animals range outside protected areas, destroying farm crops and becoming even more susceptible to poaching. Local people have unclear rights in their use of wildlife resources and seem to see wildlife as more of a problem than a benefit. In 1989 Kenya's government attempted to address this growing problem by creating the KWS. International support for KWS efforts comes from many donor agencies, including USAID and the World Bank.

Project Implementation

A consortium of U.S.-based organizations, Development Alternatives, the African Wildlife Foundation (which helped develop the COBRA project concept through an earlier USAID-supported community conservation activity) and Management Systems International have the primary contract for technical assistance to the COBRA project.

Progress on the COBRA project was slowed recently by the resignation in March 1994 of KWS director, Richard Leakey, and the transition to a new director, who arrived later in the spring.

Project Progress

Human resources. In efforts to establish a training capacity within the CWS for the community conservation program, COBRA plans to familiarize approximately 500 KWS staff with the community conservation program strategy and philosophy and train at least 36 Wildlife Extension Officers and 29 Community Wildlife Wardens to implement the strategy in the field. Organizers also hope to leave an established capacity within the CWS headquarters to address training requirements for the community conservation program. The project has also been working with KWS officials to find candidates for new project-supported positions at the CWS.

Community wildlife enterprise development. The project has focused on helping communities identify needs, outline local resources, organize equitably to ensure benefits are shared fairly, and build relationships with other interested parties, such as NGOs, tourism officials and business people. One of the new positions mentioned above would support a community enterprise and development specialist to help the Wildlife for Development Fund identify and finance community-based projects and train KWS staff and community members in managing such enterprises.

The Wildlife for Development Fund, established with USAID and World Bank support, aims to help build strong technical capacities in communities and the CWS to set up sustainable wildlife-related enterprises and share ecotourism revenues for activities in communities near protected areas. Fund activities include:

- Establishing and implementing wildlife management units and plans that incorporate concerns of community members, women, scouts, and other local groups

- Training for community members, government officials from target areas, and NGO/private sector representatives on wildlife enterprise development and management, at least 25 percent of whom will be women
- Establishing wildlife users' associations
- Creating community development projects

In selecting the groups to receive fund support, the KWS examines the connections with government and nongovernmental initiatives in health, water, education, and other areas to ensure that the proposed wildlife activity is not operating in isolation but complements local priorities. For example, funds from the revenue-sharing program have helped build a health clinic in Taita-Taveta and assisted a group ranch to maintain water points near Amboseli. The fund also helps to organize groups to ensure that benefits are more equitably and legally distributed within communities.

Associations being considered for support by the fund include the Kenya Ostrich Producers Association to help prepare its constitution, develop standards for production and exports, and give support to small producers; and the Mombasa Boat Operators Association, for training in management and accounting, establishment of a revolving fund, and public relations.

Institution-building for the Community Wildlife Service. Training activities form an important part of building Kenyan institutional capacity to work with communities on conservation. A training committee, established to ensure coordination between in-country (supported by the USAID grant to the KWS) and out-of-country (supported by the USAID contract with the consortium) activities, has been meeting every four to six weeks. Contract training activities include:

- Graduate-level courses in tropical resource ecology at the University of Zimbabwe
- Short courses (for example, a course for seven KWS staff on Wildlife Utilization Techniques held in April 1994)
- Internships for CWS field coordinators with KWS staff to build planning skills
- Workshops on Wildlife for Development Fund guidelines for KWS headquarters staff, senior wardens, and Machakos field staff
- Establishment of a data base to track training of CWS staff
- Development of a modular training course to address KWS/CWS needs.

Research and policy analysis.

COBRA aims to: develop land use management plans, reflecting community concerns in focus areas; draft strategies with the CWS for coordination with private sector representatives on community conservation initiatives; help CWS document models for revenue sharing and operational guidelines; and prepare a paper on additional reforms needed to regulate and promote sustainable wildlife use.

Research is also being geared to gaining an understanding of current wildlife and land use practices and

stakeholder and government interests, rights, and obligations. Results will be useful in developing the legal basis for improving sustainable wildlife management by communities. Because wildlife use rights are not well defined, research into the effects of policy changes is under consideration. A study on wildlife utilization is being planned and has been discussed over the last year with interested parties;¹ a scope of work for this effort was submitted to the KWS for consideration in January 1994. In the Tsavo/Amboseli area, the project supported a survey on knowledge, attitudes, and practices towards wildlife that will help local conservation planning efforts. In the Kuku/Rombo area, 964 group ranch members were surveyed as well as 996 farmers and ranchers in Mangelete/Maktau and 1,394 group ranch members in Amboseli.²

Monitoring and evaluation. Monitoring and evaluation is a critical part of the COBRA effort. A monitoring and evaluation committee was set up in 1993. The committee has helped organize several activities, including a one-day workshop for senior KWS and CWS staff, a half-day training for field and headquarters staff in February 1994, and the provision of a simple events summary sheet for tracking CWS field activities. This sheet has

been extensively tested by the African Wildlife Foundation in its Tsavo Community Conservation Project in Kenya as well as in its Uganda and Tanzania projects. Plans are under way to hire a monitoring and evaluation specialist to help develop an overall community conservation-monitoring system and train CWS staff on its use. The finalization of COBRA's monitoring and evaluation procedures is pending, because project organizers want to ensure its compatibility with an effort supported by the United Kingdom's Overseas Development Administration in management and information systems for the KWS. Plans also included an assessment of overall impacts of the COBRA effort.

—Kara Page, *Datex*
6/28/94

¹ M. R. Stanley Price, *Kenya Wildlife Service: Community Wildlife Service; An Approach to a Utilization Study from the African Wildlife Foundation* (Bethesda, Md.: Development Alternatives Inc., September 1993).

² Development Alternatives, Inc., *Conservation of Biodiverse Resource Areas Interim Contract Report* (Bethesda, Md.: DAI, May 1994).



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



Africa

Madagascar

687-0110

Sustainable Approaches to Viable Environmental Management

The *Sustainable Approaches to Viable Environmental Management* (SAVEM) project is part of USAID's effort to support Madagascar's National Environmental Action Plan (NEAP) through sustainable community development in threatened natural areas. A seven-and-a-half year (FY 1991-98), \$40 million project, SAVEM is designed to (1) provide institutional support to the National Association for the Management of Protected Areas (ANGAP), which has the mandate to coordinate implementation of government policy for management of protected areas and development of peripheral zones, and (2) test the hypothesis that local populations will move from destruction to conservation of their environment if they see a relationship between economic and social well-being and the conserved area and if they are empowered to make decisions. To do this, the project provides grants to develop and implement plans for joint, interactive management for the development and conservation of protected areas and their peripheral zones. Using tracking and evaluation systems, the project will produce guidelines for the design of integrated conservation and development efforts.

Highlights for FY 1993-94

- Helped strengthen the capabilities of Madagascar's ANGAP, which enabled it to take on coordination of 20 protected areas in addition to the 14 already developing management plans under its guidance.
- ANGAP added a new department to collect and manage environmental and socioeconomic information using a geographic information system (GIS)-based conservation data bank.
- In Phase I, completed the collection of ecological, socioeconomic, and agricultural information in communities near protected areas and testing of methods for integrating conservation with development.
- In Phase II, supporting six conservation and development projects in varying stages of development in protected areas at Masoala, Andohahela, Andasibe/Mantadia, Zahamena, and Amber Mountain/Ankarana/Analemera, and Ranomafana.
- The small community grants program hired three field monitors to expand outreach and technical assistance to nongovernmental organizations (NGOs) in buffer zones.

Project at a Glance

Funding: Life-of-Project \$40,000,000
Biodiversity Percentage 95%

Project Duration: FY 1991-98

Implementors:
Private Agencies Collaborating Together (PACT)
Tropical Research and Development

USAID Project Officer:
Robert Hanchett/USAID/Madagascar

Background

Madagascar is an island blessed with a diversity of ecosystems, plants, animals, and people that is unique in the world. Separated from the African continent millions of years ago, the country's nonhuman inhabitants have evolved into an estimated 200,000 species, nearly 75 percent of which are found nowhere else.

The island's plants and animals fulfill many of the local population's needs, including food, medicines, forage, and fuelwood. The rosy periwinkle, found only on this island nation, provides an antidote for leukemia. Yet the intensity and scale of the destruction of the country's soils, forests, and species diversity is unprecedented. Erosion, particularly *lavaka*, extremely severe gully erosion that occurs widely in Madagascar, transports thousands of tons of topsoil downriver every year. All but the steepest slopes are expected to be deforested within the next 35 years unless significant changes are made.¹ And the people, among the world's poorest, continue to require these resources.

The government of Madagascar has historically lacked a coherent institutional and legal framework within which to address environmental problems. Its policies have provided incentives for overexploitation of resources, its natural resource staff are undertrained and overworked, and the information available to them is inadequate. To address these urgent concerns, in 1988 the government initiated a NEAP, a 15-year strategy to broaden its conservation management capacity. With the support of the World Bank, USAID, the World Wide Fund for Nature, the United Nations Development Programme, the African Development Bank, and French, Swiss, and Norwegian donors, the national plan aims to conserve and manage the country's wealth of biological diversity, promote sustainable development by better managing natural resources,

improve rural and urban conditions, and develop human resources and institutional capacity.

Project Implementation

USAID utilizes technical assistance, training, and commodity provision to support ANGAP, which aims to reduce human pressures on parks through developing alternatives to destructive agricultural practices and innovative strategies for sharing park revenues with peripheral zone residents. To do this ANGAP is engaged in several areas:

- Establishing a role for itself in planning biodiversity policy with the National Office on the Environment
- Establishing a system to coordinate protected area management and peripheral zone development
- Establishing a monitoring and evaluation system for protected area operations and for itself
- Developing its financial and administrative systems
- Setting up networks for improved environmental communications and education
- Establishing a geographic-based information system for biodiversity and socioeconomic data
- Developing the professional and technical capacity of personnel active in conservation of natural resources.

A four-year USAID contract with Tropical Research and Development, which began in 1991, is helping strengthen ANGAP's capacity to gather data, develop policy, and promote coordination among the many private voluntary organizations (PVOs) and NGOs involved in Madagascar's protected area management program.

USAID's cooperative agreement with the U.S.-based Private Agencies

Collaborating Together (PACT) supports activities in protected areas and peripheral zones through the establishment and administration of a grants management unit. The unit uses two primary tools, grants and institutional development assistance. A limited number of large (\$2 million to \$3 million) protected area development grants are given to local or international NGOs for the management of major integrated conservation and development projects in priority parks or reserves. Small conservation action grants (\$2,000–\$25,000) are given to local, government, and grassroots groups for community initiatives in peripheral zones. PACT is also working with ANGAP to develop the internal structures for taking over management of the grants portfolio and is providing technical assistance and training to strengthen local grassroots organizations.

Project Progress

Human resource development. An internal assessment of the project in 1993 noted that ANGAP had made great progress in institutional development yet still faced strained relations with its collaborators, for example, the operators of most integrated conservation and development projects. Improving these relations requires further investment in interagency collaboration. ANGAP also undertook in 1993 the coordination of 20 "category II" protected areas, in addition to its role in coordinating the 14 "category I" areas that are further along in developing management plans.² Lastly, ANGAP has recently added on a new Department of Biodiversity Information and Valorization that will focus on environmental information management and monitoring. A GIS-based, conservation data bank will hold information and generate reports on Madagascar's existing wildlife and plant species as well as on the socioeconomic status of people in communities surrounding

protected areas. This effort is supported by Tropical Research and Development and the U.S. Geological Survey. Immediate plans call for assessments of its mandate, audience, and the resources available for initial data collection.

Integrated conservation and development. Phase I activities, the initial research and proposal design period, neared completion by the end of 1993. In most cases these activities involved collecting information on the ecological, social, economic, and agricultural situation and the potential of each integrated conservation and development site and the testing of certain methods for balancing conservation with development for local communities. Greater emphasis is being given in Phase II, which is just beginning, to development at human population pressure points near protected areas. Specific hypotheses are being developed for all key activities to test and monitor the impacts of those activities on local behavior and on sustainable, protected area management.

Six specific conservation and development projects are receiving USAID support in widely varying stages of development. In Masoala, for instance, CARE has taken over from the Missouri Botanical Garden as the primary managing agency. Its \$2.7 million contract provides for establishing a national park and defining the park's buffer zones. In support of this effort, project organizers will also set up a biodiversity data bank, test environmentally sound agricultural and forest techniques for use with local farmers, survey marine resources and design a subcomponent of the project to address their conservation, and strengthen community groups' efforts aimed at alternative agriculture practices and wildlife conservation.

In Andohahela Reserve, managed by World Wildlife Fund (WWF), Phase I entailed studies of reserve ecosystems, which range from moist tropical forest

to spiny desert to mountain climates, all in one category I reserve. Andohahela's buffer-zone development activities are important to protecting its unique resources, so WWF's Phase II proposal was revised this spring to include a heavier emphasis on such development activities as livestock raising.

Volunteers in Technical Assistance (VITA) will be managing Andasibe/Mantadia with a \$2.7 million grant approved in May 1994. With expertise from Clark University, Sampan'Asa Momba ny Fampandrosoana (SAF/FJKM) (a Malagasy NGO), and the Tropical Forestry Management Trust, VITA has developed small income-generating project proposals for peripheral zone communities through a participatory rural appraisal process. Next steps include redemarcating the park's boundaries and initiating community action plans.

Ranomafana National Park, where revenues from tourism have increased significantly during the life of the project, is being managed for Phase II by the State University of New York at Stony Brook under a \$2.7 million grant. Cornell University and the Malagasy NGO Tefy Saina will contribute with improved agriculture activities. Zahamena Strict National Reserve is being overseen by Conservation International with a \$2.7 million USAID grant and an additional debt swap. Organizers expect these efforts to feed into ANGAP's efforts to reform resource policy, especially on the question of recognition of communal land tenure rights. At Amber Mountain/Ankarana/Analemera, WWF, with CARE International and Veterinarians without Borders, is managing the \$2.7 million Phase II to build on conservation efforts from Phase I and integrate sustainable agriculture and livestock raising to offset threats from slash-and-burn farming.

Conservation action grants. A lack of Malagasy NGO capacity has constrained this component of the project.

Following an internal evaluation, PACT has increased its emphasis on assisting NGOs with project design, financial management, and participatory development for community action grants. An example of a new action grant activity is an agroforestry project near the Betampona reserve. Run by SAF/FJKM, the project aims to help local farmers, who selected the activity themselves, move from *tavy*, or slash-and-burn agriculture, to more sustainable techniques. The project has established two village-based tree nurseries with pine, eucalyptus, and papaya and plans to train villagers in hillside agroforestry techniques. Three field monitors have been hired by the action grant program to expand outreach and technical assistance to nongovernmental groups in buffer zones.

The SAVEM project, which underwent its midterm evaluation in summer 1994, has laid the groundwork for the newer *Knowledge and Effective Policies for Environmental Management* (KEPEM), which will focus on strengthening the policy framework for sustainable environmental management (see separate project profile on KEPEM).

—Kara Page, Datex
6/6/94

¹ World Resources Institute, *The 1994 Information Please Environmental Almanac*, (Boston: Houghton Mifflin Co., 1994), p. 420.

² The World Conservation Union (IUCN) designates natural areas as Category I when public access needs to be severely restricted because of the delicate and representative nature of the ecosystem. Category II is used for national parks and areas open for visitors. (World Resources Institute, *World Resources 1994-95* [New York, New York: Oxford University Press, 1994], pp. 247-50.)

Conservation Areas with SAVEM Project Activities



- 1 Ankarana
- 2 Amber Mountain
- 3 Analemera
- 4 Masoala
- 5 Zahamena
- 6 Mantadia
- 7 Ranomafana
- 8 Andohahela

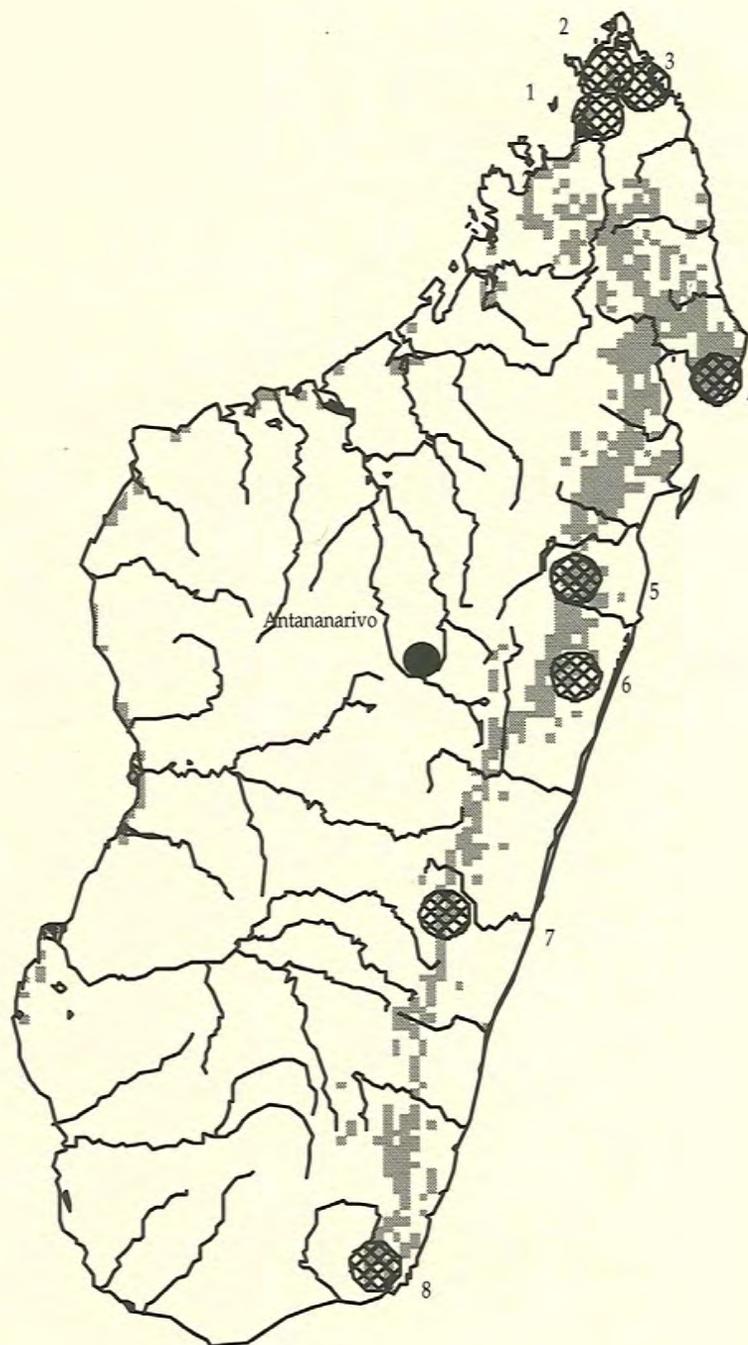
Closed Tropical Forest



Rivers



Produced for USAID by the Environment and Natural Resources Information Center (ENRIC).
Map compiled and generated by David Neufeld (ENRIC Program Analyst). Sources of data: closed tropical forest cover and conservation areas - World Conservation Monitoring Centre; country boundary and hydrography - Environmental Systems Research Inc. (ESRI); USAID project activity sites based on research conducted by Kara Page (ENRIC Researcher).



November 1994



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



Africa

Madagascar

687-0113/15

Knowledge and Effective Policies for Environmental Management

USAID developed the \$42 million *Knowledge and Effective Policies For Environmental Management* (KEPEM) program to support Madagascar's National Environmental Action Plan (NEAP). USAID also supports the NEAP through its *Sustainable Approaches to Viable Environmental Management* (SAVEM) initiative (see separate project profile), which is helping to develop conservation and development activities in tandem in protected areas. KEPEM, launched in 1992, is a six-year (1992-97) effort that provides \$33 million in nonproject assistance to help service Madagascar's \$3.98 billion debt (1993) in exchange for improvements in environmental institutions, policy, and regulations and \$9 million in project assistance for technical assistance and training. KEPEM complements SAVEM and contributes to the national environment plan process by focusing on the development of institutions, policies, and incentives affecting the long-term sustainability of natural resource management and by utilizing experience obtained from field research to identify appropriate policy reforms. The program is a first for USAID in the use of nonproject assistance to support an overall framework to encourage sustainable natural resource management, including biodiversity conservation, and has provided USAID with a model for similar efforts.

Highlights for FY 1993-94

- Funded workshop to promote policy dialogue between government and NGOs on natural resource management. Supported draft legislation that strengthens the role of NGOs in sustainable community development.
- Supported policy reforms mandating environmental review processes for investment projects, adjusting forest revenues for rosewood and pine, and establishing a national environmental endowment fund.
- Madagascar's National Office of the Environment (ONE) is fully staffed and coordinating new legislative initiatives.
- Signed a contract with the U.S. firm Associates in Rural Development (ARD) for technical assistance and training.
- Studied land tenure and governance practices near four protected areas. Recommendations to be discussed at a series of workshops starting in September 1994 and considered by ONE in policy development.

Project at a Glance

Funding: Life-of-Project \$42,000,000
Biodiversity Percentage 90%

Project Duration: FY 1992-97

Implementors:

Madagascar's National Office of the Environment
USAID/Madagascar
Land Tenure Center of the University of Wisconsin
Associates in Rural Development, Inc.

USAID Project Officer:

Robert Hanchett/USAID/Madagascar

Background

Madagascar's wealth of biological diversity and extraordinarily high percentage of endemic species make it one of the world's most critical sites for conservation. Rapid deforestation and widespread erosion, driven by severe poverty and a high rate of population growth, make the need for preserving the country's natural areas urgent.

The government of Madagascar is attempting to address these issues and the institutional problems contributing to them. With the support of multiple donors—which includes the World Bank, USAID, World Wildlife Fund, and the United Nations Development Programme—the government of Madagascar in 1988 initiated the 15-year NEAP to reform institutional and policy structures to promote sustainable natural resource management in Madagascar.

Project Implementation

Key policy reforms to be supported under the program fall into three categories. These include strengthening the capacity of ONE to develop and monitor environmental policy, generating natural resource revenue and pricing resources, and facilitating local-level natural resource management initiatives and community involvement in controlling resource use.

The first category of reform entails identifying the agencies and individuals that will participate in developing policy with the environment office and defining their roles in implementing and monitoring that policy, developing work plans to evaluate the impacts of policy reform, and establishing an environmental review process for investment projects (such as tourism, mining, and industry), beginning with environmentally sensitive areas.

The next category entails adjusting forest revenues and their systems of collection to better reflect market prices and replacement costs, increasing

revenues to be returned to maintaining natural forests, developing management plans for natural forests under exploitation, and strengthening legal provisions for local people working to manage resources sustainably.

The third category entails improving the legislative framework regarding the creation and operation of local-level organizations and nongovernmental organizations (NGOs) and establishing a National Environment Endowment Fund, with a government endowment of \$12 million in local currency to facilitate initiatives in improved natural resource management.

A large institutional contract has been signed with ARD to provide technical assistance and training in developing the institutional capacity of the ONE, revising forest policy, managing natural forests, and operating the endowment fund operation.

Research to clarify the current capacity of local resource users to govern and manage natural resources in a sustainable manner is a key precursor to actual reform. ONE is addressing this issue through studies completed over the last 12 months. The Land Tenure Center of the University of Wisconsin (through a cooperative agreement) and ARD (through a buy-in¹ to USAID's *Decentralization, Finance and Management Project*) researched issues of land and resource tenure and local governance in areas surrounding four protected areas. The research will lead to policy recommendations to be discussed at a series of workshops that started in September 1994.

Project Progress

A policy dialogue, begun with the government of Madagascar and NGOs during KEPEM's design phase, has continued during its implementation. The project funded a workshop for this purpose and is supporting draft legislation to strengthen nongovernmental actors in sustainable community

development activities.

ONE is fully staffed and functioning, legislation mandating environmental review processes for investment projects has been passed, forest revenues have been adjusted for rosewood and pine (two major categories of exploited wood), a draft law has been proposed to establish the National Environmental Endowment Fund, and final drafting of NGO legislation is under way. Support in developing the endowment legislation has been provided through USAID's *Environmental and Natural Resources Policy and Training* project.

The groundwork having been laid for KEPEM to proceed, the project's operational stage is now getting under way. The grant's first *tranche*² has been disbursed to the government of Madagascar. Once the government has formally approved the draft endowment law and the revised NGO code, the second disbursement was scheduled for October 1994. ARD has two staff in ONE to support its implementation of the environmental action plan and accompanying policy reforms.

Madagascar has faced problems in establishing institutional changes to protect the environment and been buffeted by severe political instability for almost two years. For example, ONE has suffered from political turnover and fluctuating support. It has recently established its mandate in policy development and faces the difficult task of developing consensus among its constituent agencies. Another example seems to be that the roles and responsibilities of various environmental agencies remain unclear. This probably relates to the creation of three new agencies by the national plan process. Yet the general feeling coming out of the national plan's midterm review has been positive in its assessment of Madagascar's potential for environmental reform.³

—Kara Page, *Datex*

6/24/94

¹ A buy-in occurs when a donor agency contributes funds to a pre-existing project for a specific purpose.

² A disbursement of funds.

³ National Office of the Environment, *Mid-Term Review of the EP1 Environment Program* (Antananarivo, Madagascar: ONE, unpublished report, 1994).



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



Africa

Namibia

690-0251.73

Living in a Finite Environment

Signed in 1992, USAID's six-year (FY 1992-97), \$10.7 million *Living in a Finite Environment* (LIFE) project in Namibia is a major component of USAID's eight-year (FY 1989-96) *Southern Africa Regional Natural Resources Management Project* (NRMP) (see separate project profile). LIFE aims to (1) help communities become stakeholders in protecting wildlife and other natural resources by sharing in revenues from protected areas and wildlife-based economic activities and (2) support changes in national legislation, social and economic improvements in marginal agricultural areas and buffer zones, research and education, and regional information exchange.

Highlights for FY 1993-94

- Launched operations in May 1993. Established oversight committee representing Ministry of Environment and Tourism, USAID, World Wildlife Fund (WWF), subgrantees, and experts in social sciences, environmental and land tenure law, and ecotourism.
- Set up monitoring and evaluation system in which residents note wildlife sightings and elephant crop damage, monitor poaching, and report craft sale and campsite income.
- Funded four subgrants totalling \$466,000 to nongovernmental or academic organizations to research or help organize community-based natural resource management efforts.
- Held planning workshops in early 1994 on activities in Caprivi and Bushmanland. Collaborated on system to monitor impacts of income-generation and tourism on women and men.
- Supported the Etosha Ecological Institute's research on declining ungulate populations in the Etosha watershed, providing important environmental data for the project.
- Supported study of possible conservation trust fund, financial and economic analysis of community game harvesting, and methods for sharing park revenue with communities.
- Encouraged bilateral sharing of experience in community natural resource management by visiting and hosting activists from Zimbabwe, South Africa, and Mozambique.

Project at a Glance

Funding: Life-of-Project \$10,700,000
Biodiversity Percentage N/A

Project Duration: FY 1992-97

Implementors:
World Wildlife Fund
Namibia's Ministry of Environment and Tourism
World Learning
Management Systems International
Rossing Foundation

USAID Project Officer:
Barbara Belding/USAID/Namibia

Background

Namibia, newly independent from South Africa in 1990, is struggling to overcome inequitable distribution patterns that have left most of the rural black population in communal areas near the northern border with Angola and Zambia. The government believes that transferring governance and management of natural resources in these areas may be one way to redistribute resource ownership while maintaining local users' interest in conservation. The communal areas are home not only to people but to many of Namibia's native animal and plant species, including giraffes, wild dogs, white and black rhinos, and thatch grass. These are threatened, however, by the growing need of local residents for subsistence farmland and alternative income sources.

Project Implementation

In cooperation with Namibia's Ministry of Environment and Tourism and USAID/Namibia, WWF launched LIFE project activities under a cooperative agreement (\$8.03 million from USAID and \$2.67 million from WWF) in May 1993. World Learning, Management Systems International, and the Namibia-based nongovernmental organization (NGO) Rossing Foundation are also involved in the cooperative agreement.

The four components of the project are: community-based environment and development initiatives, research, information sharing with other Southern Africa Development Community member-nations, and environmental education in three northern areas. Caprivi, Bushmanland, and the buffer zones of Etosha National Park, an important water catchment area, each provide a distinct pilot focus area in which these four components play a role.

General outputs in community-based natural resource management will

include expanded government, NGO, and community-based organizational capacity to implement and strengthen environmental efforts; establishment of community-based natural resource management projects in marginal areas and protected area buffer zones; and increased participation of women in planning and implementing natural resource management efforts in communities.

Under the planning and applied research components, WWF will target improvement of the quality and geographic coverage of data collection on resource management, socioeconomic baseline data from participating communities, and dissemination of findings on a national and regional level.

The environmental education component, consisting of community-level activities carried out by local NGOs in the target regions, is bolstered by national-level activities under USAID's *Reaching Out with Education to Adults in Development* project. For this, the Rossing Foundation is helping to produce environmental education materials, train NGOs, and organize events at the Etosha and Waterberg National Park environmental education centers.

Under the information exchange component, USAID, WWF, and the Ministry of Environment and Tourism are attempting to integrate regional and national efforts under USAID's *Southern Africa Regional Natural Resources Management Project* by networking and disseminating information on project results across borders.

Project Progress

Project activities were launched with the establishment of the LIFE Steering Committee, consisting of representatives from the Ministry of Environment and Tourism, USAID, WWF, subgrantee organizations, and experts in the social sciences,

environmental and land tenure law, and ecotourism. This committee will direct overall project activities.

World Learning helped set up financial management systems and an oversight system for project subgrants. Management Systems International began helping to develop a set of programming and planning indicators to be used in the overall monitoring and evaluation plan for the LIFE project at grassroots, NGO/subgrantee, project, and national levels. Community-level indicators, measuring benefits to project participants and ecological impacts of projects at the local level, are being developed by community members and subgrantee NGOs. Residents are counting sightings of wildlife such as black rhinos and ungulates, noting elephant crop damage, monitoring poaching incidents, and reporting income generated from local crafts, campsites, and other projects to NGO staff. The evaluation plan is expected to be completed over the next six months. WWF is also currently reviewing the overall project's planned outputs and will reflect its revisions in future reports.

Community-based natural resource management. During FY 1993-94, WWF made four subgrants totalling \$466,000 to three NGOs and an academic research organization with experience in community-based natural resource management.¹ For example, Integrated Rural Development and Nature Conservation, a local NGO, has worked since 1990 in East Caprivi, setting up a community conservation program to strengthen local support for the region's wildlife. In December 1993 the LIFE project provided the NGO a \$138,000 subgrant for a seven-month extension of their work and will be reviewing their proposal for an additional three-year period in the near future. In February 1994 the group met with WWF and the Ministry of Environment and Tourism for a planning workshop for East and West

Caprivi and began collaborating on design of a field-level project tracking system. The system will be assessing the impact of a "traditional village" set up to familiarize tourists with the area's history and culture, as part of in-depth surveys to be conducted periodically. Project staff are specifically monitoring impacts on local women, who provide many of the crafts sold there, and on the link between community benefits and conservation. They are also assessing commercial harvesting of thatch grass on several fronts: its economic and ecological viability, its potential impacts on gender relations (for example, if women cut and sell the grass now, will men allow them to continue if the practice becomes profitable?), and the local demand for grass under export conditions.

A similar workshop was held in Eastern Bushmanland in March 1994. Working with the Nyae Nyae Development Foundation, the Ju/'hoansi people, a hunter/gatherer society dependent on the endangered natural resource base, are trying to alleviate environmental pressures in their area through the development of alternative income-generating sources, such as tourism. The foundation received a six-month, \$83,000 grant to design a three-year community natural resource management program with the Ju/'hoansi.

Other community conservation subgrants included an 18-month, \$100,000 grant to the Namibia Nature Foundation, starting in January 1994, to strengthen its institutional support services to community-based natural resource management projects and a

one-year, \$144,000 grant (with the potential for extension to three years) to the University of Namibia's Social Sciences Division to expand its capacity to conduct applied socio-economic research on and for community-based natural resource management activities in LIFE focus areas. Each subgrant incorporates economic and social assessments into project design and has a gender component to increase participation of women in community projects.

Research. Under the LIFE project's research component, USAID has been supporting studies on existing fauna and flora, community socioeconomic issues, and possible tourism and other revenue-building efforts in the three target areas. A USAID grant agreement with the Zoological Society of San Diego to support research by the Namibian government's Etosha Ecological Institute terminated in June 1993; USAID's support to the institute is currently continuing under a special interim grant. The institute's research on declining ungulate populations in the Etosha catchment area is being studied in collaboration with WWF for possible long-term funding. USAID is currently working with the Ministry of Environment and Tourism and WWF to develop a funding strategy specifically for these long-term plans.

WWF initiated an investigation into establishing a conservation trust fund to support ongoing activities under the LIFE project. In addition, it initiated studies to support community natural resource management efforts, including a financial and economic analysis of community game harvesting in

Sesfontein in northwestern Namibia and an exploration of methods for returning park revenues to neighboring communities. In preparation for the latter, project organizers hired the Namibia Legal Assistance Center to review national wildlife legislation to determine whether communities can legally establish and govern their own wildlife conservancies—areas with defined boundaries and management plans developed and implemented by residents of the area—and how they can become involved in managing local resources through gate-fee sharing. Although this is currently not legally feasible, other options are being explored.

Information exchange. WWF, the Ministry of Environment and Tourism, and USAID/Namibia provided comments on Malawi's midterm natural resources management project evaluation, made contact with Zimbabwe's natural resource management project, and shared reports from Namibia's workshop on community-based natural resource management and the 1993 Ministry of Environment and Tourism annual meeting with other interested parties. Organizers visited and hosted activists in Zimbabwe, South Africa, and Mozambique to share experiences on community natural resource management.

—Kara Page, Datex
6/1/94

¹ World Wildlife Fund et al., *Namibia: Living in a Finite Environment (LIFE)*, semiannual progress report for the period October 1, 1993, to March 31, 1994 (Washington, D.C.: WWF, April 1994).



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



Africa

Uganda

617-0123

Action Program for the Environment

USAID is providing \$30 million to implement the critical, five-year (FY 1991–95) *Action Program for the Environment* (APE). Of this amount, \$20 million is in project assistance, and \$10 million is in nonproject assistance. It is one of USAID's three largest natural resource management programs in Africa. The program's overall purpose is to assist Uganda in managing its natural resources more effectively through policy reform, national environmental action planning, and the rehabilitation and conservation of its natural resource base. APE consolidates and expands on previous USAID/Uganda efforts to protect biodiversity through a number of PL480 and USAID/Washington-funded projects.

Highlights for FY 1993–94

- Helped the Ugandan government develop policy, legislative, and institutional reforms. Obtained Cabinet approval for environmental policies and guidelines—such as a bill establishing a National Environment Management Authority.
- Developed tools to implement Uganda's National Environmental Action Plan (NEAP), for example, a state of the environment report, internal monitoring and evaluation, and a report on gender and the environment.
- Conservation and development subgrants to various private voluntary organizations (PVOs) and nongovernmental organizations (NGOs) included work in Rwenzori National Park, CARE International in Bwindi and Mgahinga National Parks, and the management of the *PVO/NGO Natural Resource Management Project*.
- Identified and provided training and technical support to new district- and local-level officials.
- Conducted survey of community conservation activities near protected areas to identify needed changes and replicate successful techniques.
- Maintained and possibly increased population levels of elephants and gorillas.
- Increased Uganda National Park tourism revenues tenfold.
- Increased the number of men and women from buffer zones employed in protected areas.

Project at a Glance

Funding: Life-of-Project \$30,000,000
Biodiversity Percentage 7%
Global Environment Facility
Parallel-Financed

Project Duration: FY 1991–95

Primary Implementors:

USAID/Uganda
Government of Uganda
Tropical Research and Development
Makerere University Institute of Environment and Natural Resources
Chemonics International
Several U.S.-based NGOs and PVOs

USAID Project Officer:

Robert Clausen/USAID/Uganda

Background

Uganda's welfare depends primarily on its soil, water, wildlife, minerals, and vegetation. Situated on Africa's east-central plateau at the intersection of four ecosystems ranging from wetland to montane areas, Uganda is blessed with abundant water resources and rich biological diversity. Factors such as population growth, economic reforms, and the desire for increased income, however, are putting severe strains on the natural resource base. For example, the little remaining forest cover, under constant threat from nearby land and fuelwood seekers, is decreasing by 65,000 hectares each year.¹

After years of political turmoil, the Ugandan government has only recently addressed the comprehensive management of natural resources. The absence of coordinated environmental policies or legislation combined with institutional conflicts, rivalry, and lack of effective cooperation and coordination within and outside government have contributed to the degradation of Uganda's environment. Inadequate information on the state of the environment and a lack of trained natural resource management specialists exacerbate the problem.

Project Implementation

APE emphasizes the process of natural resource planning, training for staff of institutions charged with natural resource management, and support for the work of governmental and nongovernmental organizations fostering rational, long-term uses of local natural resources. These tasks are managed through both the policy and rehabilitation and the resource conservation components and are implemented through project and nonproject assistance.

The program is being implemented by USAID/Uganda and the government of Uganda (which is contributing \$10 million in local currency to the effort)

as well as through a contract with Tropical Research and Development (TR&D) and its subcontractors Makerere University Institute of Environment and Natural Resources and Chemonics International. In addition, several U.S.-based NGOs and PVOs are involved in implementing integrated conservation and development activities with APE support.

Policy reform. The policy reform component of the program is the primary vehicle for USAID assistance to Uganda's National Environmental Action Plan (NEAP) process. The NEAP process is an ongoing effort by the government, donors, and NGOs to form a comprehensive national strategy to address environmental issues through policy, legislative, and institutional reform. Project assistance under this component supports (1) short- and long-term technical assistance to the NEAP process to build national capacity in environmental management, (2) long-term technical assistance to the Ministry of Natural Resources in community conservation and decentralized natural resource management to help integrate human concerns into national policy implementation, and (3) long-term technical assistance to Uganda National Parks (UNP) in protected area and financial management. Technical assistance to the parks is aimed at developing policies to help local communities participate in planning and managing protected areas, revenue sharing and resource utilization, and tourism concessions. TR&D and its subcontractors are providing all technical assistance except for a long-term advisor on park management, who is provided by the U.S. Park Service.

Nonproject assistance supports the following: (1) providing support for overhead costs of the NEAP secretariat, (2) upgrading Bwindi, Rwenzori, Mgahinga, Kibale, Semliki, and Mt. Elgon Forest Reserves to national park status, (3) establishing policy guidelines for community participation in the

management of protected areas and for the decentralization of natural resource management, (4) promoting the privatization of tourist concessions in or near protected areas with special consideration for local organizations, (5) and providing interim support to the National Environment Information Center, which collects environmental data and helped produce a state of the environment report, and the Makerere University Institute of Environment and Natural Resources, which edited issue papers for the NEAP and aims to provide training services for the APE.

Rehabilitation and resource conservation. The rehabilitation and resource conservation effort complements the policy component. TR&D is providing technical assistance as well as training, materials, and local currency funds to the agencies responsible for managing Uganda's natural resources. Much of this is channeled through PVOs and NGOs working with government agencies to support improvements in the protected area system.

Project Progress

Policy reform. During the diagnostic phase (November 1991–December 1993) of Uganda's NEAP, USAID was the lead donor in helping the NEAP secretariat develop issue papers on various environmental problems facing the country. Subsequent USAID efforts focused on developing policy, legislative, and institutional reforms. White papers on the "National Environment Management Policy," the "National Environment Management Institutional Framework," and the "Environment Bill" (which will establish a National Environment Management Authority to coordinate environmental management in Uganda) were finalized in December 1993 and approved by the cabinet in January 1994. In addition, the program helped develop a set of standards and training for environmental impact assessments, produce a state of the environment

report (to be updated every few years), and establish an internal monitoring and evaluation system for the NEAP. A two-day workshop to help integrate gender issues into the NEAP process was held in June 1993; participants developed a report on gender and environment to guide NEAP policy development. Decentralization of the NEAP process is also well under way. TR&D and the World Resources Institute, under a USAID/Uganda buy-in,² and a consultant to the APE project, produced several documents to establish steps in this process.³ In short, the NEAP, including an environmental investment program to be presented to donors in the summer of 1994, is nearly completed. The policy component of APE is now shifting from NEAP assessment and planning activities to implementation.

The government of Uganda is meeting its several commitments to the program. It recently enhanced protected area management by regazetting (redefining boundaries and the level of protection) several reserves to national park status. In efforts to build community participation into policy development and park management, the government has established Participatory Management Advisory Committees, which provide community input on proposed changes in legislation and park governance. Policies on revenue sharing and resource utilization have also been developed by Uganda National Parks with APE support. Uganda has privatized 15 tourist concessions since 1992, with 12 more planned for 1994–95. Lastly, the government has kept pace with its pledge of local currency with an initial *tranche* (disbursement of funds) of \$3 million.

Rehabilitation and resource conservation. To date, USAID has funded efforts by numerous NGOs to improve sustainable management of protected areas while working with the resident population. Until September 1993 USAID/Uganda managed grants and provided technical oversight for this

component. Since then, subgrants have been administered by TR&D's new Grants Management Unit (GMU). The GMU has established proposal review criteria and procedures and provided technical support and training on organization, financial management, and monitoring and evaluation to grantees.

Examples of these grants include support to: (1) World Wildlife Fund (WWF) to work in Rwenzori National Park, (2) CARE International in Bwindi and Mgahinga National Parks, (3) World Learning to manage USAID's *PVO/NGO Natural Resource Management Project*, (4) a consortium led by the African Wildlife Foundation to manage the International Gorilla Conservation Program in Bwindi, (5) the Wildlife Conservation Society to work in Kibale Forest, (6) the University of Wisconsin Land Tenure Center for USAID's *Access to Land, Water and Other Natural Resources* (ACCESS) project, and (7) the International Council for the Research in Agroforestry (ICRAF) *AFRENA/Uganda* project. Lessons from initial efforts in protected areas are now being developed into more integrated conservation and development proposals. These will be submitted to the GMU for further USAID support.

TR&D helped develop monitoring and evaluation guidelines in 1993 to assess environmental impacts of nonpark activities and held a two-day workshop in December of that year to explain the guidelines to grantees. A training workshop for grantees on the mechanics of implementing the guidelines is being organized by CARE/Uganda and the GMU.

Despite delays caused by personnel changes, progress was made in revamping the accounting and financial management systems of the national parks.

The GMU is also supporting Uganda's decentralization of natural resource management by identifying training needs. The GMU will provide

limited training and technical support, where feasible, to new district- and local-level officials, such as District Environmental Officers. At the request of the NEAP secretariat, APE facilitated the participation of six Peace Corps Volunteers in pilot areas to work with these officers.

A survey of existing community-level conservation activities was made final in October 1993. The survey was designed to help the government determine future changes in activities surrounding protected areas, including whether and how to replicate successful techniques. For example, one effort studied was the CARE/Uganda National Parks Development through Conservation project in Bwindi Impenetrable National Park. This project involves the community in park management, resulting in the distribution of revenues from Bwindi's gorilla tours to local residents. In addition, the creation of multiple-use zones provides varied ways for the local community to benefit from the natural resource base.

APE has had significant positive results. Since its inception, population levels of such large mammals as elephants and gorillas have been maintained and may have increased, the number of protected areas with active conservation education programs has increased from three to seven, the number of men and women from buffer zone villages employed in protected areas rose from 400 in 1991 to 630 in 1993, and UNP tourism revenues have increased tenfold through support to the fledgling ecotourism industry.⁴

—Kara Page, Datex
6/29/94

¹ World Resources Institute, *World Resources 1994-95* (New York: Oxford University Press, 1994), p. 306.

² A buy-in occurs when a donor agency contributes funds to a preexisting project for a specific purpose.

³ Frederick Brusberg, "Design and Implementation of a District-Based Environmental Management Information System" (Kampala, Uganda: World

Resources Institute and USAID/Uganda, unpublished report, spring 1994).

Peter Veit, "Decentralizing Natural Resource Management: Some Issues Regarding Sub-District Environmental Planning and Implementation" (Kampala, Uganda: WRI/USAID/Uganda, unpublished report, May 1993).

———, "From Crisis Management to Strategic Planning for Sustainable Development: Sub-County/Town Planning Procedure and Process Guidelines" (Washington, D.C.: World Resources Institute and USAID, unpublished report, August 1994).

⁴U.S. Agency for International Development, *FY 1993 Assessment of Program Impact* (Kampala, Uganda: USAID/Uganda, 1993).

ASIA
and the **NEAR EAST**



USAID

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile

**ANE****Regional****499-0015**

Biodiversity Conservation Network

The *Biodiversity Conservation Network (BCN)* brings together organizations in Asia, the Pacific, and the United States to combat the loss of valuable habitats and to encourage the sustainable use of biological resources through active partnerships with local and indigenous communities. This six-and-a-half-year (FY 1992-97), \$20 million *United States-Asia Environmental Partnership* (US-AEP) program provides competitively awarded grants that encourage the development of enterprises dependent on local biodiversity conservation for long-term viability. 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, in addition to supporting site-specific conservation programs across Asia and the Pacific, will be a tested and documented approach to conservation for host country policy makers, the donor community, and environmental organizations. In addition, BCN facilitates learning and information exchanges between Asia and the Pacific regions and the United States.

Highlights for FY 1993-94

- By September 1994, BCN received more than 400 proposals and concept papers and awarded \$1.1 million for 25 planning grants and \$1.9 million for three implementation grants totalling \$1.2 million.
- Supported projects which are promoting a variety of enterprises including ecotourism, nontimber forest product marketing, chemical prospecting, marine product harvesting, and small-scale timber extraction.
- Provided an implementation grant to an NGO in central Luzon, Philippines for the harvesting of a variety of forest fruits which are made into jams and jellies for sale in high-end Manila grocery stores.
- Supplied planning grant funds to a team assessing the feasibility of identifying pharmaceutical compounds in terrestrial and marine environments in Fiji. The team is comprised of the University of the South Pacific, The Rainforest Alliance, and Smith Kline Beecham.
- Developed an analytical framework for systematically testing the BCN approach to conservation across 20-25 sites, which will ultimately comprise the BCN portfolio of projects.

Project at a Glance

Funding: Life-of-Project \$20,000,000
 Biodiversity Percentage 100%
 Global Environment Facility
 Parallel-Financed

Project Duration: FY 1992-97

Implementor:
 Biodiversity Support Program

USAID Project Officer:
 Lewis P. Reade/USAID/ANE/AEP

Background

Initiated in 1992 with a five-year authorization of \$100 million, US-AEP is designed to help Asian and Pacific countries restore, protect, and sustain their fragile and rapidly deteriorating environmental systems and achieve sustainable economic development by mobilizing U.S. environmental expertise, technology, and financial resources. The project was organized as the centerpiece of a ten-year US-AEP Presidential Initiative announced in Singapore in 1992. The program is intended to link related projects and programs in USAID field missions and the activities and resources of other federal and state government agencies. Core funds support activities that coordinate the application of federal and local government resources to environmental problems in Asia and the Pacific and promote public-private partnerships.

Asian economies greatly need environmental technology and experience to deal with urban and industrial pollution and natural resource degradation. The US-AEP program catalyzes the efforts of U.S. business, community, and government organizations and their Asian counterparts to work together on solving issues that span environmental, developmental, and business concerns and leverages each partner's resources. The project targets four areas of greatest immediate need in Asia and matches them with U.S. technologies and expertise. Biodiversity conservation is one of those areas.

Project Implementation

The Biodiversity Support Program (a consortium of World Wildlife Fund, The Nature Conservancy, and World Resources Institute) implements BCN. The network's basic premise is that communities, given the opportunity and incentive to realize tangible social and economic benefits through

sustainable resource utilization, will support the conservation of their local biological resources. A director has been appointed to head the BCN regional office in Manila. A network of projects is being planned to demonstrate that biological conservation can be achieved by promoting entrepreneurial and subsistence activities that depend directly on the sustainable use of biological resources. By facilitating the dissemination of data collected and lessons learned from these conservation projects, BCN ultimately expects to influence conservation policy at national, regional, and international levels. Through a competitive grants program begun in the spring of 1993, the network is strengthening the capacities of local communities, NGOs, government agencies, businesses, universities, and similar organizations to develop community-based enterprises that conserve biological resources while utilizing them in a sustainable manner. Both planning and implementation grants are available, and the network provides technical assistance in developing proposals, which must address biological, socioeconomic, and enterprise components.

Project Progress

By April 1994 BCN had received nearly 300 preproposals or proposals and awarded 15 planning grants (totalling more than \$700,000) and two implementation grants (totalling \$1.2 million) to groups in India, Indonesia, Nepal, Papua New Guinea, the Philippines, the Solomon Islands, Thailand, and Western Samoa. Most of the award recipients have been international and domestic nongovernmental groups. In reviewing grant proposals, BCN asks three major questions:

- Is the enterprise linked directly to biodiversity?
- Is there a flow of benefits to the local community, now and in the future?
- Are members of the community

major stakeholders in the project?

A few examples illustrating the range of grants are described below.

Local value-adding enterprises. A planning grant carried out in the Humla region of Nepal by Appropriate Technology International exemplifies BCN's objective of conservation through community enterprise. Project staff work with a women's cooperative and other user groups to assess the feasibility of establishing local processing enterprises for herbal and medicinal plants traditionally sold unprocessed for the Indian market. This value-adding enterprise is expected to increase locally generated revenue, expand community control over the resource, and transform this historically disenfranchised community into a major stakeholder in local biological resources. As those responsible for transforming the plants into market products, members of the community also become more aware of and concerned about the quality of the resource itself.

Resource ownership and control. In the Philippines, World Wildlife Fund and a local nongovernmental group conducted a series of community assessments and planning exercises with participating communities to identify existing and potential conservation-based enterprises, such as rattan (*Calamus* spp.) and almaciga (*Agathis philippinensis*), a tree valued for its resin. This grant deals particularly with issues of land and resource ownership, a focus of many BCN grants. Proving that the community is capable of utilizing a biological resource consistent with sustainability provides a valuable argument for increased resource ownership, especially in instances where historically disenfranchised, often indigenous communities are denied land tenure. In this case, on the island of Palawan, the indigenous community can clearly establish that they have inhabited the area for

centuries. BCN is helping this community recover land rights by assisting in mapping, resource assessment, and other resource management and business planning techniques. An implementation grant was developed for review in 1994.

Nontimber forest products. Other projects dealing with issues of land tenure and resource marketing are being funded in Indonesia. On forest land that in recent years has become the buffer zone of Sumatra's Bukit Barisan Selatan National Park, the Krui people have been planting *Shorea javanica*, a tree valued for its damar, or resin, for more than a century. The damar is harvested by the Krui and sold on the domestic market, where it is used for paints and manufacturing processes. The Krui are not guaranteed legal access to these trees despite their traditional stewardship role. The BCN grantee, an Indonesian NGO, is reassessing forest management strategies and legal structures within the park. It is also surveying the damar market, prices, and harvesting technologies and studying institutional and land tenure issues affecting the Krui.

In another Indonesian project in West

Kalimantan, an NGO with well-established marketing expertise is exploring the commercial potential of sustainably harvesting nontimber forest products, in particular, damar and the nut of the illipe tree (*Shorea* spp.), which has potential value as an exotic food product on the European market.

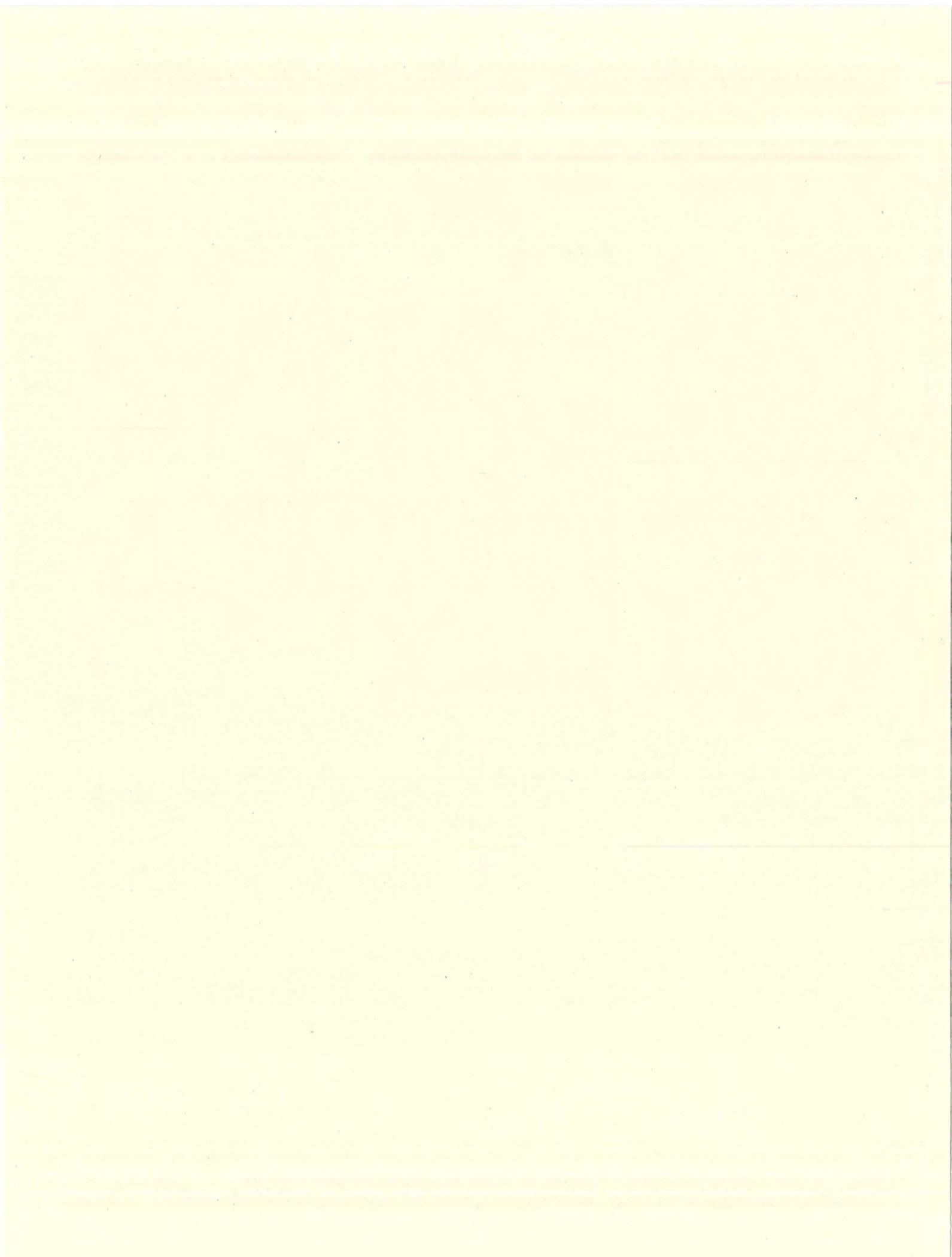
Other Activities. As is true with any conservation activity—especially those employing innovative approaches—there is an inherent risk of failure in BCN's projects; however, by funding planning grants and providing technical support in design prior to implementation grants, BCN allows grantees to explore the feasibility of a venture before committing to full investment. Examples of further projects being considered for funding by BCN include a proposal to search for economically viable chemicals among marine flora and fauna in a Pacific island that can be marketed (with the profits to be equitably distributed among local communities) and a small portable sawmill project in Papua New Guinea. A financial credit system is being established to enable the circulation of community-owned "walkabout"

sawmills among participating clans to produce wood for the domestic and export markets.

In FY 1994 BCN focused on continuing to make planning grants. These planning grants will lead to a portfolio of about 20 three-year grants in Asia and the Pacific. Other activities include developing and reviewing indicators for success at individual project sites, establishing biological and socioeconomic monitoring frameworks and associated advisory panels, identifying and addressing the biological and socioeconomic monitoring and training needs of grantees and host country institutions, and developing a network of U.S., Asian, and Pacific businesses to collaborate and improve market access for grantees. The network also plans to develop national advisory groups that will serve as technical resources to grantees, eventually helping to disseminate information and influence policy based on successful conservation techniques learned at demonstration sites.

—Lili Sheeline, Datex

11/04/94



USAID

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile

**ANE****South
Pacific****879-0023**

Profitable Environmental Protection

USAID's *Profitable Environmental Protection* (PEP) project was planned as a five-year (FY 1991-95), \$2.1 million effort to address conservation of biodiversity in terrestrial and marine environments of the South Pacific. The project originally planned activities to involve the island nations of Vanuatu, Papua New Guinea, and Tonga; USAID reorganization necessitates that initiatives now be restricted to Vanuatu. Vanuatu, however, is host to important representative ecosystems found in several other South Pacific islands. The project aims to demonstrate profitable commercial and community enterprises that facilitate the long-term conservation of biologically and economically vital ecosystems.

Highlights for FY 1993-94

- Contracted a local nongovernmental (NGO) to assess existing farming systems and recommend practices to increase agricultural production on existing agricultural lands.
- Supported a local NGO in establishing a contour planting trial using *Gliricidia sepium*, a nitrogen-fixing agroforestry species from Central America.
- Helping distribute and plant varieties of wild yam, *Dioscorea nummularia*, in native forest to increase value of this habitat to local people.
- Trained seven women and eight men from north Ambrym as guides for nature tours to area's volcanoes and ash plain.
- Identified sites of an endemic palm species near extinction in Vanuatu. Supported further search for the species, performed germination trials of its seeds, and is assessing the market for its products and researching its horticultural production.
- Supported development of local theater group working on plays concerning environmental degradation and social problems.

Project at a Glance

Funding: Life-of-Project \$2,100,000
 Biodiversity Percentage 100%
 Global Environment Facility
 Parallel-Financed

Project Duration: FY 1991-95

Implementors:

Foundation for the Peoples of the South Pacific
 Various NGOs

USAID Project Officer:

John Grayzel/USAID/Philippines

Background

In the South Pacific nation of Vanuatu, people depend on forests for food, fuelwood, medicines, and raw materials for implements, buildings, and boats. Upland forests stabilize soils, protect critical watersheds, and nourish near-shore marine resources. Along the coast, mangroves provide breeding and nursery habitat for marine life. Both forest and marine systems, however, are under pressure from economic endeavors, causing overexploitation by local and tourist populations. Loss of the forest, reef, and lagoon ecosystems means reduced food supply, decreased tourism, and a loss of species diversity.

Project Implementation

The project is being implemented through a cooperative agreement with the Foundation for the Peoples of the South Pacific (FSP), a nonprofit institution formed in 1965. FSP is dedicated to strengthening island community capacity for fostering sustainable development. FSP country programs emphasize community development, women-in-development programs, stimulation of food production, fisheries management, and other facets of natural resource management.

PEP has identified two ecological management units (EMUs) representing threatened habitats occurring regionally. The EMUs are located at Lolihor on north Ambrym and Elephant Island on north Santo. In addition, the project is studying and contributing to several new and existing enterprises that generate income while conserving natural resources. These include the Malakula Ringi Te Suh Reef Restocking Project, waste oil recycling, and species recovery for an endangered palm.

Project Progress

Activities in Lolihor, North Ambrym. North Ambrym is valued for its remaining intact rain forest, which protects steep slopes above the limits of present cultivation and provides northern access to the Marum and Benbow volcanoes. The government of Vanuatu's Environment Unit has assessed the area surrounding the volcanoes as "pristine" and worth protecting. Permanent conversion of native forest through traditional slash-and-burn cultivation for cash crops (peanuts, succeeded by cacao, coconut, or cattle) has been identified as a major problem by FSP and the Lolihor Development Council (a community-based organization that facilitates community ownership and management of the PEP projects). After extensive studies including a population profile, local social organization, ecological studies, and an entrepreneurial review, several profitable activities that may assist maintenance of biological diversity have been identified.¹

Site-stable agriculture. FSP has contracted technical support from the local NGO Farm Support Association (FSA) to assess existing farming systems and recommend practices to increase agricultural production in terms of food or cash on existing agricultural lands. If successful in increasing production or cash flow per land unit, this effort should reduce the need for further forest conversion. Recommendations from the FSA include introducing alley cropping, encouraging improved fallow using legumes, intercropping coconut plantations with income-generating crops, designing a farm forestry program, and initiating contour planting among farmers. In Lolihor FSA established a contour-planting trial for PEP using *Gliricidia sepium*, a nitrogen-fixing agroforestry species from Central America.

PEP is also involved in the distribution and planting of varieties of wild yam, *Dioscorea nummularia*, to conserve native forest. Wild yams are a secondary rather than primary root crop for the community as a whole. Certain varieties receive reasonable prices at the local market, and a dependable market exists in Port Vila for the easily transported varieties. FSP organized a collection of yam-planting material from parts of Ambrym and distributed it to interested farmers in Lolihor. The wild yams, planted at the base of selected low trees in native forest, require little care during two or more years of growth. Both the planting and harvesting activities have minor impact on the forest undergrowth and soil cover, particularly in Lolihor, where the substratum is deep volcanic ash. The project anticipates that increased wild yam cultivation will encourage forest conservation in order to retain the habitat of this species.

Ecotourism. To conserve natural resources affected by tourism, project personnel and the local community have identified and implemented several strategies. Fifteen residents (seven women and eight men) from north Ambrym have been trained as nature tour guides for trips to Ambrym's volcanoes and ash plain. Guides earn income while learning and teaching about the natural history of the area. FSP has also approached Club Med II concerning environmental education programs for tour ships calling on Ambrym and Santo in an effort to reduce the damage the tourists unknowingly inflict on reefs. In addition, FSP sponsored a food preparation workshop in Lolihor attended by 15 women and one man. This initiative was taken to add local spices and variety to the island's cuisine, making it more interesting for tourists.

Environmental Education. As part of the effort to expand community awareness and education on environ-

mental issues, the project supported the development of a local theater group, Wuhuran Theater Troupe. The group is working on plays with themes concerning environmental degradation and social problems including two titled "Nabanga" and "Tourists and Toilets."

Forestry. A Presidential Management Intern at U.S. Forest Service's International Forestry joined FSP for a five-week internship. The intern was assigned to evaluate the income potential of timber production compared with copra, cacao, beef, and other commodities commonly produced in Vanuatu. Her final report concluded that a tree nursery would not be a profitable private enterprise but that an education program should be encouraged to inform landowners of the benefits of tree planting. FSP already addresses this under a Community Environmental Forestry Project.

EMU activities in Elephant Island, North Santo. A survey of Vanuatu's marine resources by the Australian Institute for Marine Sciences showed that Hog Harbor and Elephant Island have coral reef systems that are exceptional for their marine biodiversity and conservation potential; however, current practices and tourism may be detrimental to the reef and threaten the ecosystem as a viable resource. The project is, therefore, investigating potential practices that will improve tourist services of existing tour, snorkeling, and diving enterprises in exchange for cooperation in managing Elephant Island. The project has already identified interested conservation-minded community groups and has established statements of goals, objectives, activities, and expected outcomes. The aims are to develop community environmental education and gather ecological data to guide management practices. In addition, a Woman's Fisheries Network

survey administered by the project is under way to determine the extent to which women are involved in fishing enterprises.

Species recovery. The palm *Carpoxydon macrospermum*, described as probably the only endemic plant genus in Vanuatu, was once an important food source for the coconut crabs, flying foxes, and to a lesser extent, the local human population. Thought to be extinct prior to its rediscovery in 1987, 24 individual plants at four sites have been identified.² PEP has conducted a transect of west Santo in search of other individual palms, performed germination trials with collected seeds, opened a dialogue with local and international groups interested in reproducing the species, funded studies to qualify the market for *Carpoxydon* plant material, and is investigating the horticultural production of the palm. Some conservation proponents in Vanuatu feel that seed collection for sale could raise conservation awareness for the palm and other valued plants and return income to rural communities. Other valued plants receiving similar attention are *Veitchia montgomeryana* and *V. spiralis*.

Reef rehabilitation. The Malakula Ringi Te Suh Reef Restocking Project began independently on the village level in response to local recognition of the overexploitation of the near-shore reef resources. Efforts to rehabilitate the reef include establishing protected areas and restocking giant clams. A marine scientist contributed by FSP assisted with protecting the initial efforts of villagers, encouraging continued protection of the area, improving the efficacy of the reserve in restocking other areas, adding organisms to those protected in the reserve, and managing the reserve so that stocks can again be harvested on a sustainable basis.

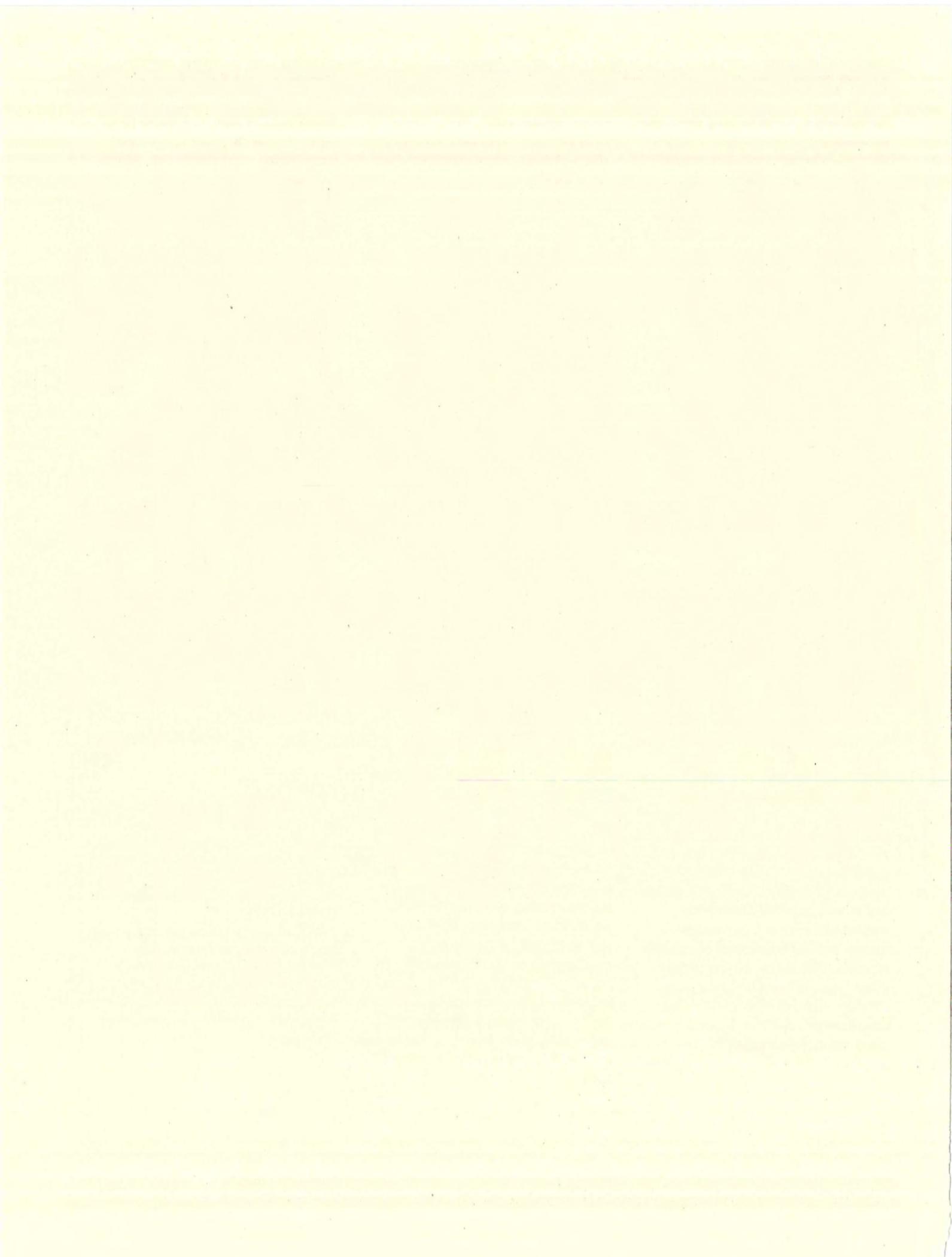
Waste oil disposal. In Efate, Vanuatu's energy unit with project assistance is investigating environmentally acceptable methods of disposing used lubricating oil. Since preliminary findings show that there is no accessible market for waste oil in the South Pacific, attention has now focused on the possibilities of environmentally acceptable methods for the destruction of the oil, such as using it as a source of heat, or processing it for the marketplace as some new product.

Dissemination of lessons learned. The project will provide information on working examples of profitable environmental protection for dissemination to lenders, assistance agencies, entrepreneurs, and community leaders in the region. Project models and lessons that indicate the value, feasibility, and limits of enterprise for achieving conservation goals will be used in the wider South Pacific community and may be applicable to island regions worldwide. A follow-on project may be necessary, beginning early in FY 1995, to build on this foundation and expand the kinds and numbers of enterprises pursuing profitable environmental protection.

—Brad Williams, Datex
6/6/94

¹ Foundation for the Peoples of the South Pacific, "Profitable Environmental Protection Project; Background Materials, Project Advisory Group Meeting, February 4, 1993" (San Diego, Calif.: The Foundation for the Peoples of the South Pacific, February 1993).

² Foundation for the Peoples of the South Pacific, "Profitable Environmental Protection Project; Quarterly Report, January, February, March, 1994" (San Diego, Calif.: The Foundation for the Peoples of the South Pacific, February 1993), pp. 11–15.





U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



ANE

South
Pacific

879-0020

Pacific Islands Marine Resources

USAID's five-year (FY 1990-94), \$12.8 million *Pacific Islands Marine Resources* (PIMAR) project is a follow-on to the *South Pacific Fisheries Development Project* that ended in FY 1992. PIMAR supports small-scale, sustainable development of marine resources and marine farming activities. Although biodiversity conservation is not its primary objective, an essential element of PIMAR's approach is to integrate protection and use of a biologically diverse resource. The project is helping to improve fishery management in the Cook Islands, Fiji, Kiribati, Papua New Guinea, Tonga, and Tuvalu.

These fisheries have been severely depleted over the past few decades by onshore development and increasing fishing pressure. Some species of fish have disappeared throughout the South Pacific. PIMAR will assist governments in better managing and protecting finfish and shellfish stocks, while helping to create employment, increase household incomes, and increase exports. Examples of the project's conservation activities include inventorying and monitoring fish stock levels to establish and maintain sustained-yield limits, establishing marine reserves to protect wild stocks, and developing and disseminating improved fishing techniques that minimize collateral catch.

Highlights for FY 1993-94

- Began in 1994 to distribute lessons learned to date from project activities via workshops, short-term technical assistance, training visits, and demonstration programs.
- Helped establish marine reserves to protect wild stocks of a wide range of endangered and economically important marine species, including the pearl oyster.
- Established lagoon ecology research station to monitor overcultivation and pollution from pearl oyster farming activity. Helped establish prohibitions on transporting oyster stock between islands to prevent disease and loss of genetic diversity.
- Cook Islands has approved commercial seedling and pearl farming in a lagoon for which PIMAR conducted a 1992 environmental impact assessment (EIA). Installed water quality-sensing equipment and completed scuba training of fishery monitoring staff. Completing environmental and economic surveys.
- Conducting EIA of causeway built across Tarawa lagoon to identify need for bridge or culvert so that water flows between the two sides and to help design other mitigation measures to reduce pollution entering lagoon.
- Studying the population dynamics in Tonga of baitfish for small-scale tuna fishing to establish safe harvest

(continued)

Project at a Glance

Funding: Life-of-Project \$12,800,000
Biodiversity Percentage 60%

Project Duration: FY 1990-94

Implementors:
RDA International
BioSystems Analysis

USAID Project Officer:
Jay Nussbaum/USAID/ANE

Highlights *(continued)*

limits. Promoting scaled-down, long-line technique among local tuna fishermen to minimize catch of nontarget species such as dolphins and sea turtles.

- Assisting Tuvalu in establishing the extent of deep bottomfish and developing safe harvest limits and fishing techniques. Since 1991, completed baseline bottomfish inventory and trained 20 local fishermen in data collection to monitor fish populations.

Project Implementation

Lessons learned from project activities in each country will be spread throughout the region via workshops, short-term technical assistance, training visits, and demonstration programs. The South Pacific Commission Coastal Fisheries Program will execute this regional dissemination component through a \$480,000 grant over a two-year period scheduled to begin in early 1994. Country-specific project activities are described below.

Project Progress

Cook Islands. The outer islands of the Pacific offer potential for farming local marine species. USAID-funded research on black pearl oyster culture was completed under the South Pacific Fisheries Development Project. PIMAR is providing technical assistance to expand the production of black pearls in the Cook Islands for export.

The project has helped establish marine reserves to protect wild stocks of important marine species, including the pearl oyster. Sites for these reserves were carefully selected to protect a wide range of both endangered and economically important species. For example, by selecting reserves that have a seaward sandy beach, the

project has protected important sea turtle nesting grounds. The reserves are also helping to protect endangered sea birds, such as the curlew, which migrates from Alaska to winter in the South Pacific. In addition, the reserves serve as undisturbed control sites against which the effects of commercial operations can be measured.

In support of the pearl oyster farming activity, PIMAR has established a lagoon ecology research station where researchers have collected baseline data on the lagoon and are closely monitoring activities to guard against overcultivation and pollution. Assistance also includes genetic screening of wild stocks of pearl oysters to determine characteristics of different populations. Another project accomplishment has been to help establish prohibitions on transporting oyster stock from one island to another to protect against disease transmission and ensure against loss of genetic diversity.

In March 1992 a preliminary assessment of the ecological characteristics of the first targeted lagoon in the Cook Islands was undertaken; it predicted that the environmental impact of a pilot oyster pearl culture facility would be negligible but recommended that environmental monitoring continue during the course of the project. Although local people were initially concerned about the environmental impact on the lagoon of commercial farming, the Island Council has now given its approval to commercial seeding and pearl farming. Water quality-sensing equipment has been installed and fishery staff monitoring lagoon ecology have completed scuba training. Environmental and economic surveys are also being completed. The Asian Development Bank has loaned the Cook Islands \$4 million for follow-up activities.

Kiribati. The Tarawa area of Kiribati ranks among the highest in popula-

tion density in the world. Improved resource management techniques are needed to increase economic and food security. PIMAR is financing an assessment of marine stocks and the impact of land-based development on the Tarawa ecosystem that will be used in the formulation of management strategies for marine resources. Activities underway include a three-year finfish and shellfish stock assessment and a two-year monitoring program of lagoon water quality, circulation, and exchange systems. Completion of a house-to-house survey on traditional lagoon management and preliminary identification of environmental problems have enabled the project to develop a list of management options.

PIMAR is conducting an environmental impact study of importance to the future environmental status of the Tarawa lagoon. Several years ago a major international donor funded construction of a causeway cutting the lagoon in two. No allowances were made for exchange of water between the two sides. The populated side is rapidly degrading from sewage effluent and solid waste being dumped into the lagoon. The impact assessment will be used as a basis for justifying opening the causeway with a bridge or culvert to allow water to flow between the two sides. It will also serve as a basis for designing additional mitigation measures to reduce pollution entering the lagoon.

Tonga. The waters of the South Pacific hold the largest stock of tuna in the world. Most of this resource is fished by large-scale foreign fleets. New methods of small-scale tuna fishing and expanding air links to new markets present opportunities, however, for Tonga fishermen. To develop these opportunities while ensuring that the entire fishery is properly managed, PIMAR is studying the population dynamics of the baitfish resource in the area. It is assessing population size, distribution, age, and reproductive rates to

establish safe harvest limits. The project is also promoting among local fishermen a scaled-down version of the long-line technique for tuna fishing that minimizes catch of nontarget species such as dolphin and sea turtles.

Another advantage of this long-line approach is that the quality of fish caught is higher than that of those caught by large industrial fishing ships, thus creating a valuable market niche for the on-shore fishermen.

Tuvalu. Stocks of deep bottomfish, such as grouper and snapper, are available on the outer reef slopes and seamounts (submerged islands often rich in bottomfish) of the Pacific islands. Demand for these table fish is strong and increasing. The fish are

relatively easier to catch, handle, and market than tuna (although still beyond the reach of traditional fishing methods and gear), and the supply is steady year-round. These species are, however, slow-growing and prone to overfishing.

PIMAR is providing assistance to Tuvalu to establish the extent of these fisheries and develop safe harvest limits and fishing techniques. Resource conservation activities completed since project start-up in late 1991 include a baseline bottomfish inventory and training in on-board data collection methods for 20 local fishermen, who will undertake follow-up monitoring of fish populations.

—*Barbara Bever, Datex*

10/27/94



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



ANE

India

386-0513

India Plant Genetic Resources

In support of the Indian government's efforts, USAID is underwriting \$18.7 million of the jointly funded \$27.95 million *Plant Genetic Resources* (PGR) project. The remainder is being contributed by the government of India. The nine-year (FY 1988-97) project is designed to promote advances in agriculture by strengthening the capacity of the National Bureau of Plant Genetic Resources (NBPGR) to preserve the genetic diversity of the nation's plants. Specifically, the project coordinates a comprehensive national germ-plasm system to explore, collect, preserve, evaluate, and exchange crop-plant germ plasm as well as to enhance India's role as a major global and regional partner in international efforts to conserve and use plant and genetic resources.

The major components of the project include the construction of a new NBPGR headquarters facility in New Delhi, including a national gene bank and an international training center; equipment procurement; construction of new quarantine and greenhouse facilities; upgrading existing 20 germ-plasm collection units; development of a germ-plasm data management system; training and technical assistance; and collaborative research and exploration activities.

Highlights for FY 1993-94

- A National Gene Bank for conserving local and introduced germ-plasm collections is scheduled to begin operations in 1995 with long-term (50 to 100 years) storage capacity for up to 600,000 samples. As of May 1994 the bank was to acquire about 180,000 samples of seeds, cuttings, and tissue and cell cultures.
- Trained or provided study tours for 76 Indian scientists in the United States by the end of FY 1993 and plans to train 14 more in FY 1994.
- In FY 1993-94 India hosted more than 200 scientists and technicians from developing countries at project-funded workshops on germ-plasm collection, evaluation, and maintenance and on computer-based information management.
- Cooperative Indian-U.S. explorations have resulted in collection of nearly 900 samples. Three more joint explorations are planned for 1995.
- Completed joint research projects which address eggplant taxonomy and evolution, DNA analysis of bananas and their relatives, role of enzymes in soybean seed deterioration, and other topics.

Project at a Glance

Funding: Life-of-Project \$18,700,000
Biodiversity Percentage 90%

Project Duration: FY 1988-97

Implementors:

Winrock International
India's National Bureau of Plant Genetic Resources
U.S. Department of Agriculture

USAID Project Officer:

David Hess/USAID/India

Background

The Indian subcontinent is an important center of origin and genetic diversity for more than 20 major economic plants, including rice, some Asian beans, sugarcane, citrus, mango, bananas, yams, and several other common vegetables and spices. In addition, it is very rich in medicinal and aromatic plants. In India alone, for example, some 2,500 different plants are used in traditional medicines. This invaluable reservoir of genetic materials is necessary to the study and development of economically useful plants. Having suffered near catastrophes during food crop failures earlier in this century, the Indian government recognized the need for improving plant breeding technology, infusing new crops, and improving germ plasm. The NBPGR was established in the 1970s as part of the effort to address these needs.

Project Implementation

The project is being implemented by the NBPGR with the assistance of Winrock International and the Office of International Cooperation and Development of the U.S. Department of Agriculture (USDA). Winrock International is working with the NBPGR in planning and implementing the project through management, training, and technical support activities, including procuring of equipment and building quarantine greenhouses. The USDA, through a participating

agency service agreement, is a partner in providing training, short-term technical assistance, collaborative research, and joint exploration of germ-plasm crop plants.

Project Progress

Facilities and equipment. A national gene bank for conserving local and introduced germ-plasm collections, which will include vegetative propagation materials such as seeds, cuttings, and tissue and cell cultures, is scheduled to begin operating in 1995. The bank will include samples collected from NBPGR's regional stations, base centers, and field sites, along with 100,000 samples from other cooperating institutions of the Indian Council of Agricultural Research. As of May 1994, approximately 180,000 accessions were to be in the central gene bank. Long-term (50 to 100 years) storage capacity is planned for up to 600,000 samples. The state-of-the-art gene bank will also act as a key training facility for scientists from India and abroad. Greenhouses, quarantine stations, and other facilities in four locations around the country are in various stages of design and construction; they and other facilities and equipment, including medium-term storage units and seed handling equipment, are also expected to be in place and functioning in 1995. The data management system for the NBPGR headquarters and gene bank currently is being developed and installed.

Training and technical assistance.

Once physical and operational facilities are fully functional, in-country training, both formal and hands-on, for Indian and foreign scientists and technicians will be a significant project component. By the end of FY 1993, 76 Indian scientists had visited the United States for training and study tours; plans call for training 14 more scientists in FY 1994. Fourteen U.S. scientists have visited India to consult on various aspects of plant genetic resources. In addition, India hosted more than 200 scientists and technicians from India and other developing countries during FY 1993 and early 1994 at workshops on germ-plasm collection, evaluation, and maintenance and on computer-based information management.

Joint exploration and collaborative research.

Explorations carried out cooperatively by Indian and U.S. scientists have so far resulted in the following accessions of germ-plasm material: 144 of sunflower, 75 of jojoba, and 658 of melon and cucumber. At least three more joint explorations are planned for 1995. Collaborative research projects completed have addressed eggplant taxonomy and evolution, DNA analysis of bananas and their relatives, the role of enzymes in soybean seed deterioration, and the molecular diagnosis of viruses and certain other infectious disease agents in *Prunus* (cherry) germ plasm. Two additional collaborative efforts are planned for FY 1994. The NBPGR and U.S. scientists will consult in early FY 1995 on species and topics for further joint explorations and collaborative research efforts.

—Lili Sheeline, Datex

5/22/94

USAID

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



Indonesian Biodiversity Foundation

ANE

Indonesia

497-0384

USAID has committed more than \$20 million beginning in FY 1994 to establish an independent *Indonesian Biodiversity Foundation* (IBF), which will issue small grants to local NGOs and scientific and other communities from an endowment fund in support of the country's *National Biodiversity Action Plan*.¹ The action plan was released in 1993 after a broad consultative process to provide guidance on protecting the biological resources of one of the world's most species-rich countries.

The genesis of the Indonesian Biodiversity Foundation project, which forms part of USAID's \$150 million commitment to support the pilot phase of the Global Environment Facility (GEF), dates back to a decision by the governments of the United States and Japan in January 1992 to cooperate in assisting developing countries to manage their natural resources. A U.S.-Japanese donor team consulted with Indonesian governmental ministries, NGOs, and scientists to identify possible initiatives that could be launched under a coordinated strategy to help protect the country's biological diversity. One innovative concept quickly took hold: the establishment of an independent, highly reputed Indonesian foundation capable of funneling money from the international donor community to local NGOs and communities through small grants.

Setting up an endowment fund was viewed as the best way to guarantee long-term financial sustainability for the new organization and, at the same time, ensure transparency, accountability, and effective monitoring. Moreover, the endowment grant from USAID would leverage additional contributions from international and Indonesian public and private donors.

Highlights for FY 1993-94

- The Indonesia Biodiversity Foundation, with a board of trustees comprised of prominent Indonesians, was legally established in January 1994.
- USAID submitted a \$20 million proposal for the Indonesian Biodiversity Foundation to the GEF in June 1994.
- GEF's Scientific and Technical Advisory Panel of prominent scientists rated the project highly as an innovative approach to conserving biodiversity at the grassroots.
- Indonesian President Suharto personally endorsed the initiative and appointed former environment minister Emil Salim to head the foundation's board of directors.

Project at a Glance

Funding: Life-of-Project \$20,000,000
Biodiversity Percentage 100%

Project Duration: FY 1994-95

Implementors:
Indonesian Biodiversity Foundation

USAID Project Officer:
Jerry Bisson/USAID/Indonesia

Background

Indonesia's biological abundance can only be described in superlatives. Scientists estimate that the country encompasses one of the greatest diversities of plant and animal species, ecosystems, and genetic resources on Earth. The 17,000-island archipelago has more marine coastline than any other tropical country and contains the most extensive remaining lowland rain forest in Asia. Indonesia's biological resources—subsistence agricultural crops, medicinal plants, nontimber forest products, subsistence and commercial fisheries, and tropical timbers—are some of its most important economic assets; however, the nation also posts the world's longest list of species threatened with extinction. Logging, shifting agriculture, pollution, urbanization, and destructive fishing practices are among the leading factors causing the demise of rich ecosystems.

Project Implementation

A U.S.-Indonesian design team spent over a year translating the independent foundation concept into a final project proposal. Project analyses included institutional development, grant making, financial management, and the legal aspects of establishing the foundation and involved input from 63 institutions, including 300 Indonesian NGOs, 6 governmental ministries, 8 universities and scientific institutes, and 15 international donors. The IBF was set up as an autonomous entity, independent of both the Indonesian and U.S. governments, which would encourage broad citizen participation in establishing program priorities and grant and other decision making.

Indonesian President Suharto endorsed the project idea in June 1993 and asked Dr. Emil Salim, a former minister of population and environment, to head an independent board of directors for the IBF, the foundation's highest decision-making authority. There is no formal

representative of the Indonesian government on this board. However, by the end of 1993, 21 prominent Indonesians, representing the scientific, NGO, and business communities, were selected to serve on the board. International representation is provided by Dr. Swaminathan, former director general of the World Conservation Union. In January 1994 the Indonesia Biodiversity Foundation was legally established.

According to the GEF's Scientific and Technical Advisory Panel, a group of prominent scientists who reviewed the project proposal in April 1994 as part of the facility's approval process, IBF is "a truly innovative project" whose "potential for success is great."² They considered the project a potential model for similarly endowed foundations in other countries, as well as a promising mechanism for encouraging creative ways of conserving biodiversity at the grassroots level.

The new foundation will set aside approximately \$16.5 million for an endowment fund and use the remaining \$3.5 million for the initial five years of institutional development and program grants, which could start by the end of 1994. The foundation will be a grant-making institution, not an implementor of programs. It will have a small professional staff responsible for soliciting, issuing, and monitoring grants in five theme areas:

- Forest and marine biodiversity protection and management
- Research on sustainable uses of biological resources
- Public education and outreach
- Biodiversity monitoring
- Interdisciplinary policy analysis.

The small grant amounts and IBF's low administrative overhead will enable the foundation to maximize the number and types of grants to be awarded. Most grants will be selected on a competitive basis; however, some of the grants will be reserved for projects initiated by foundation staff,

who will search out opportunities to support grassroots NGOs and local communities engaged in innovative approaches to conservation but lacking the ability to access IBF monies themselves. This grant-making system will ensure that funding reaches highly creative ventures even in the most remote islands where much of Indonesia's biological wealth lies. Grants also will be awarded to develop the country's human resource capacity in biodiversity protection by, for example, sponsoring conferences and workshops.

Start-up funding will be allocated for initial staff recruitment, preparation, and training, including study tours for selected board members and senior staff to develop institutional relationships and learning experiences with foundations in the United States and other countries. Dr. Setijati Sastrapradja, an internationally reknown female botanist, has been selected as the first IBF executive director. Institutional linkages are already under way with the Rockefeller Brothers Fund and the MacArthur, Ford, and Asia Foundations. The IBF also will establish three or four advisory panels consisting of scientists, NGO leaders, and regional representatives. These panels will provide the foundation with scientific and policy support, while ensuring that Indonesia's remote provinces are included in decision-making processes. During the establishment phase, IBF has received assistance from Pelangi Indonesia, a sustainable development policy research NGO, and the Biodiversity Support Program. The project will also provide extensive technical assistance to help build the IBF into a world class institution engaged in grassroots approaches to biodiversity conservation.

—Michele Zador, *Datex*

6/27/94

¹ Ministry of National Development Planning/National Development Planning Agency (BAPPENAS), *Biodiversity Action Plan for Indonesia* (Jakarta: BAPPENAS, 1993)

² Global Environment Facility, *GEF FY 94 USA Parallel Cofinancing, Seventh Tranche: Project Briefs* (Washington, D.C.: GEF), p. 33.



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



Indonesia Natural Resources Management Project

ANE

Indonesia

497-0444

U SAID's seven-year (FY 1990–1997), \$27 million *Indonesia Natural Resources Management Project* (NRMP) seeks to strengthen the ability of selected Indonesian institutions to identify natural resource management constraints to sustainable economic growth, and design and implement policies and practices which mitigate these constraints. USAID contributes \$20.5 million to fund the project and the Indonesian government provides \$6.5 million. The project has two components: (1) policy analysis for sustainable economic development, and (2) pilot field programs that address the management of forests, protected areas, and industrial pollution. In an effort to secure environmental sustainability, the project design incorporates strong private sector involvement, institution-building capability, and community participation. Pilot field programs are supported by on-site research at the Bunaken National Park (BNP), Bukit Baka-Bukit Raya National Park, and in various production forest sites. The project also supports a long-term training program in natural resource management. The NRMP produces regular newsletters and policy briefs in Bahasa Indonesian and English to help disseminate information regarding project activities.

Highlights for FY 1993–94

- Catalyzed more than 50 recommendations in natural resource management policy reform.
- Supported policy reforms in the forestry sector, including reducing annual allowable cut from 33 million cubic meters to 22 million cubic meters and identifying practices to increase utilization of logging waste by 10–30 percent.
- Funding satellite imagery mapping for Bukit Baka-Bukit Raya National Park.
- Provided scholarships for 21 Indonesians to pursue masters degrees in natural resource policy, resource economics, forest management, or nature conservation in the United States and three Indonesians to complete their PhD programs in the United States.
- Promoted more than 20 studies leading to policy and management recommendations for Bunaken Marine National Park.
- Produced area maps at a scale of 1:10,000 of BNP from aerial surveys.
- Publishes a monthly newsletter featuring updates on park activities, news from local communities, and articles on conservation and other related issues.

Project at a Glance

Funding: Life-of-Project \$27,000,000
Biodiversity Percentage 9%

Project Duration: FY 1990–97

Implementors:

Indonesia Policy Working Group
National Development Planning Agency
International Tropical Timber Organization
Ministry of Forestry
USAID/Indonesia
Associates in Rural Development
Nathan Associates
Institutes for International Education
World Environment Center
PT Intersys Kelola Maju
Environmental Impact Management Agency

USAID Project Officer:

Jerry Bisson/USAID/Indonesia

Background

Forty percent of Asia's remaining tropical forests are located in Indonesia. These forests contribute approximately \$5.5 billion in annual export earnings, making the management of this resource significant to the domestic and global economy. In addition, Indonesia's coral reefs rank with the Philippines and Papua New Guinea as being the richest in the world in terms of species diversity; however, these renewable natural resources are experiencing serious degradation from human activities, damage that is exacerbated by faulty market and utilization strategies. Economic losses, both in the present economy and to future growth, result from the unnecessary depletion of these sustainable natural resources. Analysis of the policies and management practices required to ensure long-term sustainable development is needed.

Project Implementation

A group of senior officials from the National Development Planning Agency (BAPPENAS) and from the Ministries of Finance, Population and Environment, Forestry, and Home Affairs forms the Policy Working Group (PWG). The PWG provides overall direction for the NRMP, determines the agenda for policy analysis, and formulates policy recommendations. Other agencies and individuals are invited to participate in the PWG depending on the issue being discussed.

A Project Coordinating Committee, whose members include BAPPENAS, the Ministry of Forestry, USAID, and the International Tropical Timber Organization (ITTO), handles detailed implementation issues and ensures coordination between the NRMP and the complementary Indonesian project, Sustainable Forest Management, developed jointly by the Ministry of Forestry and ITTO.

Associates in Rural Development, Inc. (ARD), under a contract with USAID/Indonesia, leads a consortium responsible for implementation of the NRMP. Consortium members are Nathan Associates, a private firm specializing in economic policy and analysis; the Institute for International Education, a nonprofit training organization; and PT Intersys Kelola Maju, an Indonesian consulting firm specializing in natural resources. In collaboration with the Alas Kusuma Group, a major forest concession holder, pilot projects are used to develop improved policies and practices for sustained yield management of production forests. In collaboration with the private sector and the Environmental Impact Management Agency, the NRMP conducts pilot activities aimed at minimizing industrial waste. The World Environment Center provides technical experts and training to support the implementation of activities in industrial pollution reduction.

Project Progress

Policy analysis. A Natural Resource Management Policy Secretariat carries out the analysis of policy issues under the direction of the PWG. This analysis identifies constraints to economic growth posed by inappropriate natural resource management practices and policies. Staffed by analyst and technical advisors, the Policy Secretariat serves as a "think tank" conducting special studies for the interministerial PWG.

The project supports the analysis of a wide array of policy issues within four broad topics: incorporating natural resources in long-term economic planning (e.g., a second 25-year development plan), urban environment, forest management, and nature conservation. Examples of policy studies completed in 1994 include: *Dynamic Input-Output Modelling for the Second Twenty-Five Year Plan and the Sixth Five-Year Plan*;¹ *Policy Towards Protected Areas in Indonesia, Final*

Report;² *Marine Sector Study*;³ and *Employment Effects of Natural Resources Policy: Analysis of Labor Absorption Forecasts to the Year 2020*.⁴

Since the inception of the Indonesian NRMP, new economic policies addressing natural resource management constraints have been identified through numerous studies and seminars with BAPPENAS. Policy study topics currently being investigated include trade policy, impact of natural resource marketing boards, a foreign direct investment policy review, policy incentives and disincentives to efficient and equitable production and trade of rattan, the viability of eco-labeling and other initiatives that promote improved forest management. Recent seminars targeted for BAPPENAS include Trade and Natural Resources Management (December 1993), Planning for Sustainability (December 1993), and Employment Effects of Natural Resources Policy: Analysis of Labor Absorption Forecasts to the Year 2020 (January 1994).

Policy recommendations. Prior to the NRMP, to ensure the maintenance of ecosystems including the conservation of genetic material for future economic exploitation, the government of Indonesia set aside approximately 16.2 million hectares of environmentally sensitive land (mangrove, estuary, etc.), 2.5 million hectares of seas (reef and marine breeding grounds), and 18.0 million hectares of forest.⁵ Although the national system of conservation areas is generally considered large enough to ensure the necessary space for the survival of most of Indonesia's biological resources, the management aspects of protected areas does not provide adequate protection because of a lack of funding, acceptable management plans, and community support. In response to this inadequacy, the NRMP identifies and introduces specific reforms for increasing funding available for conservation and for promoting community participation in

designing and carrying out management plans.

To address the need for natural resource management policies, numerous policy studies have been carried out to gather and analyze information and to formulate viable recommendations. In the areas of macroeconomic and cross-sectoral policies, 11 recommendations have been submitted by BAPPENAS to review and consider for policy reform. In addition, there have been 28 sectoral policy recommendations in forestry and commercial forest management and four policy recommendations in the marine sector. In protected area policy, 12 recommendations have been advanced.⁶ These policy results are disseminated through policy briefs, newsletters, workshops, and consultations.

Policy impacts have generated greater recognition for the need of sustainable use of natural resources in Indonesia's second 25-Year National Development Plan (1995–2020) and the 5-Year National Development Plan. In the forestry sector, NRMP has supported such reforms as increasing economic rent from \$10 per cubic meter to \$15–20 per cubic meter, reducing the annual allowable cut from 33 million cubic meters to 22 million cubic meters and identifying practices that increase the utilization of logging waste by 10–30 percent. The Ministry of Forestry has formed policy working groups to focus on implementing these and additional policy reforms.

Pilot programs. Guided by the Ministry of Forestry, the NRMP tests management systems for natural production forests and protected areas. In collaboration with the private sector Alas Kusuma Group, several pilot projects are being implemented to facilitate the development of improved policies and practices for sustainable yield within production forests. Activities that have been incorporated into the management of the pilot projects include damage control logging techniques, participatory

community development approaches, improved design and construction of logging roads, and a community-based fire control program. A key success in building links between the private and public sector is the collaboration between the forest concession holder and seven villagers in designing and constructing potable water supply systems and in testing organic farming and agroforestry practices. The NRMP also assists in developing management plans and infrastructure for several pilot protected areas including Bunaken National Park and Bukit Buka-Bukit Raya National Park.

The NRMP has published a number of technical reports on the management of natural production forests which include *Biological Conservation in the Sustainable Management of Production Forest*,⁷ and *Recommendations for Controlled Timber Harvesting in the SBK Forest Concessions*.⁸ These studies support a number of recommendations recently made to the Ministry of Forestry and concessionaires, including:

- Limit plantation development to unutilized degraded land
- Recognize traditional rights of communities in logging and plantation development
- Raise the fee paid by logging concessionaires on wood extracted from natural forests from \$10 per cubic meter to \$35 per cubic meter, with higher rates for more valuable species
- Deploy an independent forestry inspection and enforcement service to prevent forest degradation due to inappropriate management
- Make renewal of existing logging contracts contingent on passing an independent review of concessionaire logging practices
- Review carefully the prospects for sustainability in the evaluation of plans for new logging concessions.⁹

Bunaken National Park. The NRMP is addressing the ecological, socioeco-

nomie, and institutional dimensions of marine and coastal resource policy making, planning, and management through the development of the Bunaken National Park (BNP), located in North Sulawesi. The BNP covers 89,000 hectares, of which 97 percent is sea or intertidal environment. The park was established to protect the areas extraordinary coral reefs; however, it also encompasses regionally important mangrove ecosystems and hosts of small populations of endemic Sulawesi black macaque, endangered dugong, giant clams, trouchus, black coral, and other protected marine and terrestrial species. Approximately 20,000 people live within the park boundaries. Commercial recreational dive centers make regular trips to sites within the park.

More than 20 studies leading to policy and management recommendations have been undertaken concerning the management of Bunaken Marine National Park. In 1993 published studies and technical reports included the *Eco-Tourism Development in Bunaken National Park and North Sulawesi*,¹⁰ and *Communications, Information, and Education Strategy for Bunaken National Park*.¹¹ Other study topics to be published in 1994 include a demographic profile of local communities in the BNP, a vernacular list of economic fish species in the BNP, traditional mangrove-harvesting practices at Mantege Island, local community participation in the BNP Management Plan, and cost/benefit analysis of fish and agricultural products of local communities in the BNP. Some of the recommendations for further study and implementation are:

- *Human influence.* Options for introducing exclusive "use rights" for local communities utilizing coastal and tidal resources deserves careful examination. Use rights arrangements, if they are to be sustainable, must be grounded in comprehensive valuations of the

true benefits of coastal resources to local communities.

- *Protected species.* A more flexible classification of protected species is needed to incorporate uneven patterns of marine species distribution, reproductive biology, and susceptibility to extinction. Also, a review of the effectiveness of species protection outside of protected areas is needed.
- *Protected area selection.* Develop a national data base for marine environments, analogous to the 1984 Marine Conservation Data Atlas, which allows for the rationalization of strategies for the protection of species and habitats.
- *Park zoning.* Review and adapt the national policies for the marine reserve zoning system to reflect the unique qualities of coastal ecosystems and marine resource use by local people.
- *Policy coordination.* Develop a cadre of seasoned mid-level marine conservation specialists capable of formulating and managing a national marine conservation program, advise policymakers, and train Directorate General of Forest Protection and Nature Conservation field staff.

The following current activities address the management of the park and include mapping, study tours, park awareness through a local newsletter, and site-specific research studies:¹²

- *Maps.* In February 1994 area maps at a scale of 1:10,000 of BNP were produced from aerial surveys. These maps allow accurate classification of all park habitats, particularly helpful in marine features identification. In addition, the NRMP has received the complete set of full color, 1:5,000-scale, aerial photographs used to prepare the maps.
- *Study tours.* Six local government officials and the NRMP nature conservation advisor made a study

tour of the Philippines and Thailand to observe the positive and negative aspects of marine tourism development. This resulted in greater commitment by the different local government agencies to cooperate in supporting the management of the park for both national conservation and regional economic development interests.

- *Newsletter.* The first publication of the Bunaken Newsletter began in January 1994. Published monthly, the issues feature updates on park activities, news from local communities, and articles on conservation and other related issues. The primary target audience includes NGOs, local government officials, and universities.
- *Management plan development.* NRMP field staff and local nongovernmental organizations (NGOs) concluded field studies supporting the development of the park management plan. Recent work focused on local community population profiles in and around the park, local fishing grounds, mangrove utilization on Mantheage Island, the marketing of agricultural and fisheries produce, paratonomy of marine species in the park, and the local perception of tourism development on Bunaken Island.

Bukit Baka-Bukit Raya National Park. The Bukit Baka-Bukit Raya National Park is a remote area of approximately 181,000 hectares located on the mountainous border of West and Central Kalimantan. The area contains diverse ecosystems representative of Kalimantan's dwindling forests, including lowland and hill *Dipterocarp* forest, several riverine systems, and Kalimantan's highest mountain peak. Areas of research importance include extensive areas of continuous forest cover, adjacent logged natural production forest, logged-over forests and forests actively being harvested, grasslands of *alang alang* (*Imperata*

cylindrica), areas of shifting cultivation, local farms, and river communities.

The park's primary goal is to protect and maintain a natural and self-sustaining tropical rain forest which will enable each ecosystem and its constituent biotic elements to continue to adapt to the demands of the environment.¹³ The secondary goal is to allow indigenous human communities the opportunity to pursue traditional methods of using the forests and rivers, thus allowing continued cultural evolution based on the environmental influence of the forest. Continued development of community management practices will incorporate an understanding of the value of sustaining the resources.

The park's management plan, developed in 1993 by the Ministry of Forestry with the assistance of the project, includes administration, conservation, community development, recreation, research, monitoring, and public relations activities.¹⁴ This plan consists of seven subprograms: resource conservation, community development, recreation and interpretation, research and development, implementation support, monitoring and evaluation, and public relations. Topics under study that support management of the park include local community structure, habitats for biodiversity, the uses of traditional forest areas, and the barter system of traditional peoples within Bukit Baka-Bukit Raya.

Satellite imagery has been obtained for the park; with the use of Global Positioning System equipment, detailed biological diversity and land use maps are being prepared. Extensive sketch mapping has been carried out with local communities to identify the types of forest products harvested by local communities in the areas. This information will help the Ministry of Forestry staff work with local communities in delineating management zones and planning development activities.

The main focus of activities in 1994 at the Bukit Baka-Bukit Raya National Park is strengthening the ability of the

community advisory board to plan and carry out activities. A priority action is to continue the biodiversity surveys for delineating management zones and identifying priority management activities. Another priority is continuing applied research on traditional use of forests by local communities as a means of developing a legal form of forest use extraction (e.g., traditional forestry areas concept).

The NRMP is assisting the Ministry of Forestry in developing a competitive award system for funding applied research in production forestry. Working groups in West/Central Kalimantan and North Sulawesi are identifying priority management constraints that can be addressed by information generated by applied research. Construction of a research and training station continues at Bukit Baka-Bukit Raya. Station construction is funded under a collaborative effort supported by the ITTO and the Ministry of Forestry. The NRMP is financing the support infrastructure, including a micro-hydro electric and water facility system. The forest concession holder, P. T. Sari Bumi Kusuma, has financed the construction of the access road.

Project training. By the summer of 1994, 21 Indonesians were in the United States pursuing master's degrees in natural resource policy, resource economics, forest management, or nature conservation. Funding is allocated for the students to conduct their thesis research in Indonesia. The project also supported three Indonesian students in completing their PhDs in the United States. In recent months, the NRMP Policy Secretariat has hosted three training and information seminars, including a seminar for BAPPENAS presenting the findings of

the recent natural resource management study analyzing the labor absorption impacts of past policy and the scope of new employment generation in resource-based development. On-the-job training for the Secretariat's 15 research assistants is ongoing. In January 1994 the researchers initiated an in-house seminar series to improve methodological and analytical skills in policy analysis as well as oral and written presentation abilities. Regional training is also being funded by the project for short courses focusing on Southeast Asia.

—Brad Williams, Datex
10/28/94

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²Associates in Rural Development, *Policy Towards Protected Areas in Indonesia, Final Report* (Jakarta, Indonesia: USAID/Natural Resource Management Project, 1994), p. 5.

³Associates in Rural Development, *Marine Sector Study* (Jakarta, Indonesia: USAID/Natural Resource Management Project, 1994).

⁴Associates in Rural Development, *Employment Effects of Natural Resources Policy: Analysis of Labor Absorption Forecasts to the Year 2020* (Jakarta, Indonesia: USAID/Natural Resource Management Project, 1994).

⁵Ibid.

⁶Associates in Rural Development, *Progress Report: Natural Resources Management Project (August 1990–March 1994)* (Jakarta, Indonesia: USAID/Natural Resources Management Project, 1994).

⁷Associates In Rural Development, *Biological Conservation In The Sustainable Management of Production Forest* (Jakarta, Indonesia: BAPPENAS - Ministry of

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⁸Associates In Rural Development, *Recommendations for Controlled Timber Harvesting in the SBK Forest Concession* (Jakarta, Indonesia: BAPPENAS - Ministry of Forestry assisted by USAID/Natural Resource Management Project, 1993).

⁹Natural Resources Management Project of BAPPENAS and the Ministry of Forestry assisted by USAID, *Managing Forests, Policy Brief on Natural Resource Management No. 4* (Jakarta, Indonesia: USAID/Natural Resource Management Project, 1994).

¹⁰Associates in Rural Development, *Eco-Tourism Development in Bunaken National Park and North Sulawesi* (Jakarta, Indonesia: USAID/Natural Resource Management Project, 1993).

¹¹Associates in Rural Development, *Communications, Information, and Education Strategy for Bunaken National Park* (Jakarta, Indonesia: USAID/Natural Resource Management Project, 1993).

¹²Natural Resources Management Project of BAPPENAS and the Ministry of Forestry assisted by USAID, *Conserving National Marine Resources, Policy Brief on Natural Resource Management No. 5* (Jakarta, Indonesia: USAID/Natural Resource Management Project, 1994), p. 1–4.

¹³Natural Resource Management Project, *One Year Operational Plan (1994–95) for the Bukit Baka-Bukit Raya National Park* (Jakarta, Indonesia: BAPPENAS - Ministry of Forestry Assisted by USAID/Natural Resource Management Project, 1993).

¹⁴Natural Resource Management Project, *One Year Operational Plan (1994–1995) for the Bukit Baka-Bukit Raya National Park; Five-Year Operational Plan (1994–1999) for the Bukit Baka-Bukit Raya National Park; and the Twenty-Five Year Master Plan for the Bukit Baka-Bukit Raya National Park* (Jakarta, Indonesia: BAPPENAS - Ministry of Forestry assisted by USAID/Natural Resource Management Project, 1993).



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



ASE

Philippines

492-0444

Philippines Natural Resource Management Program

U SAID authorized the five-year (FY 1990-94), \$125 million *Natural Resource Management Program* (NRMP) to help the government of the Philippines develop a policy environment conducive to ecologically sound and sustainable economic growth. The program focuses special attention on tropical forests, biodiversity, and increasing economic efficiency of the forest products industries. The NRMP strategy is based on the assumption that a sound policy foundation coupled with appropriate social, economical, and ecological sustainable management approaches will result in more valuable, productive, and healthier forests.

Highlights for FY 1993-94

- The NRMP has influenced policy reform to empower communities to undertake the management of forest lands on which they depend for their livelihood.
- The NRMP helped establish a private, nonprofit foundation, the Foundation for the Philippine Environment (FPE) through two debt-for-nature swaps, creating a \$22.4 million equivalent peso endowment fund. From the interest earned, FPE is financing more than 50 biodiversity conservation projects.
- The NRMP is pilot testing new forest management policies, specifically policies that empower upland communities to assume responsibility for their surrounding forests at 21 sites across the Philippines.

Project at a Glance

Funding: Life-of-Project \$125,000,000
Biodiversity Percentage 29%

Project Duration: FY 1990-94

Implementors:

Philippines Department of Environment and
Natural Resources
Development Alternatives Inc.

USAID Project Officer:

Delbert McCluskey/USAID/Philippines

Background

The Philippines is a nation composed of 7,100 islands with some of the richest and most biodiverse flora and fauna in the world.¹ Its coastal waters have about 450 species of coral and more than 2,300 fish species. The islands support at least 12,000 plant, 165 mammal, and 570 bird species, many of them endemic.

The Philippine economy is highly dependent on the survival of the country's rain forests, upland watersheds, mangroves, seagrass beds, and coral reefs systems, which support high levels of biodiversity. Sixty percent of Filipinos make their livelihood from some form of forestry, agriculture, or fishing activities, and 55 percent of the protein in the Filipino diet comes from marine sources.

The pace of damage and destruction to the Philippine environment in the latter part of this century is staggering. Indiscriminate logging followed by uncontrolled slash-and-burn agriculture has reduced the country's rich forest resources from more than 10 million hectares of primary, old-growth, hardwood forest covering one-third of the country in 1950 to about 0.8 million hectares today. Another 3.1 million hectares of scattered, residual secondary hardwood forest remain in varying condition; however, at current rates of deforestation, even these remaining forests will be significantly reduced by the turn of the century with the concomitant, irreversible depletion of the rich flora and fauna that are unique to the Philippines. The clearing of forested watersheds has adversely impacted agricultural production in the lowlands. The deforested lands have been further damaged from storms and droughts, which accelerate the loss of valuable top soil and increase the destructive impact on lives, property, and infrastructure. Furthermore, the resulting soil erosion has been highlighted as the principal cause of damage to the country's coral reefs.

Forty years ago, only 20 million people inhabited the Philippines. Since 1950 the population has more than tripled in size. Rapid population growth has increased the number of poor, marginalized communities and driven the rapid degradation of natural resources. Today, about 30 million Filipinos exist below the poverty line, caught in a cycle of limited economic alternatives that drive them to exploit public lands to ruin. Since public domain is openly accessible, the slash-and-burn migrants have no incentive to leave anything behind or manage what is there.

In the late 1980s, the government of the Philippines dramatically shifted its attitude and policies on and approach to managing upland forest resources. These shifts are premised on two beliefs. First, successful resource management depends on a policy climate that encourages popular participation in decisions affecting access to and utilization of the country's natural resources. Second, it is necessary to empower upland communities to be directly responsible for managing the forest resources on which they depend for their livelihood.

Project Implementation

After the publication in 1990 of the Philippines' new *Twenty-Five Year Master Plan for Forestry Development*, donor support increased from 20 projects valued at \$73 million in 1986 to 56 projects valued at more than \$1 billion today. USAID was the first donor to operationalize the master plan with the NRMP. The government of the Philippines' Department of Environment and Natural Resources (DENR) implements the NRMP.

The program's design includes four principal components: policy reform, resources protection, support services, and a combined monitoring, evaluation, and auditing component.

The policy reform component

provides budgetary support to the government of the Philippines in exchange for policy reforms that alleviate regulatory and institutional constraints. Specifically, the program seeks to address constraints that adversely affect land and resource tenure, forest charges, private sector investment and competitiveness, trade in forest products, preservation of old growth forests, DENR management systems, community participation in forest management, and technology development and transfer.

The NRMP resource protection component is designed to increase participation by nongovernment organizations (NGOs) in natural resource management. The Philippines has hundreds of NGOs interested in environmental issues; however, most do not have sufficient funds to carry out programs to address environmental concerns. The resource protection component seeks to create a local umbrella organization that finances the implementation of projects designed to conserve and protect the country's rich biodiversity by local NGOs and people's organizations.

The support component provides technical assistance to analyze and recommend policy changes, pilot test these changes, and help create the local NGO financing organization.

Project Progress

Policy reform. By late 1993 a review of the project highlighted that it has helped the DENR develop and implement several important policy changes, including:

- Empowering communities to undertake the management of forest lands on which they depend for their livelihood
- Granting legitimacy to the rights of indigenous cultural communities to their ancestral lands and the resources therein

- Conceding a greater percentage of the revenue from the harvesting of public forest lands to the government of the Philippines
- Strengthening protection of the country's remaining old-growth forests
- Designing and implementing more rational and responsible management of the remaining 3.1 million hectares of secondary hardwood forest
- Removing some of the disincentives to private investments in wood processing
- Privatizing inefficient government lumber and paper-milling parastatals.

Resource protection. The program's resource protection component has established a private, nonprofit foundation, the Foundation for the Philippine Environment (FPE). FPE is endowed through two debt-for-nature swaps, creating a \$22.4 million equivalent peso endowment fund. From the interest earned, FPE is financing more than 50 biodiversity conservation projects, carried out by Filipino NGOs, to protect and conserve critical coastal and forest resources.

The NRMP is pilot testing new forest management policies, specifically policies that empower upland communities to assume responsibility for their surrounding forests at 21 sites across the Philippines. These pilots are providing important feedback to the DENR on its policy reforms and encouraging widespread adoption of community-based resource management as the principal forest management system in the Philippines.

Future Plans

Based on the findings and conclusion of the 1993 Interim Evaluation of the NRMP,² USAID and the DENR agreed to extend the program to September 30, 1998, and to reprogram funds to increase support expanding the transfer of management responsibility to upland communities. Under this extended time frame, the program has adopted two specific objectives. The first objective is to bring at least 500,000 hectares of residual forest land under management by communities, forest-based cooperatives, or community/corporate joint ventures. The second objective is to stimulate a policy environment that promotes the management of forests on a sustainable basis

and encourages long-term investment in forestry, specifically:

- Simplifying the system for transferring long-term management responsibilities for tracts of public forest land to communities and private corporations
- Designing forest taxation systems that encourage investment in, and a long-term commitment to, sustainable management of forest lands by both communities and private corporations accessing public forest lands
- Improving the efficiency in the utilization of timber and nontimber resources.

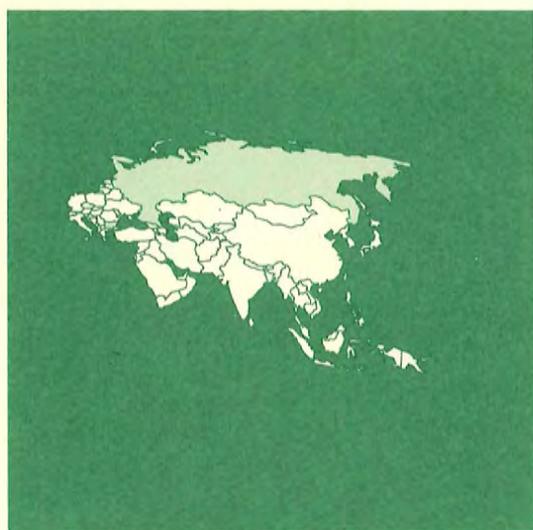
Brad Williams, Datex

10/28/94

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² Tropical Research and Development and Abt Associates, Inc., *Interim Evaluation of the Natural Resources Management Program* (Gainesville, FL.: Tropical Research and Development for USAID, 1992).

**CENTRAL &
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and the **NEW**
INDEPENDENT
STATES





U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



ENI

Regional

110-0003

Environmental Policy and Technology Project

The \$128.5 million, six-year (FY 1992–1997) *Environmental Policy and Technology* (EPT) project aims to ensure that environmental and natural resource management in the New Independent States of the former Soviet Union (NIS) is linked to sustainable development.

EPT is designed to promote policy, economic, and legal reforms that will lead to improvements in the environment, strengthen environmental nongovernmental organizations (NGOs), increase public participation in government decision making, help reduce major environmental health threats from urban and industrial pollution, assist in improving natural resource management and biological diversity conservation, and selectively address global environment issues.

Highlights for FY 93–94

- Conducted a review of geographic information system (GIS) capacity and capability in Ukraine, Belarus, and Moldova.
- Initiated nine subprojects to demonstrate models of sustainable economic development in the Lake Baikal region.
- Pledged \$1 million for the protection of two historic Russian scientific institutions engaged in botanical and agricultural research: the Vavilov Gene Bank and the Komarov Botanical Institute.
- Funded more than 150 small grants and 19 U.S.–Russian partnership programs through ISAR: A Clearinghouse on Grassroots Cooperation in Eurasia (ISAR). With these funds, work has been initiated or expanded to preserve some 15 endangered ecosystem areas, conserve tigers in the Russian Far East, and develop 17 environmental education projects.
- Began implementation of the \$15 million *Aral Sea Initiative* to alleviate environmental degradation and foster regional cooperation on water management issues.

Project at a Glance

Funding: Life-of-Project \$128,500,000
Biodiversity Percentage 15%

Project Duration: FY 1992–97

Implementors:

Harvard Institute for International Development
ISAR
U.S. Environmental Protection Agency
CH2MHill

USAID Project Officer:

Ron Greenberg/USAID/ENI

Background

Environmental problems are severe and widespread in the NIS. The breadth and magnitude of the associated economic, health, and ecological costs is only now beginning to be understood. The range of problems goes beyond the nuclear safety issues epitomized by Chernobyl to include some of the world's worst air, water, and land pollution as well as pervasive mismanagement of natural resources. Current economic hardships have created tremendous pressure to speed the exploitation of natural resource assets and to maintain longstanding patterns of neglect of environmental quality.

Project Implementation

USAID is implementing the project through the following mechanisms: a cooperative agreement with the Harvard Institute for International Development (HIID) primarily to provide assistance for environmental economic and policy reform; a cooperative agreement with ISAR for NGO strengthening and public participation; a participating agency service agreement with the U.S. Environmental Protection Agency to support institutional reform and reduce threats to human health; and a contract with a consortium of contractors led by CH2MHill for efforts to reduce threats to human health and support natural resource management and biological diversity conservation.

Project Progress

Regional projects. Most project activities have only recently begun. Progress is reported on a regional/country basis below.

Ukraine, Belarus, and Moldova. In the countries of the western NIS (W/NIS), including Ukraine, Belarus, and Moldova, EPT promotes sustainable economic development while ensuring environmental protection, resource conservation, and public health.

EPT is currently developing a data base for Ukraine with entries that include major environmental, health, and agricultural agencies, institutions, and NGOs. It has also conducted a review of local GIS capacity and capability. Projects are planned to build local institutional capacity to reduce urban and industrial pollution as well as to address high-priority environmental issues.

Central Asia. In November 1993 USAID began to implement the \$15 million *Aral Sea Initiative* to alleviate environmental degradation and foster regional cooperation on water management issues in the Aral Sea Basin. An interagency team developed a program to provide potable water and public health education to communities most affected by waterborne diseases and infant mortality. As a result of a November 1993 visit to the Aral Sea Basin area by an EPT project team, activities in Turkmenistan, Kazakhstan, and Uzbekistan are currently under way.

The Tashuaz Reverse Osmosis Potable Water, Public Health Education, and Laboratory Assistance Program in Turkmenistan was initiated in March 1994 to provide a reverse osmosis drinking water treatment system to a region with some of the highest infant mortality rates in the Aral Sea Basin. Programs for Kazakhstan and Uzbekistan are expected to get under way before the end of 1994. The *Aralsk-Kazalinsk Potable Water Branch Distribution System, Public Health Education, and Laboratory Assistance Program* in Kazakhstan will improve the piped drinking for several towns where current water supplies are unreliable. The *Karakalpakstan Potable Water, Public Health Education, and Laboratory Assistance Program* in Uzbekistan will improve operations and quality in municipal water treatment systems serving Nukus and Urgench.

In April 1994, 22 leading government water resource management, planning, and policy officials from the Central

Asian Republics participated in a two-week study tour of the southwestern region of the United States, which is similar to the Aral Sea, to gain a better understanding of U.S. water management practices. Among sites visited were: the Colorado River Basin, the Central Valley Project, and the State Water Project in California.

A regional water information management workshop is planned for Tashkent, Uzbekistan, for November 1994 to help scientists and technical organizations better address water problems.

The Russian Federation. Much of the work under EPT in Russia is stimulated by the Commission on Economic and Technical Cooperation headed by Vice President Gore and Russian Prime Minister Chernomyrdin. At the second plenary meeting of the Gore-Chernomyrdin Commission Environment Committee in April 1994, 14 environmental initiatives were endorsed. By the end of 1994, the initiatives will be consolidated into eight activities focused primarily on environmental health and natural resource management. Highlights of progress for the last fiscal year follow.

In the western Siberian city of Novokuznetsk, a demonstration program began in April to help manage pollution from multiple sources through risk assessment and priority setting, local planning, and industrial environmental management stressing no-cost and low-cost opportunities to improve the operating efficiency of enterprises while also reducing pollution.

In Nizhnii Tagil, an industrial environmental management pilot activity is encouraging environmentally sound industrial conversion by identifying changes that will increase economic efficiency and reduce pollution. An agreement to cooperate in this area was signed in February 1994. As a result, some 80 Russian professionals were trained in environmental management courses held in

Ekaterinburg and Nizhnii Tagil in May through environmental enforcement courses held in Nizhnii Tagil in June and through training programs in the United States conducted under the USAID-funded NIS Exchange and Training (NET) project.

A conference for 100 Russian participants was held May 24–25, 1994. Workshops covered areas such as pollution prevention/environmental audits, environmental planning and comparative risks, institution strengthening, health assessment, and environmental education.

A preliminary survey of environmental problems at six enterprises was conducted as a prelude to more comprehensive environmental audits. The first environmental audit of a medical instrument facility was completed in July 1994. The audit report will serve as a follow-up for activities in pollution prevention to introduce process modification to reduce nickel use and wastewater volume in the electroplating facility of the medical instrument plant.

U.S. and Russian counterparts signed an agreement to cooperate in February 1994 to improve water quality in the Moscow region. This project activity will help decrease the input of point source pollution to the Moscow drinking water supply and will introduce low-cost pollution technologies and control of nonagricultural runoff. Both an analysis of the current water quality-monitoring network and a survey of agricultural pollution sources and practices in the Moscow, Tver, and Sverdlovsk regions were initiated in summer 1994. A final workplan is being developed to control point source pollution. An agreement also is in the process of being finalized with the Minnesota Pollution Control Agency to assist in coordinating U.S. involvement in this activity.

In Volgograd, alternative approaches to improving air quality management policies are being demonstrated. Facility pollution audits of selected industrial plants have begun to identify

low- and no-cost improvements to production processes to reduce pollution. An inventory of point pollution sources, including source identification and stack emission testing, began in May 1994. Through the *Commodity Import Program* (CIP), \$2.6 million in air-monitoring and emission-testing equipment has been approved for Volgograd. The equipment will help set up the Volgograd air quality-monitoring network, which will include 8 gaseous pollutant stations, 2 meteorological stations, and up to 12 particulate-monitoring stations. Training has also been conducted on physical emissions.

Also being developed is a *Sustainable Natural Resources Management Program* aimed at promoting sustainable, multiple-use forest management and biodiversity protection in the Russian Far East. CH2MHill visited the area in April and May 1994 to identify areas for potential collaboration. The program includes such components as forest and habitat protection, forest fire prevention, catastrophic fire management, forest rehabilitation, strengthening of the public sector, and promotion of U.S. investment and community development planning.

USAID has also joined the John D. and Catherine T. MacArthur Foundation, the Trust for Mutual Understanding, and the Frank Weeden Foundation in supporting a land-use policy at Lake Baikal. The Center for Citizen Initiatives and Davis Associates implemented the project initially but have been succeeded by Ecologically Sustainable Development Inc. Following the development and distribution of a Comprehensive Land Use Plan in spring 1993, the project initiated nine subprojects to demonstrate models of sustainable economic development. Among these are a management program for the 647,500 hectares Ivano-Arakhley Lakes Wildlife Refuge; a program to promote ecotourism; and the development of two model farms for training, introduction of native crops, and alternative energy modeling.

On June 23, 1994, USAID pledged \$1 million for the protection of two historic Russian scientific institutions engaged in botanical and agricultural research. The St. Petersburg-based All Russian Vavilov Institute of Plant Industry (commonly known as the Vavilov Gene Bank) and the Komarov Botanical Institute each received \$500,000. The Vavilov Gene Bank houses 380,000 accessions of plant biodiversity collected both in Russia and around the world. USAID funds will help continue efforts begun last year with a \$400,000 USAID contribution to improve seed handling and drying. The Komarov Botanical Institute's herbaria comprise some 6 million plant specimens collected worldwide. USAID funds will match funds provided by the International Science Foundation and others to ensure that the collections remain safely stored under conditions of controlled temperature and humidity.

NGO strengthening and public awareness. USAID is providing support to NIS environmental NGOs to strengthen their management capabilities and enhance public participation in environmental management.

The *Seeds of Democracy Program*, operated by ISAR, was funded by USAID to provide seed grants and technical assistance to indigenous NGOs throughout the NIS and to promote joint activities between citizens of the United States and the NIS. A cooperative agreement for \$1 million was signed for a two-year period on May 4, 1993. An amendment was made to the original grant as a result of the April 1993 Clinton-Yeltsin summit in Vancouver, which provided an additional \$1 million, bringing the total for the program to \$2 million through March 1995. In September 1994, USAID committed an additional \$5.2 million to the ISAR program.

ISAR has made over 150 small subgrants of from \$100 to \$3,000 to environmental groups in Russia, W/NIS, and Central Asia and the

Caucasus through offices in Moscow, Kiev, Almaty, and Tbilisi. In addition, \$750,000 in larger grants of from \$6,000 to \$75,000 has been distributed to U.S.-Russian partnership projects. As a result, civic groups throughout the NIS were provided with funds to build infrastructure and communications networks, develop citizen monitoring programs and environmental education programs, protect endangered species of plants and animals, and publicize the effects of pollution on health.

With ISAR/USAID funds, work has been initiated or expanded for the preservation of some 15 endangered ecosystem areas; 20 press and information programs have been established; 7 citizen-based monitoring, recycling, waste disposal, or energy efficiency programs have been supported; and 17 environmental education projects have been completed, including after-school programs, summer ecology camps, teacher training, and curriculum development.

ISAR's small grants include the following:

- An environmental group in Gatchina, a town near St. Petersburg's Sosnovy Bor nuclear power plant, purchased computers to complete a first-alert warning system for the township and link it with a scientific monitoring institute in Moscow.
- Groups in Moscow, Nizhny Novgorod, Samara, and Yaroslavl carried out ecosystem surveys, the first step in establishing local wildlife refuges for endangered flora and fauna.
- In Bryansk, the area of Russia most affected by Chernobyl, a seminar was held on citizen monitoring, bringing together local activists with representatives from Tomsk, Minsk, and Karaganda.
- Grants to groups in Dzerzhinsk, Kaliningrad, Krasnoyarsk, Lipetsk, Petrozavodsk, and Volgograd enabled them to join the environmental E-mail network, develop eco-information centers, and publish regional environmental newsletters.
- A grant to the Union of Salvation from Chernobyl in Kiev, Ukraine, has led to the establishment of a nationwide network of radiation-monitoring volunteers training over 180 specialists to use dosimeters (devices to measure radioactivity). With partial assistance from ISAR, the union has created and equipped around 50 volunteer monitoring stations in some of the most contaminated areas near Chernobyl, mostly at schools or local medical clinics.
- In Central Asia, support has been provided to the Socio-Ecological Union of Tajikistan for research on water and radiation pollution in recreational areas north of Dushanbe and to the Dashkhovuz Ecological Club in Turkmenistan to initiate a series of water reform workshops at state farms in the Aral region of northern Turkmenistan.

ISAR's partnership grants program has funded 19 partnerships between U.S. and Russian NGOs in areas such as nature conservation, communication networks and information exchange, nuclear safety issues, citizen monitoring, the effects of pollution on health, environmental law, sustainable forestry, and environmental education.

Two partnership programs, for example, are currently working on tiger conservation in the Russian Far East. The Maurice Hornocker Institute is working with the Wildlife Foundation in Khabarovsk to develop an

antipoaching program for the local reserve. Zov Taigi, a local NGO, is working with the Pacific Environment and Resources Center to alert the public to the threat of extinction that faces the Amur tiger. Public education programs are providing materials to schools and to the media.

Related activities. USAID's investments in the energy sector and in a Commodity Import Program are contributing to meeting the Agency's environmental objectives in the NIS.

The NIS *Energy Efficiency and Policy Reform Project* focuses on energy efficiency, nuclear safety, and energy policy reform. The FY 1994 \$50 million Russian and Ukraine nuclear safety program is designed to protect the environment and public. The FY 1994 \$90 million NIS non-nuclear program is designed to promote energy efficiency and policy reform.

The \$90 million *Commodity Import Program*, implemented by Burns and Roe, provides grant equipment to enhance the capability of Russian environmental protection agencies, including public enterprises, government, and nonprofit institutions, and to improve energy efficiency and environmental protection primarily in the energy sector itself.

The USAID-supported NIS *Exchange and Training Project* is conducting four courses with a total of 60 Russian participants in the United States in the summer of 1994. These cover environmental policy and programming, public participation in environmental decision making, and management. The NET project is implemented by the Academy for Educational Development and training providers throughout the United States.

—Raisa Scriabine, *Datex*

10/1/94

**LATIN
AMERICA
and the CARIBBEAN**



USAID

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



LAC

Central
America

596-0150

Regional Environmental and Natural Resource Management

USAID's *Regional Environmental and Natural Resources Management* (RENARM) project is a seven-year (FY 1989–95), \$66 million effort to provide broad-based management and conservation of Central America's natural resources. Initiated in 1989, the project attempts to integrate regional development with long-term, sustainable, economically beneficial natural resource use in eight Central American countries. RENARM activities focus on eight protected areas, eight buffer zones, ten watersheds, 15 natural forests, 25 multiple-use distribution nodes, and the rational use of pesticides.

RENARM aims to help "produce, with the citizens of Central American countries, the conditions for sustained management of natural resources in a manner that minimizes damage to the environment, protects biodiversity, and provides the means for equitable and sustainable economic growth."¹

Highlights for FY 1993–94

- Held regional conference in 1993 on legal aspects of creating a Mesoamerican biological corridor.
- Established national ecotourism councils in Costa Rica, Honduras, and Guatemala.
- Supported farm forestry activities, encouraging thousands of farmers throughout the region to reforest small plots, reducing the need to harvest from protected areas.
- Initiated pilot program that trained over 1,000 hillside farmers in biological pest management.
- Began encouraging cooperative effort among Belize, Guatemala, and Mexico to protect the fragile Selva Maya region.
- Supported design of correspondence course on pesticide poisoning, which was completed by 4,200 health care practitioners in 1993.
- Supported training for 39 B.S., 80 M.S., and 3 doctoral candidates. Provided short-term training to 105 trainers, over 750 end-users of natural resources, and nearly 3,000 extension agents.
- Supporting joint ventures in integrated pest management (IPM), such as involving Nicaraguan public and private institutions and producer cooperatives in IPM for coffee, plantain, and tomato farms.
- The Environmental Project for Central America (PACA) joined a regional electronic-mail network to link with other environment and development NGOs. NGO partners in Honduras and Belize joined in 1993.

Project at a Glance

Funding: Life-of-Project \$66,000,000
Biodiversity Percentage 1%

Project Duration: FY 1989–95

Implementors:
(See table, p. 83)

USAID Project Officer:
John Acree/USAID/ROCAP

Background

Economic, political, and social conditions in Central America have combined to make environmental degradation a virtual certainty within the region. Economic policies and legal systems tend to stimulate economic growth at the expense of environmental protection. Cultural and social factors (including rapid population growth) have caused deterioration of traditional agrarian systems. Institutional weaknesses contribute further to mismanagement of renewable resources. Finally, Central American countries lack trained professionals with the skills or tools that might mitigate the impact of these problems on the environment. Without action to change these conditions, Central American countries may see their natural resources and their agricultural economic base damaged beyond repair.

Project Implementation

Over three dozen U.S., international, and local nongovernmental organizations (NGOs), academic institutions, government agencies, and private consultants are participating in RENARM activities (see table, p. 83). These implementors support the project's three interdependent components: policy analysis and training; environmental education and biodiversity conservation; and sustainable agriculture and forestry, including watershed management, forestry, integrated pest management, and plant protection. Underlying all activities is an emphasis on providing financial benefits to local communities through sustainable natural resource use.

Project Progress

Biodiversity protection and wildlands management. Two consortia of NGOs, PACA and Paseo Pantera, are promoting the conservation of biodiversity in legally declared national

parks, reserves, and other wildlands in Central America.

PACA is a joint effort by CARE and The Nature Conservancy (TNC) that works on wildlands protection and institution strengthening for local NGOs. PACA focuses mainly on helping communities in protected area buffer zones obtain sustainable benefits from natural resources, thereby increasing the perceived value and protection of these zones. Local residents are participating in a variety of projects: tree nursery management (including three multipurpose tree nurseries and one women's tree nursery that will eventually produce 150,000 trees), captive-wildlife breeding programs, fire prevention, and training. Twelve schools and over 1,000 students are participating in ecology and wildlife management programs. In addition, PACA has published a *Rapid Ecological Assessment Manual*² for Central American NGOs.

PACA has signed on to a regional electronic-mail network, providing a regional link for NGOs working in development and environment throughout Central America. In 1993 PACA's NGO partners in Belize and Honduras joined the network; partners in other Central American countries will join in 1994. In June 1993, PACA co-sponsored the First Regional Conference of the Mesoamerican Biodiversity Legal Project in Costa Rica. This conference brought together project collaborators, policymakers, and conservation experts to discuss the legal aspects of creating a Mesoamerican biological corridor. In 1993 PACA also began implementing fire prevention education in Costa Rica, Guatemala, and El Salvador.

Paseo Pantera is a combined effort by a consortium made up of the New York Zoological Society, the Wildlife Conservation Society, and the Caribbean Conservation Corporation to improve protected area management and increase wildlife preservation. Its strategy is to create a biological land

corridor linking reserves throughout the Central American isthmus from the Selva Maya region in Guatemala's Maya Forest System in the north to Panama's Bastimentos Marine National Park near the Colombian border. In Honduras, Costa Rica, and Guatemala, Paseo Pantera has helped establish national ecotourism councils to coordinate ecotourism and minimize environmental damage stemming from it. In addition, Paseo Pantera sponsors workshops on ecotourism, ecology, wildlife management, and buffer zone management. Paseo Pantera provided support for an October 1993 meeting in which Central American park service directors developed recommendations for the proposed establishment of the Central American Council on Protected Areas.

Paseo Pantera will play a major role in RENARM's two-year, \$1 million MAYAFOR activity, which began in September 1993. MAYAFOR is part of the U.S. government's Forests for the Future initiative and focuses on the environmentally fragile Selva Maya region in Belize, Guatemala, and Mexico. MAYAFOR aims to establish cooperative partnerships in these countries to promote ecologically sound management and development in tropical forests. Activities will include information dissemination, training in sustainable forestry, and strengthening of public and private institutions.

These uniquely organized efforts have not been without management problems. An evaluation of multiple-NGO interventions³ found several weaknesses. These include, for example, partners' inexperience with collaborative efforts, differences in organizational philosophy that hindered effectiveness, poor communication among partners, and an outdated approach by USAID for what is essentially a new, experimental program. Evaluators also found that the structure of the multi-NGO interventions hindered "bottom-up" participation.

The evaluation concluded that USAID should ensure that its consortia

Major RENARM Activities

Implementor	Activities	Funding (\$000)
Center for Tropical Agricultural Research and Education (CATIE) (3 grants)	Watershed management, tree crops, natural forest production, plant protection, sustainable agriculture symposium, institution strengthening, tropical forestry action plan	21,600
CARE, The Nature Conservancy (grant)	Regional environmental strategic planning, monitoring and information dissemination, environmental education, wildlands management	5,500
Pan American Agricultural School (Zamorano) (3 grants)	Development and dissemination of sustainable integrated pest management (IPM) techniques, development of IPM course, institution strengthening	3,600
USDA/Office of International Cooperation and Development (OICD) (participating agency service agreement)	Short-term technical assistance and training from U.S. government agencies and Peace Corps in pesticide management	2,000
Management Systems International (contract)	Monitoring and evaluation of RENARM activities	1,700
Wildlife Conservation International (grant)	Regional wildlands management	1,600
Cultural Survival (grant)	Institution strengthening among rain forest-dwelling indigenous groups	1,145
U.S. Environmental Protection Agency (EPA) (participating agency service agreement)	Pesticide management, EPA and Food and Drug Administration technical assistance, training, and support	1,075
Interamerica Management and Consulting Corporation	Wood utilization and marketing development	900
Abt Associates (3 contracts)	Natural resource policy inventory, synthesis of lessons learned from policy inventories, policy taxonomy, and analytical framework	500
World Resources Institute	Technical support to Central American Commission on Environment and Development (CCAD), strengthening of national environmental commissions through CCAD	490
Nutritional Institute of Central America and Panama (INCAP) (2 grants)	Pesticide management, training of medical personnel in recognizing and treating pesticide intoxication	470
Central American Commission on Environment and Development (CCAD) (grant)	Support to CCAD operational activities, provision of technical assistance and training	190
The Nature Conservancy (grant)	Fellowship for Central American conservation professionals	190

members understand USAID project structure and possess the capacity to communicate among organizations at local, country, and regional levels, and recommended that implementation of

RENARM II biodiversity conservation activities not be limited to consortia.

Sustainable forestry and agriculture. RENARM is implementing a wide

variety of activities related to sustainable, ecologically safe, economically beneficial, natural resource use. Some of these activities are described in the following paragraphs.

Watershed management. Costa Rica's Center for Tropical Agricultural Research and Education (CATIE) works with local collaborators to promote on-farm conservation practices, and provides training on soil conservation, sustainable agriculture, and geographic information systems (GIS). CATIE provided this assistance in eight field projects in El Salvador, Honduras, and Costa Rica. As a result, local organizations in Costa Rica, El Salvador, Guatemala, and Nicaragua are now using GIS.

Farm forestry. CATIE is working with 25 extension organizations at dozens of locations throughout Central America to support the planting, management, and use of multipurpose trees on small farms. As a result, thousands of farmers have begun reforestation, increasing local sources of fuelwood, poles, fenceposts, and lumber without danger to protected areas. These efforts have also increased local employment, income, and land value. In El Salvador and on Guatemala's southern coast, for example, thousands of small farmers are growing eucalyptus as a cash crop.

Production from natural forests. CATIE works with 67 institutions, including cooperatives, private owners, NGOs, and other groups, to demonstrate the feasibility of managing lowland rain forests on a sustainable commercial scale. At more than 15 sites, CATIE assists forest owners with forest inventories, management plans, controlled harvests, and silvicultural improvements.

Pilot forest management operations have begun in five commercial-scale forests covering several thousand hectares in Costa Rica, Guatemala, and Nicaragua. Sustainable timber harvest has begun on these plots. Harvests follow environmental guidelines to demonstrate that wise and profitable forest use is a powerful incentive for forest preservation.

In addition to supporting dozens of short training events, USAID also facilitated training in forest management at CATIE for seven Central American graduate students.

Integrated pest management. RENARM works with a number of agencies to reduce use and misuse of pesticides and to improve pest management through agreements with the U.S. Environmental Protection Agency (EPA), the U.S. Department of Agriculture (USDA), CATIE, the Nutritional Institute of Central America and Panama (INCAP), the Panamerican Agricultural School (called Zamorano), and other U.S. and local organizations.

EPA provides technical assistance on pesticide regulations and residues, focusing on crops destined for export to the United States. EPA also provides assistance with pest and pesticide management activities involving other international donors. The Pesticide Information Center, created by RENARM and EPA and located at CATIE, distributes U.S. government pesticide regulation information to hundreds of Central American organizations.

USDA works with the Peace Corps on a RENARM pesticide management and safety training activity that involves 700 volunteers and local nationals. Research, technical assistance, and training programs at CATIE and Zamorano are helping thousands of small farmers improve pest management and use pesticides safely. INCAP is implementing a correspondence course for Central American physicians, covering diagnosis, treatment, and prevention of acute pesticide poisonings. The first class of 4,200 health practitioners from six countries began graduating in November 1993. About 7,000 people will complete the course during the project's life.

INCAP has also implemented a hillside pest management pilot program, training over 1,000 farmers in biological pest control. CATIE has

initiated a pest management control for Guatemalan producers of broccoli, snow peas, and tomatoes and has begun a pest control program in Nicaraguan coffee plantations.

CATIE works on integrated pest management (IPM) in humid, semi-humid, and semiarid zones throughout Central America, supporting training, research, diagnostic services, and education. CATIE produces IPM newsletters, bulletins, and guidebooks and provides bibliographic search services on request. CATIE also helps coordinate joint ventures among countries or organizations. For example, in Nicaragua, CATIE provides administrative coordination, technical assistance, and fund-raising efforts for a joint venture among CATIE, public institutions, producer cooperatives, and NGOs. The venture develops IPM technologies for small- and medium-sized coffee, plantain, and tomato farmers and provides training for participants.

Zamorano works on B.S. training, IPM research, and grassroots outreach, and concentrates on semiarid tropical areas. Sixty-five Central Americans will graduate from its IPM program with professional degrees by 1995. Zamorano research, conducted throughout the region, includes biological pest control. In El Salvador, for example, Zamorano is disseminating exotic natural enemies to destroy endemic pests, such as the diamond-back moth, fall armyworm, and water hyacinth. Zamorano is working through several institutions and the National University to distribute these agents.

Training and environmental education. RENARM has supported formal training at CATIE and Zamorano, as well as in the United States. The project has supported university-level training, including 14 ongoing fellowships, which have graduated 39 students with B.S. degrees (including 10 women), 80 with M.S. degrees (including 15 women), and 3 with doctorates (including 1 woman). Fields

of study include watershed management, natural forest management, tree crop management, and integrated pest management.

RENARM provided short-term training through PACA to 105 trainers and 767 end users of natural resources. Nearly 3,000 extension agents, including 890 women and 985 end users, received training in sustainable agriculture and forestry. Monitoring and evaluation trainees included 50 men and 50 women.

Rural multimedia campaigns are in place in four communities in Honduras, Belize, Costa Rica, and Guatemala. A citizen patrol group has begun operations in the protected areas near Tempisque, Costa Rica. A press campaign throughout the region promotes Central American biodiversity and ecotourism.

Policy analysis. RENARM promotes increased participation and the use of improved information and analysis in the formation of environmental policies that encourage sound management of forests, soils, coasts, and biodiversity. To that end the program has funded inventories of policies that affect natural resources and the environment, focusing on forestry in Belize, Costa Rica, Guatemala, El Salvador, and Honduras. This work resulted in publication of *The Green Book: An Environmental Policy Sourcebook*,⁴ which will facilitate understanding of policy issues for NGOs, donor agencies, and Central American policymakers.

RENARM support has helped the CCAD increase its regional cooperation. RENARM has also provided technical support to the Regional Interparliamentary Commission on Environment and Development (CICAD) and helped organize the new Women's Environmental and Development Program of the Central American First Ladies.

Institution strengthening. PACA has established partnerships with 19 local NGOs in Guatemala, Costa Rica, Belize, and Honduras and is providing technical assistance through training and field programs. Nearly 900 trainers and resource users received instruction on biozone management and environmental education.

In June 1993 Paseo Pantera provided its third Regional Buffer Zone training course at the University for Peace.

Paseo Pantera also conducted the Central American Regional Wildlife Corridors Conference in Costa Rica and a workshop on ecotourism. Over 100 participants attended a land-use planning workshop in Bocas del Toro in Panama. The consortium has also accumulated maps and formed a data base for a Biotic Corridor Mapping Project and has produced a manual on ecotourism.

RENARM funding has supported CCAD, enabling the organization to orchestrate several international fora and agreements, such as the regional biodiversity treaty signed by Central American presidents in 1993. As a result of the White House meeting in November 1993, CCAD developed the

Alliance for Sustainable Development, meant to prepare Central America for a NAFTA-like agreement; the seven Central American presidents endorsed this alliance. In RENARM's MAYAFOR activity, CCAD plays a coordination role, promoting cooperative approaches for the conservation and sustainable management of the Selva Maya region in Belize, Guatemala, and Mexico.

RENARM's work with indigenous NGOs includes technical assistance and financing to create the institutional capacity for proper management of protected areas. For example, the project has strengthened Defensores de la Naturaleza, which is helping manage the Belize Zoo.

—Stephanie Joyce, *Datex*
7/15/94

¹ U.S. Agency for International Development, Bureau for Latin America and the Caribbean, *Environment and Natural Resources Management in Central America: A Strategy for A.I.D. Assistance* (Washington, D.C.: USAID, 1989), p. 17.

² Claudia Sobravia and Paquita Bath, *Rapid Ecological Assessment Manual* (Arlington, Va.: The Nature Conservancy, 1992).

³ Management Systems International, *Using Multi-NGO Consortia in Wildlands Projects: Lessons for RENARM* (Washington, D.C.: MSI, January 1994).

⁴ U.S. Agency for International Development, Bureau for Latin America and the Caribbean, *The Green Book: An Environmental Policy Sourcebook* (Washington, D.C.: USAID, 1992).



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



LAC

Eastern
Caribbean

538-0171

Environment and Coastal Resources

The seven-year (FY 1991–97), \$11 million *Environmental and Coastal Resources* (ENCORE) project is a partnership between USAID and the Organization of Eastern Caribbean States (OECS). The philosophy of this partnership is based on the premise that participation and empowerment of the stakeholders in the development process of the subregion is good governance. ENCORE aims to demonstrate that collaboration among public, private, and community interests can conserve the natural resource base and enhance biodiversity while promoting economic development. The project focuses on capacity building and the processes that are essential for sustainable development, in general, and effective management of the environmental and coastal resources, in particular.

Highlights for FY 1993–94

- Completed six capacity-building regional workshops, seminars, and training courses for member states in the Organization of Eastern Caribbean States (OECS).
- Helped OECS' natural resource management unit prepare a proposal to initiate a forestry network at the third round-table meeting on the tropical forestry action plan.
- Assisted in setting up a human resource data bank to identify individuals with technical skills and experience in managing OECS natural resources.
- Established a nongovernmental organization (NGO) institutional grants program to strengthen NGO activity in environment and natural resource management in the OECS.
- Initiated a local site management (LSM) organization component in St. Lucia and Dominica to empower communities in planning, monitoring, and implementing biodiversity conservation and natural resource management programs.
- Through the LSM, rehabilitated the Soufrière Sulphur Deposit Trail and Purple Turtle Beach, established a solid waste disposal program for Portsmouth and Soufrière, and conducted workshops on using pumice as construction aggregate to reduce sand mining.

Project at a Glance

Funding: Life-of-Project \$11,000,000
Biodiversity Percentage 53%
Global Environment Facility
Parallel-Financed

Project Duration: FY 1991–97

Implementors:

Organization of Eastern Caribbean States
World Wildlife Fund

USAID Project Officer:

Richard Owens/USAID/RDO/C

Background

In the West Indies, biodiversity is expressed in the abundant biological zones and ecosystems supporting numerous marine and terrestrial species, many of which are endemic, rare, and/or threatened. Urban development is seriously degrading these environments. Of particular concern to the OECS island nations are changes resulting in altered water flow patterns, accelerated soil loss and fertility, and the pollution of water and air. Conservation of these increasingly stressed yet potentially productive resources has regional and global implications.

Project Implementation

ENCORE addresses environmental problems in OECS nations through two components, regional environmental management (REM) and local site management (LSM).

Regional environmental management. Conducted in all OECS countries (Antigua and Barbuda, the British Virgin Islands, Dominica, Grenada, Montserrat, St. Kitts-Nevis, St. Lucia, and St. Vincent and the Grenadines), activities in this component are intended to strengthen the capabilities of member states to address natural resource management problems and to use natural resources in economic and sustainable ways. These broad goals are to be achieved by improving their access to environmental knowledge and an awareness of their unique environmental issues by building institutional capacity to support and oversee environmental management programs. The methods to be employed to facilitate these specific goals include environmental monitoring, training, policy dialogue, and environmental public awareness and education. World Wildlife Fund began providing technical assistance to achieve these goals in FY 1993.

Local site management. Initiated in St. Lucia and Dominica, this innovative USAID environmental activity empowers communities to conceptualize, plan, monitor, and implement programs in biodiversity conservation and natural resource management. Within broad limits, community groups are involved in the selection, design, and management of site-specific environmental interventions. To ensure equal access of community members in the process, an open forum was established for community meetings. This was done in response to USAID's research on gender in economic and social systems, which concluded that "a lack of open forums [equal gender access] limited women's participation in project design/environment assessment process."¹ Issues broadly discussed by communities include solid waste disposal, ecotourism development, and protected area management.

Because of the difficulty of predicting outputs of community-managed activities at the time of project authorization, ENCORE received authorization to initiate the project with only broadly described output indicators. As communities develop and refine their projects over time, these indicators will become well defined. This community management method encourages sustainability by establishing community ownership of activity benefits.

In St. Lucia and Dominica, communities that were targeted for local site activities were not sufficiently organized or informed to accept the project. The local site management teams found it necessary in the beginning to foster project understanding, discussion, acceptance, and organization to facilitate community participation and ownership. Two local training workshops that dealt with community mobilization and environmental education for teachers helped in providing needed organization skills and disseminating environmental information.

Project Progress

Regional environmental management. Among activities conducted under the REM component are capacity building through workshops and training courses, establishing a technical personnel data bank, beginning an NGO Institutional Grants Program, and launching a public awareness campaign. Six regional workshops, seminars, and training courses have been completed. Topics include guidelines and techniques for environmental impact assessments, ecjournalism for media personnel, designing effective proposals (a program for NGOs), senior executive seminar on natural resource management and policies for sustainable development, and the establishment and management of protected areas. Sample plans and accomplishments are described below.

Forestry network. With project assistance, the natural resource management unit of the OECS is preparing a proposal to initiate an OECS forestry network at the third round-table meeting of the tropical forestry action plan. By fostering closer dialogue among forestry personnel in the subregion, the network should strengthen the institutional capacity of member-state forestry departments and elevate the awareness of forestry personnel to the work of counterparts in subregions. The network will be supported three years by ENCORE through the natural resource management unit with a subsidy not exceeding \$10,000 per year.

Data bank. With the assistance of the ENCORE senior technical advisor, a human resource data bank is being set up in the resource management unit that will serve to identify and register individuals with technical skills and experience important to the management of natural resources within the OECS.

Grants program. The NGO institutional grants program has been created to strengthen NGO activity in environment and natural resource management within OECS. Announcements and application forms have been prepared and are being distributed. Awards of up to \$10,000 for one year are possible. A workshop was presented to NGOs on successful proposal writing.

A strategic review of the natural resources management unit, funded by USAID through ENCORE and conducted by the Caribbean Center for Development Administration, has been completed. The review will be tabled at the unit's fourth technical advisory committee meeting and released to the public thereafter. The annual report for 1993 is being distributed.

REM activities being developed include a regional training program on drinking water quality monitoring; workshops on community-based, water quality monitoring for NGOs; a graduate study grants program to improve the scientific expertise and leadership capabilities of the Caribbean region; and a multimedia public awareness campaign on pesticide management.

Local site management. Currently, local site activities in Dominica and St. Lucia are on the increase. Training and information that supply communities and local organizations with the necessary tools and knowledge they need to identify priority natural resource management needs has reached a level where programs have been designed and are being implemented.² These include the rehabilitation and stabilization of the Soufrière Sulphur Deposit Trail, upgrading of the hot water spring on the Soufrière beach, Purple Turtle Beach rehabilitation, a solid waste disposal program for Portsmouth in Dominica and Soufrière in Saint Lucia, and workshops on using marine debris to make jewelry and banana trash to make greeting cards. Other activities that have been initiated and have an economic focus include the establishment of bee pastures and apiaries in Soufrière, St. Lucia; the establishment of a model integrated and diversified farm system by children of the Anse la Raye Primary School; and training workshops on the use of pumice as an alternative construction aggregate, thereby reducing beach sand mining.

Significant developments. Unique natural heritage features and the ENCORE project in St. Lucia have received major national and international recognition. The Pitons in Soufrière, St. Lucia, have been identified as a potential United Nations World Heritage Site and a priority site by both the St. Lucia Systems Plan for Parks and Protected Areas and the National Physical Development Strategy for St. Lucia. In 1994 ENCORE was approved for inclusion in the World Bank's Global Environment Facility, which gives worldwide recognition to the project as a major environmental effort and will allow access to resources from other international sources such as World Bank and U.N. environmental projects.

—Brad Williams, *Datex*
5/25/94

¹ U.S. Agency for International Development, *Environment Program Report* (Washington, D.C.: USAID, 1993), p. 27.

² Dr. Vasantha Chase, *ENCORE Quarterly Report (1-3/1994)* (Castries, St. Lucia: USAID, 1994).



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



LAC

Regional

598-0782

Parks in Peril

USAID's *Parks in Peril* (PiP) project began in 1990 as an effort to help Latin American governments and private organizations develop fully functioning, sustainable protected areas in their respective countries. The Nature Conservancy (TNC), which designed the project, identified about 200 sites whose size and/or biological wealth made them important and which were under imminent threat by resource mining, ranching, colonization, or other factors. USAID, under a cooperative agreement with TNC, originally committed \$2 million for a period of three years. As of the spring of 1994, USAID has obligated a total of nearly \$14 million through 1997, with TNC and host countries providing matching funds of \$5.5 million. In Mexico, additional funding for PiP comes from USAID's *Environment/Global Climate Change* program (see separate project profile).

The project has three strategic objectives: on-site protection and management, compatible use and economic development, and long-term financial sustainability. The present agreement aims to install basic protection infrastructure in 25 to 50 protected areas. A strategic tenet of the project is that park managers, TNC, and both nongovernmental (NGO) and government collaborators work to "graduate" parks from USAID funding to other sources. Under the project's original design, chosen sites will attain long-term financial viability utilizing local, government, or international resources during the life of the PiP project.

Highlights for FY 1993-94

- Established presence in 26 parks covering over 5.7 million hectares in 12 countries. Supported construction or renovation of 82 ranger stations and employment of 282 rangers.
- Six parks are close to obtaining sufficient long-term, outside funding, while maintaining adequate park protection activities, to graduate from PiP funding.
- Fundación Amigos de la Naturaleza (FAN) in Bolivia has performed so well, the government has chosen it to administer Amboró National Park.
- Influenced the voluntary relocation of over 800 gold miners in Ecuador's Podocarpus National Park, a site important for the protection of *Cinchona* (quinine) tree.
- Helped Paraguay's Conservation Data Center in developing a proposal for 25 new conservation sites, which was accepted and signed into law in May 1994, more than doubling the area protected in that country.

Project at a Glance

Funding: Life-of-Project \$14,000,000
Biodiversity Percentage 100%

Project Duration: FY 1990-97

Implementors:

The Nature Conservancy

USAID Project Officer:

Jeffrey Brokaw/USAID/LAC

Background

Although many Latin American countries have legally designated national parks and reserves, these protected areas are generally understaffed and underfunded. In Panama in the late 1980s, for example, 14 employees with one boat tended the 575,000-hectare Darién National Park. (California's Yosemite National Park, half the size of Darién, had a staff of 190 with 80 vehicles.) Park employees often have neither the equipment nor the training to manage and protect their parks. As a result of both understaffing and local socioeconomic conditions, colonization, slash-and-burn agriculture, illegal mining and logging, and animal poaching threaten over three-fourths of Latin America's protected areas.

Project Implementation

TNC implements the project in collaboration with USAID missions and in-country government and nongovernmental entities. PiP is presently carrying out activities in 12 countries in Latin America and the Caribbean. PiP has identified and begun work in 26 parks covering a total of 5.7 million hectares (see table, p. 93). Protection and management elements at the park site include park equipment, boundary marking and monitoring activities, and training.

Problems and delays. In its third-year report (fall 1993), TNC identified problems that delayed PiP's progress. Because many PiP sites are extremely remote, transportation and accessibility, weather, and security problems have hindered progress in establishing a presence in them. Poor pay, inadequate training, and high turnover among park employees have impeded development of park management capacity. Poor coordination among participating entities has frequently slowed field operations. Unstable politics and economics in host countries as well as

the absence of consistent, clear policy regarding conservation have slowed progress in some sites.

In March 1994 Management Systems International (MSI) completed a midterm evaluation of the PiP project that included visits to nine sites in five countries. Accomplishments MSI reported include increasing park protection through constant presence of guards (mainly in high-profile parks); attracting alternative support systems, such as local or international donors, again for high-profile parks; strengthening NGO stewardship of parks and influencing national conservation policy; and developing more thoughtful views of conservation issues in both TNC and USAID. The evaluators also remarked on the commitment and flexibility of participating NGOs, which augured well for sustainable progress with PiP's initiatives.

MSI noted that graduation from PiP support was proceeding very slowly. (TNC believes that the concept of graduation should involve a flexible time limit—from two to seven years.) Given the progress of existing sites, MSI suggested that no more than 35 parks be targeted under the current commitment, which ends in 1997. In addition, it advised that PiP activities should include a mechanism for addressing national policies regarding land, parks, and protected areas that threaten some parks.

For the project's protection component, MSI recommended greater emphasis on buffer zone activities and integration of park needs with buffer zone communities, better training to park guards and community extensionists, and consideration of policy issues in park work plans. Regarding compatible use, MSI recommended that TNC establish mechanisms for community input and participation by NGOs. In efforts to achieve sustainable funding, MSI found spotty progress, recommending that PiP monitor trends among international donors, aim for written assurance of government support for parks, and

require descriptions of long-term funding potential in proposals for new PiP sites.

Project Progress

Progress in implementing on-site protection and management in the project sites includes the following highlights:

- Continuous field supervision is in place in all 26 parks.
- Over 400 employees, including 282 rangers, now work in PiP sites. Ranger accommodations include 82 permanent centers and outposts for housing and stop-overs.
- Baseline studies and monitoring have begun and critical threats have been identified in 19 parks. In five parks TNC conducted rapid ecological assessments (REAs), which allow quick evaluation of natural resources and speedy development of site-tailored management and monitoring programs.
- Over 300 rangers and agricultural extension agents received training through more than 35 courses in 1993. TNC also hosted 300 participants at a Conservation Training Week in spring 1993. This event included 42 NGOs and government representatives from eight countries who had been working in PiP sites. In late summer of 1993, seven specialists from PiP projects in six countries attended a wildlands management course at Colorado State University.
- Local NGOs and governmental bodies have signed agreements to collaborate in implementing PiP's activities. The number of PiP project coordinators in local organizations increased from four in 1992 to 17 in 1993, which improved coordination among the various participating agencies.

Parks in Peril Sites

Country	Park	Hectares	Terrain
Belize	Río Bravo	92,713	Subtropical forest
Bolivia	Amboró	637,700	Mountain peaks to alluvial plains
	Noel Kempff Mercado	920,000	Mountain peaks to lowland forest
Colombia	Cahuinari	575,000	Lowland tropical forest
	Chingaza	50,374	Flatlands, mountains, glacial lakes
	La Paya	442,000	Humid forests
	Sierra Nevada de Sta. Marta	383,000	Snow peaks, rain forest, desert, coastal rain forest
Costa Rica	Corcovado	41,788	Lowland rain forest
Dominica	Morne Trois Piton*	6,880	Elfin woodlands, various rain forest types
Dominican Republic	Jaragua	137,400	Dry forest and scrub
	Parque del Este*	42,000	Humid and dry subtropical forest
Ecuador	Machalilla	55,000	Coastal ecosystems
	Podocarpus	146,000	Premontane moist forest to cloud forest
Guatemala	Sierra de las Minas	236,300	Dry to humid subtropical and conifer forests
Mexico	Calakmul*	688,259	Tropical forest
	El Ocote	48,140	Tropical/lower montane rain forest, evergreen forest
	El Triunfo	119,177	Various tropical, temperate, and evergreen forests
	La Encrucijada	2,500	Coastal wetlands
	Pinacate*	1,764,953	Deserts and arid lands
	Rías Celestun/Lagartos	107,970	Coastal wetlands and scrub forests
	Sian Ka'an	528,000	Coastal ecosystems
	Darién	575,000	Lowland tropical rain forest
Panama	Panama Canal Watershed	353,929	High and low tropical forest watersheds
Paraguay	Mbaracayú	62,339	High forests, transition forests, grasslands, wetlands
Peru	Pampas del Heath	102,109	Humid tropical savanna, rain forest
	Yanachaga	122,000	Upland tropical forest

* New parks

Although involvement of local communities in sustainable park resource use has traditionally been low, with a few exceptions, PiP has increased their collaboration with park projects.

Communities received some financial benefits through such PiP activities as construction of ranger stations and boundary trails. They have also begun to help informally with enforcement and education. Although alternative economic activities are under consideration, local communities have so far not reaped as much economic benefits through park activities as hoped.

Six parks are approaching graduation from PiP funding: Corcovado (Costa Rica), Amboró and Noel Kempff (Bolivia), Mbaracayú (Paraguay), Yanachaga (Peru), and—pending the Panamanian government's approval of

a trust fund and release of money this May—Darién. Twenty parks in all have obtained outside funding, leveraging a total of \$764,926 from federal and state sources, while eight have obtained a total of \$500,000 from local sources. In addition, identification of long-term support sources has begun for 12 sites.

PiP's major accomplishments have been in establishing basic protection infrastructure and acting as a "multiplier" in gaining alternative funding sources to support park activities. Project principals report that local-partner NGOs have established good administrative and managerial systems and have collaborated with considerable dedication. Implementors urge development of detailed management plans that address specific goals and strategic objectives as a priority for the remainder of the project as well as

increased attention to compatible use, which enlarges local community involvement.

Bolivia. The Amboró National Park was enlarged to 620,000 hectares and linked to the Carrasco National Park, creating a continuous protected area of 1.2 million hectares.

TNC's local partner, FAN, has proved remarkably successful in persuading initially unreceptive local people to support the park. This organization provided technical assistance in improving local agricultural practices and in supporting reforestation and agroforestry. FAN also improved its relationship with the government entity originally assigned to the park's management.

FAN has also collaborated with early planning for ecotourism at Noel

Kempff National Park near the border with Brazil. The organization has acquired an office, retains a staff of 35, and employs strategic planning. Because of this success, the Bolivian government is now granting FAN official sanction to administer both parks.

The two Bolivian parks will graduate from PiP funding in the next few months. TNC, FAN, and various government agencies established a nature trust fund in Bolivia, utilizing funds from the Global Environment Facility. As of May 1994, this endowment has accumulated \$3 million, or approximately 10 percent of its full requirement. PiP support will be replaced by a debt-for-nature swap completed by TNC in 1994.

Peru. Yanachaga-Chemillen National Park, in Peru's central jungle, has completed a park office, biological station, and visitor's center, and plans are under way for ecotourism. Local university teachers took a course on conservation and ecology, and tree nurseries were established in two area schools.

Peru, with Global Environment Facility (GEF) funds, will establish a \$5 million endowment for its national parks. That endowment and PiP activity have helped attract additional funding, which should enable Yanachaga to graduate in a year. The European Economic Community (now the European Union) is completing plans for a six-year project in the Yanasha Community Reserve, which runs along Yanachaga's eastern border. The planned activities in sustainable development and forestry will complement those of PiP.

Guatemala. The Sierra de las Minas Biosphere Reserve, only in its third year of existence, has employed 11 staff members from local communities. Local groups also participate in park activities and planning. A master plan and baseline studies are under development. A study—now in its second

year—of Guatemala's endangered national bird, the quetzal, monitors the birds in their breeding habitats in cloud forests and the dry and presently unprotected areas to which they migrate for winter. The findings will reveal measures needed to protect the quetzal.

Defenders of Nature Foundation (FDN), the Guatemalan NGO mandated to manage Sierra de las Minas, has purchased its office and established education programs, including an ecology newsletter. The foundation has initiated a land acquisition program, which has purchased 15,000 hectares of private property within the reserve, strengthening the political potential and legitimacy of this relatively young NGO. Calendar sales have generated \$20,000 in local currency, while a variety of government and international organizations have begun providing additional support to the park's activities.

Mexico. The Salinas administration has greatly improved its relationships with NGOs, and the unrest in Chiapas and the occasion of an election this year have resulted in a renewed concentration on social development. This has benefitted the Yucatan's PiP parks, Calakmul, Ría¹ Celestún, and Ría Lagartos.

REAs are complete in Rías Celestún and Lagartos. In an effort to develop a new management plan for Celestún, PiP mapping of the reserve uncovered mistakes in site boundaries. Correction of these mistakes may allow protection of areas not now included in Celestún's boundaries. After the park's boundaries are finally determined, PiP will develop a management plan.

Tourism has the potential both of great benefit and, if poorly managed, great harm in the Yucatan parks. Carrying-capacity studies are not yet complete. Environmental education has, however, made its mark on tour guides. For example, boatmen in the Celestún estuary used to drive their boats into flocks of flamingoes so

tourists could see the flocks take flight. But after receiving environmental education through PiP, the boatmen became strongly protective of the flamingoes, never venturing within 50 yards of flocks.

A Celestún-based youth ecology group has become the first NGO from Mexico's coastal region to achieve national importance. In January 1994 a Maine-based youth group visited Celestún to work with the Mexican group on environmental education. In April the group organized a world migratory bird day during which dozens of local children participated in a bird poster contest.

PiP's partner in the Yucatan, ProNatura, began coordinating its community development efforts with the Ford Foundation beginning in late 1993. Ford provided \$75,000 for assessing community needs in Calakmul, Lagartos, and Celestún. Additionally, delayed support from GEF is expected to come soon.

In La Encrucijada, Chiapas, rangers carried out three overflights in late 1993 to perform a waterfowl population count and to document illicit logging. The park staff is carrying on four monitoring projects and has begun a study of vegetation and soil use. Staffers moved to a new headquarters closer to the park and have begun to promote the expansion of the reserve from 2,000 to 80,000 hectares.

A large water development project, implemented by the National Water Commission (CNA) and financed by the World Bank, has put La Encrucijada's wetlands in grave peril. Responding to local concerns, PiP facilitated a visit from a representative of the World Bank and the U.S. Fish and Wildlife Service. These agencies have recognized the danger to La Encrucijada.

At another Chiapas site, El Triunfo, PiP is developing 12 monitoring projects, which will be used as a model for monitoring in other Mexican parks. Protocols are prepared for 11 of the 12

projects, which include an aerial photography survey to define deforestation and studies of the migration and habitat use of quetzals.

In El Ocote, also in Chiapas, PiP completed 18 assessments of local communities, sponsored a workshop on insecticides in late 1993, refurbished the ranger station, and opened an office closer to the park site. El Ocote's chief of operations attended a U.S. Department of Agriculture-sponsored fire suppression workshop in Chiapas in 1993 and held a similar workshop for the park guard staff. The community development program has established eight agricultural demonstration plots in El Ocote's southeastern section to show how production of corn, beans, and coffee can be increased in an environmentally sound manner.

Mexican parks and politics. The January uprising in Chiapas disrupted some of PiP's activities there, but patrols and the guards' physical presence in the parks stopped for only three weeks. In fact, according to project principals, TNC's implementing partner in Chiapas, the Institute of Natural History (IHN), has increased its opportunities to help communities since the uprising.

One reason is that the institute has established an excellent rapport with the local community. Many of the parks' 17 guards are Chiapas natives. Also, each park has a strong community development program, supported by World Wildlife Fund and TNC, and an environmental education outreach program. Park staffers tailor these programs to local needs. In El Ocote, for example, park employees have produced radio spots on ecological issues in the Tzotzil language to reach local community women, most of whom do not speak Spanish.

Activities in these areas have brought the institute into contact with about 75 percent of buffer zone inhabitants who number over 10,000 in 195 settlements. Local communities near the parks have asked to be included within the buffer

zones to benefit from agricultural extension and education services. Park activities are so well known that local groups or *ejidos* (cooperative farming communities) have approached the IHN, seeking cooperative agreements to carry out agroecology projects.

The uprising did delay activities related to long-term financing. In May 1994 TNC planned to work with the institute to determine what staff and budget can be committed on a long-term basis and to begin investigating alternative funding opportunities.

Costa Rica. In its first two years, PiP established basic park protection mechanisms in Corcovado National Park. The project supplied infrastructure construction and improvements, park equipment, ranger training, and park management. An REA established baseline data, and PiP established permanent plots for monitoring studies of terrestrial flora and fauna and marine communities.

Fundación Neotrópica, TNC's in-country partner, performed park administration admirably. A major task in administration will be the drafting of a new park management plan to replace the one written in 1988, which is no longer viable. Fundación Neotrópica will concentrate on finding ecologically sustainable sources of economic benefit for local communities and also on the ongoing biological monitoring in the Osa Peninsula.

PiP's activities have increased community understanding of conservation and involvement in the park's goals. Several communities that previously depended on gold extraction have switched to ecotourism as a source of income. A priority will be the development of sustainable ecotourism, since inadequately managed tourism could threaten the park's ecology.

Ecuador. In Podocarpus, a 146,000-hectare park in the western Ecuadorian Amazon, USAID support of PiP activities was instrumental in obtaining protected status for the park and

increasing the effectiveness of local NGOs. This park is the center of origin for the *cinchona* (quinine) tree, but 97 percent of its area is licensed for gold mining, an environmentally devastating process. TNC has engaged in a long-term effort to end gold mining, coordinating with local, regional, state, NGO, and military agencies. In April 1994 this two-year effort culminated in the successful and nonviolent relocation of over 800 gold miners through the efforts of Arco Iris, a local NGO. The Ecuadoran government, the Ecuadoran park service, and local authorities helped identify alternative sites. With PiP support, local public and private groups have also begun the complete removal of all gold-mining infrastructure, including pumps and other equipment, to allow regeneration of natural vegetation. This process stems directly from USAID support of TNC's conservation activities in Podocarpus.

Paraguay. The 62,000-hectare Mbaracayú Reserve, Paraguay's most important example of the species-rich "Alto Paraná" forest and a sanctuary for the local Aché Indians, will graduate in 1994. TNC's work with Paraguay's Conservation Data Center, a biodiversity research institute, has resulted in the proposal of 25 new conservation sites in Paraguay. This proposal, accepted and signed into law in May 1994, more than doubles Paraguay's protected areas—from 2 million hectares to 4.5 million hectares. Some of the new areas include the 400,000-hectare Cerro Guaraní-Timane National Park, which will provide a biological corridor between Paraguayan and Bolivian protected areas in the threatened Chaco region of dry forest, and the 550,000-hectare Laguna Inmákata National Park, which will protect the endangered Alto Paraguay forest type.

—Stephanie Joyce, Datex
6/6/94

¹ *Ria* means estuary.



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



Regional

598-0784

Environment and Global Climate Change

USAID's Bureau for Latin America and the Caribbean (LAC) established the *Environment and Global Climate Change* (E/GCC) program in 1990 in response to a Congressional mandate to help key developing countries reduce their production of greenhouse gases. A seven-year program (FY 1990–96), presently funded at \$34.5 million, E/GCC focuses on the key countries of Brazil and Mexico and carries out additional special activities in Belize and Paraguay.¹ To reduce greenhouse gas emissions in the LAC region, the program embraces policy reform, research, and technology transfer centered on sustainable, efficient use of forest and energy resources in these countries. This report discusses the two primary regions separately.

E/GCC follows two strategies to decrease greenhouse gas production: (1) reducing deforestation through protection and sustainable use of forest resources and (2) diminishing consumption of fossil fuels through inexpensive alternate energy technologies, including energy efficiency and renewable energy. The program's supporting activities are applied research and practical demonstration of ecologically and economically sustainable forest, natural resource, or energy use; training and institution strengthening; and policy analysis and improvement of environmental impact assessments.

Various USAID offices have supported E/GCC's activities with project resources. The offices of Environment, Energy and Technology, Environment and Natural Resources, and the Urban Programs within the Global Affairs Bureau are helping to fund efforts in Brazil. *Gender in Economic and Social Systems* (GENESYS) has provided five specialists to work with local nongovernmental organizations (NGOs) to ensure consideration of gender and social issues in Brazilian activities. Mexican activities benefit from \$1.6 million in support of a \$10 million debt-for-nature swap, organized by Conservation International (CI) in 1991, and protection for ten Mexican parks under *Parks in Peril* (PiP) (see separate project profile), a program designed by The Nature Conservancy (TNC).

Highlights for FY 1993–94

Brazil

- Providing technical and legal assistance and training in three Amazon states to help local communities set up extractive forest reserves and agroforestry projects.

(continued)

Project at a Glance

Funding: Life-of-Project \$34,500,000
Biodiversity Percentage 40%

Project Duration: FY 1990–96

Implementors:

Government: Smithsonian Institution, U.S. Environmental Protection Agency, and the U.S. Forest Service

NGOs and academia: Environmental Law Institute, World Wildlife Fund, The Nature Conservancy, Woods Hole Research Center, University of Florida, Conservation International

Brazil: Institute for the Environment and Renewable Natural Resources, Brazilian Agricultural Research Institute, Institute of Man and the Environment in the Amazon, Fundação Vitória Amazônica, and others

Mexico: Fundación Mexicana para la Educación Ambiental, Fundación Miguel Alemán, Institute of Natural History (Chiapas), PRONATURA Yucatán, and Amigos de Sian Ka'an

USAID Project Officers:

Art Danart/USAID/Mexico
Ed Kadune/USAID/Brazil

Highlights *(continued)*

- Working with Brazilian institutions to monitor and analyze burning in the Amazon basin to help the nation develop a national fire prevention and control strategy.
- Supported research that found that tropical forests survive dry periods by using a deep root system and that annual die-off and regrowth of these roots deposit large amounts of carbon in the soil, adding to the forests' importance as carbon sinks.
- Supported pilot project that revealed that, compared with traditional logging, managed extraction reduces damage by 50 percent, increases yields by 25 percent, and generates 25 percent greater profit at only 7 percent added cost. Media and major lumber companies are interested in study results.
- Training, research, and technical and legal assistance led to public hearings contesting a proposed kaolinite clay mine in Pará. The mine was approved, but for the first time in this region, approval was contingent on addressing grassroots groups' environmental concerns.

Mexico

- Working with local communities and NGOs in park buffer zones to develop agroforestry, beekeeping, and other alternative agricultural activities not requiring forest clearing.
- Supporting policy discussions, debt-for-nature swap, environmental impact studies of proposed extractive projects, and infrastructure improvements in Montes Azules Biosphere Reserve.
- Supporting pilot projects for energy efficiency and alternative energy sources as means of decreasing greenhouse gas production.

- Helping train experts and research policy issues to help government identify environmentally unsound policies and develop laws and policies encouraging sound energy and natural resource use.

Special Projects

- Provided funds so the Belize Audubon Society could purchase and manage the Rio Bravo Reserve, leveraging funding to protect adjacent lands and increase protected area to 229,000 hectares. Helped consolidate Belize's largest NGO, the Programme for Belize.
- Provided \$500,000 toward purchase of Paraguay's Mbaracayú Nature Reserve by the Moises Bertoni Foundation, a local NGO, illustrating the potential of private sector conservation in Paraguay.

Project Implementation

A number of U.S. agencies and organizations are implementing E/GCC through agreements with in-country partners. Government implementors include the Smithsonian Institution, the U.S. Environmental Protection Agency (EPA), and the U.S. Forest Service (USFS). Nongovernment partners include the Environmental Law Institute (ELI), World Wildlife Fund (WWF), TNC, the Woods Hole Research Center (WHRC), Conservation International, and the University of Florida.

Among E/GCC's local implementors in Brazil are the Institute for the Environment and Renewable Natural Resources (IBAMA), the Brazilian Agricultural Research Institute (EMBRAPA), Institute of Man and the Environment in the Amazon (IMAZON), and other NGOs mentioned below. E/GCC partners in Mexico include the Fundación Mexicana para la Educación Ambiental, Fundación Miguel Alemán (for the Tropical Forest Action Program, PROAFT), the Institute of Natural History (Chiapas),

PRONATURA Peninsula de Yucatán, and Amigos de Sian Ka'an.

Evaluation at local, country, and regional levels will constitute an additional element of the E/GCC program. The LAC Bureau's Program Performance Assessment System (PPAS) and USAID's *Program Performance Information System for Strategic Management* (PRISM) will guide evaluation of activities at each participating mission. PRISM will provide training and data management services through a \$220,000 grant to Management Systems International (MSI).

MSI has begun working both in Mexico and Brazil, helping E/GCC implementors set up a logical framework that sets strategic objectives and describes indicators of success within each objective. A January 1993 workshop in Brazil acquainted U.S. NGOs with the monitoring process and helped them develop operational frameworks; a similar workshop took place in July 1993 in Mexico. Over time, evaluations should yield a time-series data base of measurable steps or events that indicate the impact of forest management and energy activities.²

Project Progress

Special activities. This component encompasses several opportunities to support activities outside of the two target countries that contribute to environmental protection and the reduction of greenhouse gases. E/GCC has provided support for such activities in Belize and Paraguay.

Belize. The Massachusetts Audubon Society used a series of grants from E/GCC (totaling \$1.5 million over a three-year period) to help the Programme for Belize (PFB) purchase and establish the Rio Bravo Conservation Management Area, a 44,515-hectare expanse of tropical lowland forest and wetlands teeming with wildlife, including five species of large cats.

Program assistance also catalyzed two other important developments in Belize. One was the leveraging of funds, through support from industry and U.S. and international NGOs, to protect additional adjacent land, bringing the total acreage of contiguous protected lands to about 92,670 hectares. Additionally, E/GCC's gift helped consolidate PFB, the country's largest environmental NGO, staffed and managed entirely by Belizians. PFB has begun involving local people in its investigation of sustainable development opportunities within the protected areas, including ecotourism and the harvesting of chicle (used in chewing gum), wild honey, and tropical woods for dyes.

Paraguay. In 1991 E/GCC also provided \$500,000 to help the Moises Bertoni Foundation purchase the 5,787-hectare Mbaracayú nature reserve in Paraguay from the World Bank's International Finance Corporation. This reserve, one of the most important examples of Alto Paraná, is a highland tropical forest extremely rich in endemic species and a sanctuary for the local Indians, the Aché. Moises Bertoni, in collaboration with TNC, has helped the Aché, who depend on the park's resources for their livelihood, develop a management plan to sustain the park's viability for hunter-gatherer activities in perpetuity. Mbaracayú has become Paraguay's flagship example of the potential contribution of the private sector to conservation. (See separate project profile on *Parks in Peril.*)

E/GCC Brazil. Program efforts in Brazil focus on activities at local, state, and regional levels designed to offset greenhouse gas production stemming from Amazon deforestation. The program's main activities are sustainable use of Amazon forests, policy analysis, and environmental education. Implementors support these activities through institution strengthening, training, and research.

Grants totaling \$17.5 million support 20 activities by 14 U.S. agencies and institutions (government and nongovernment). With their Brazilian state and local counterparts, these implementors provide complementary, collaborative, or supporting elements of the E/GCC Brazil program. Several grants to WWF, totaling \$4.2 million, support seven activities, including institution strengthening and environmental education, environmental economics and policy, integrated forest management, and protected area management. WWF has collaborated with ELI, EPA, USFS, and other organizations to improve environmental impact assessment (EIA) procedures. A four-year, \$1 million grant to GENESYS (with matching grants from WWF, the University of Florida, and USAID's Women in Development Office) is providing technical assistance and support for socioeconomic and gender research and institutionalization of gender consideration within NGO activities. WHRC is carrying out scientific research, training, and environmental impact work.

A \$3 million contribution to the World Bank's Rain Forest Trust Fund, part of the G-7 (Group of Seven industrial nations) Pilot Program to Conserve the Brazilian Amazon is supplemented by the \$2 million Forests for the Future Initiative (FFI). FFI provides infrastructure development for two major Brazilian research institutions: the National Institute of Amazon Research and the Goeldi Museum. The World Bank is helping to manage the FFI activities.

Sustainable use of Amazon forests. This component aims to reduce the greenhouse gas production that results from deforestation in Brazil's Amazon region. Program activities, including institution strengthening and research, lead ultimately to the sustainable use of the Amazon forest. E/GCC is also helping set up extractive reserves and promoting agroforestry, sustainable agriculture, and forest management.

Projects involving sustainable use of forest resources also build in efforts to provide economic benefits to local participants and their communities, thus linking conservation and development.

Extractive reserves. E/GCC is helping establish extractive reserves in several Amazon states. These reserves will allow harvesting of seasonal products such as Brazil nuts, rubber, and fruits for which E/GCC is also helping to develop markets.

In connection with establishing extractive reserves, the program supports institution strengthening and training for in-country partners. WWF, for example, in 1991 and 1992 helped two groups form community associations in Amapá, file the necessary papers, and fulfill the legal requirements for their extractive reserves, Cajari and Maracá. WWF also helped set up a river transportation system, provided training in reserve resource management, and assisted with studies on forest product marketing and forest management. The University of Florida provided similar assistance in setting up extractive reserves in Acre.

Agroforestry/sustainable agriculture. This component will improve degraded farmlands and reforest cleared or fallow lands. Efforts to increase or intensify production on existing small farms, part of an overall effort to increase productivity and income, will preclude additional forest clearing for agriculture.

In Acre, the University of Florida's efforts have helped promote agroforestry and the culture of native trees, including seven types of fruit trees, which are distributed by the local agricultural cooperative. More than 50 species of trees have been planted in more than 96 farm plots. The University of Florida and GENESYS helped establish the Acre Group for Research and Extension on Agroforestry Systems (PESACRE), representing a variety of government and NGOs. PESACRE is carrying out agroforestry projects in

Acre in a rubber tapper community, a recent settlement, and an indigenous community. With GENESYS support, PESACRE has carried out rapid rural appraisals (RRAs) of the three areas and will perform socioeconomic research, including gender analysis and demographics to design activities for these communities.³ GENESYS has also been instrumental in providing technical assistance for a newly established market research team at PESACRE.

WWF has been laying the groundwork for production of nontimber forest products in Araras, a small farming community in southern Pará. GENESYS has assisted a local NGO in basic social science research and marketing studies for cupuaçu, a tropical fruit. In spring of 1994 GENESYS hired a consultant to help develop business plans for marketing this fruit.

In the eastern state of Pará, WWF, WHRC, and GENESYS provided technical assistance and training for the Paragominas Worker's Union (STR/P), which has carried out research and agroforestry activities with two communities near the Capim River in Pará. Results of data gathering from 130 families in two communities on the Capim River helped to prevent the closing of two local public schools. WWF helped STR/P plant 37,000 seedlings in 4.56 hectares in four communities. WHRC conducted experiments on participating farms and identified several organic residues suitable for use as mulch. Application of these mulches, cheaper than fertilizers and readily available, helped farmers achieve an 80 percent survival rate for seedlings. This success rate spurred another local NGO to develop similar nurseries in adjacent communities.

Forest management and protection. E/GCC's activities in forest management include fire science and prevention, forest and natural area protection, and sustainable forestry. Training, research, and pilot projects promote planned, ecologically sound, timber extraction. WWF and USFS are

implementing E/GCC's activities in forest management, whereas WHRC provides supporting research and community outreach.

USFS activities with E/GCC are part of its large interagency forestry program in Brazil, in collaboration with the National Aeronautics and Space Administration and other U.S. government agencies. The U.S. contribution includes training for Brazilian state and federal employees and NGOs on such topics as fire prevention; forest administration, management, and rehabilitation; firefighting techniques; and wildlife monitoring. USFS is helping develop firefighting courses for use by Brazilian firefighting associations.

USFS, in collaboration with IBAMA, is doing research on the effect of Amazon forest burning on the region's air quality. Data on fire emissions, smoke components, biomass consumption, air quality, and fire occurrence will provide IBAMA with geographic information about wildfire and burning in northern and central Brazil. This information will help IBAMA develop a national fire prevention and control strategy. USFS is also helping install a network of fire monitoring stations to collect data on air quality and emissions in the Amazon. USFS, IBAMA, and the University of São Paulo are designing a program to increase public awareness of the effects of smoke exposure.

WHRC and Brazilian scientists carried out a series of mapping and research projects in Paragominas, Pará, to determine the effects of human land use on water and carbon exchanges. Several studies on fire and hydrology investigated what regions of Amazonia support evergreen forests despite severe seasonal drought and the reasons for this tolerance. WHRC estimates that half of the Amazon Basin's closed canopy (primary) forests do not become desiccated and flammable during dry seasons because they possess extremely deep root systems, which extract water stored deep in the soil. These deeply rooted forests

release far more water vapor to the atmosphere than the pastures and croplands that often replace them and constitute a previously unsuspected sink for carbon.⁴ The Paragominas soil, from one to eight meters deep, contains twice as much carbon as the above ground forest biomass. This finding adds to the importance of Amazon and other tropical forests as carbon sinks (or as potential sources of carbon emissions, should the forest cover be destroyed).

WHRC studies in Paragominas found that logging renders these deeply rooted forests highly vulnerable to fire and possible savannization.⁵ Additionally, severe dry seasons can provoke some forests into shedding their leaves, facilitating wildfire. These conditions make it difficult for forest margin farmers, such as those along the Capim River in Paragominas, to control accidental forest fires.

Using the results of its research, WHRC is developing a fire prevention course for farm communities, beginning with the Capim River communities. WHRC will work with unions and grassroots groups, discussing economic losses associated with fires, and will present practical techniques for containing or preventing accidental fires.

WWF has helped NGOs form protected area management agreements with Brazil's IBAMA. Fundação Vitória Amazônica (FVA), for instance, is working with WWF to develop a management plan addressing both human and ecological needs in Brazil's largest protected area, Jaú National Park in the state of Amazonas. In 1993, with technical assistance from GENESYS, FVA completed a socioeconomic census of park residents and formed a multidisciplinary study team, including biological and social scientists. FVA has begun studying the park's natural and financial resources to develop a management plan.

E/GCC forestry activities also include demonstration projects. WWF, working with IMAZON, organized a pilot

project comparing logging yields on two 100-hectare plots—one logged using traditional methods and the other using model management plans. In both operations, IMAZON documented numbers of trees damaged, time spent, and costs. Initial observations indicated that planned extraction reduces damage by 50 percent, increases efficiency in terms of yields by 25 percent, and generates a 25 percent profit at only 7 percent more cost. IMAZON and WWF are producing a video using footage of both operations and interviews with several stakeholders, including the president of the Paragominas logger's union.

In November 1993 IMAZON organized a field day to highlight the pilot project. Representatives from 25 leading timber companies attended, as well as three consulting foresters and agents from ten logging equipment companies. Timber representatives expressed interest in adopting sustainable logging practices (required by law but scarcely followed up to now). Also, Brazil's leading television network featured the event on its popular Sunday morning science slot.

Natural resource policy. E/GCC Brazil is promoting the development of environmentally sound policies that protect forested areas. To that end, the program's implementors are analyzing natural resource policy and training NGOs and government agencies on natural resource law.

Policy activities especially emphasize improving local capabilities to perform EIAs, based on the assumption that improved EIAs will protect forests better and may prevent the implementation of especially ill-conceived projects. EIAs are required by recent environmental regulation in Brazil, but government agencies, mainly those located in the Amazon region, do not have sufficient personnel with technical skills to develop the criteria and parameters necessary for effective evaluation of proposed land use. They also lack the infrastructure for enforce-

ment. E/GCC EIA activities assume that improved EIAs will protect forests better and may prevent the implementation of especially ill-conceived projects.

ELI is carrying out environmental policy activities in two main areas: institutionalization of extractive reserves and training in environmental law, including EIA training. Its draft report on extractive reserves in Brazil, now under review at USAID, will be discussed at workshops in Rio Branco, Belém, and Brasília. ELI has also delivered a number of courses on environmental law. One such seminar, delivered in September 1993, included a session (attended by law students and attorneys) comparing U.S. and Brazilian national environmental policy laws, enforcement mechanisms, citizen suits, EIAs, protected areas, and pollution control. A parallel seminar, attended by close to 100 government attorneys and Manaus bar members, covered legal and procedural tools for environmental protection and analyses of U.S. environmental case studies.

ELI and WWF also provided a series of EIA training sessions in 1992. These sessions, held in several cities, were well attended and generated requests for more training. In response, E/GCC grantees (WWF, ELI, EPA, and USFS, in cooperation with the State University of New York) brought 17 Brazilian professionals to the United States and provided an intensive three-week course in environmental management techniques, which included a "train-the-trainers" session. The course took place in August 1993. WWF provided a seminar identifying biological values of the Amazon, which gave local terms of reference for EIAs and addressed the scientific issues relating to the EIA process. ELI gave a two-day seminar describing the legal and policy frameworks of Brazilian law connected with EIAs and public participation. EPA provided a week-long facilitated workshop in Washington, D.C., detailing the principles of preparing EIAs. USFS put on a week-long

workshop in forest management techniques and a site visit to the George Washington National Forest in Virginia. Following the forest management experience, EPA gave a three-day train-the-trainers course in Philadelphia to enable the Brazilians, in turn, to serve as facilitators for future week-long EIA training workshops in Brazil.

The first trainee-facilitated EIA course took place in May 1994 in Rio Branco, capital of Acre. Four trained Brazilian facilitators taught the course, which was attended by 25 professionals from four western Amazon states. Another course taught by trained Brazilian facilitators will take place in Belem in late 1994.

The EIA training, along with other program activities, also helped a Capim River community launch a successful campaign against an ill-conceived kaolinite clay-mining project. A train-the-trainers participant from Pará, using the instruction he received during the course, arranged a series of meetings to contest the mining project. WHRC helped organize community leadership opposing the plan. Findings of joint socioeconomic research by WHRC, GENESYS, and STR/P were used to discredit the company's faulty assessments of the project's impact on the environment and on the local community. Following three public hearings—more than had ever been held since 1986 legislation requiring EIAs—the company received preliminary permission to establish its plant, contingent on addressing certain concerns regarding the mine. The successful grassroots campaign against the mine and the leverage of legal and scientific evidence against it were the result of combined E/GCC activities in the region.

Environmental education. This component includes both formal and informal training. E/GCC, especially through WWF, the University of Florida, WHRC, and the Smithsonian Institution, has provided community workshops related to natural resource

management and training seminars for NGOs and government officials engaged in environmental education. Institution strengthening is supported by strategic planning workshops, training in proposal writing, and institutional development. The purpose is to enable organizations to continue their work beyond the project's life.

The program's community-level environmental education, with its emphasis on practical tools and tangible results, has proven effective. For example, WHRC has used satellite images to improve land use planning in four rubber-tapping communities in Acre. The satellite images proved a powerful tool. The visual element of the maps helped communities grasp very quickly, and in some cases for the first time, how local land use can affect a much larger region. WHRC, which plans to extend satellite image use to other communities, will use its experience to document the way in which communities use information.

The program also offers formal training. The University of Florida, PESACRE, and WHRC have offered internships, supported by program funds, which enabled 12 Brazilian researchers to obtain hands-on experience in the Amazon. The Smithsonian Institution is supporting two Brazilian doctoral students researching forest regeneration from abandoned pastures as part of its *Biological Dynamics of Forest Fragments* project. Results of this project, which studies how fragmentation affects a forest and its original species diversity, will help conservation planners set up effective biological reserves in areas that are undergoing development.

E/GCC Mexico. Because of the wide variety, magnitude, and complexity of Mexico's environmental problems, program activities focus resources on three critical objectives: management of tropical forests (mostly in southern Mexico), energy efficiency, and policy and institution strengthening. Support and coordinating assistance from other

USAID projects include *PiP* and the *Biodiversity Support Program* (BSP). Other government and private agencies provide funding and technical assistance, including the U.S. Department of Energy and the EPA.

Management of tropical forests. The Mexican program supports ongoing programs to consolidate and manage legally declared protected areas, mostly tropical and subtropical reserves and parks in southern Mexico. The program works with WWF, CI, TNC, and about 22 Mexican NGO counterparts in eight reserves totaling more than 40,468 square kilometers of tropical forest. The component's goals include involving local communities in natural resource management, identifying sustainable production alternatives for buffer zones, and consolidating protection for core areas. WWF, TNC, and CI are implementing projects under this component; ELI provides supporting research and training on environmental law.

In 1991 WWF initiated its People-Centered Conservation and Development projects in the buffer zones surrounding important wildlands in southeastern Mexico. E/GCC supports this five-year project with a \$5 million grant. People-Centered Conservation focuses on buffer zone management and community-based sustainable development.

Projects are under way in four regions. In Oaxaca, which boasts one of the world's most diverse biotas, WWF aims to help rural communities use their natural resources more sustainably through improved agriculture and forestry practices, research, and institutional coordination.

A four-member field team is providing training to seven communities, working with over 100 people. In the El Triunfo Biosphere Reserve in Chiapas, WWF is working on organic and sustainable agriculture and environmental education. WWF is providing institution strengthening around protected areas in the Yucatán

Peninsula and the Chimalapas/Uxpanampa/Ocote region (also in Chiapas).⁶

Through the program's Mexico activities, WWF and the World Resources Institute (WRI) applied the Latin American field test of the participatory rural appraisal (PRA). This state-of-the-art, interdisciplinary planning tool was adapted from the rapid rural appraisal by WRI's Center for International Development and Environment (CIDE). PRA methodology works through visual diagrams, field visits, and group discussions. It is a simple approach that allows semiliterate communities to articulate their needs and participate in project planning yet incorporates a methodological rigor uncommon to participatory development. WRI performed its PRA in two communities; one of its local partners, the Group for Environmental Studies (GEA), has helped produce a Spanish-language *PRA Trainers' Manual*.⁷ Several thousand copies of the manual are now in use throughout Mexico and beyond its borders. GEA training for PRAs has extended not only throughout Mexico but also to Latin America and the Caribbean.

WWF has completed two RRIs in the Yucatán's Calakmul Biosphere reserve and in El Triunfo, and is working with seven local NGOs. NGOs have identified alternatives to traditional agriculture, such as beekeeping and agroforestry in Calakmul and coffee in El Triunfo, which help increase farm household incomes, decreasing the need to clear surrounding forests. WWF is helping Chimalapas residents to establish a Campesino Forest Reserve, a new protected area designation that will allow long-term local residents to participate in protected area management according to community needs. This designation still awaits official recognition by the Mexican government.

In addition, BSP funds several program activities through a consortium consisting of WWF, TNC, and

WRI. One is a community-based project to reforest the Monarcas (Monarch) Butterfly Reserve in Michoacán. In May 1993 USAID/Mexico provided bridge funding to allow further development of the program. A yearlong effort, which began in the summer of 1994, aims to reforest nearly 3,000 hectares and provide economic benefits to 38 cooperative farming communities in the Monarch Reserve buffer zones.

The WWF/TNC/WRI Consortium is also initiating pilot buffer zone management activities in three forested zones near the U.S. border: the Cumbres de Monterrey National Park, El Cielo Biosphere Reserve, and Chipinque Reserve. Other studies are going on in the Sierra del Carmen area in Coahuila and in the Sierra Madre Occidental/Tarahumara region in Chihuahua. WWF and partner organizations have completed forest resource mapping to evaluate opportunities for integrated conservation and development in these areas.

E/GCC is also providing \$3 million in support for TNC's PiP project in Mexico. The program's activities, focusing on the protection of core zones in Mexican parks and reserves, complements WWF's buffer zone management projects. Local organizations at seven sites have signed cooperative agreements with Mexico's Secretariat of Social Development (SEDESOL). TNC organized a week-long conservation training session in late 1993 for Mexican government officials and representatives from partner NGOs and government agencies. These partners include PRONATURA Peninsula de Yucatán, Amigos de Sian Ka'an, the Centro Ecológico de Sonora, and the Institute of Natural History.

The E/GCC program is providing \$1.6 million to cofinance CI's debt-for-nature swap, aimed at managing the 331,100-hectare Montes Azules Biosphere Reserve within the Selva Lacandona. Logging, colonization, and ranching seriously threaten this reserve,

part of Mexico's last remaining tract of tropical lowland rain forest. CI's comprehensive "ecosystem approach" to protection and management of Montes Azules, is attempting to build local management capacity, provide environmental education, and perform scientific research.

At the political level, CI is promoting the implementation of a management plan, drafted in 1992 and subsequently extensively revised, for Montes Azules; following its approval, CI will begin boundary demarcation. CI has been refurbishing the abandoned Chajul station in the southern part of the reserve as an international research center. The staff of the Chajul ranger station received six courses in various aspects of park management. In 1993 CI began establishing a presence in the northern part of the reserve, employing five local people as rangers. EIAs are under way for three community projects: a small butterfly reserve in Loma Bonita at the border of the reserve, a small ecotourism operation at the northern end of the reserve, and an enterprise for raising the native white river turtles for commercial use. CI is also identifying three local products for commercial potential: organic coffee, a local edible mushroom, and pumpkin seeds.

In early 1994 CI signed a cooperative agreement with the Lacandon Maya, descendants of the ancient Maya race and legal owners of 80 percent of the Montes Azules reserve. The Lacandon, who number between 400 and 500 people, are working with CI on patrols and other activities designed to stop encroachment into the reserve.

A \$450,000 grant to Mexico's Fundación Miguel Alemán (FMA) supports the implementation of PROAFT and its activities in and around priority protected areas in southeastern Mexico. The PROAFT program aims to reduce tropical deforestation through sustainable land use and the development of private or communal areas near forested lands. PROAFT/FMA has begun four

technical studies on reserve management, community forests, forest plantations, and nontimber forest products. Groups of *ejidos* (cooperative farming communities) are carrying out a variety of pilot projects at an average cost of \$4,000 annually in nine communities.

In 1993 E/GCC supported EPA in a three-year, \$500,000 project to assess past, present, and future carbon dioxide emissions caused by land cover changes in southeastern Mexico. EPA has begun preliminary processing of data on land use, including remote sensing imagery, and has signed three-year agreements with two Mexican counterparts. Field research on carbon dioxide emissions began in 1994. EPA is also developing several models of carbon dioxide emissions for the last 20 years.

Energy efficiency and renewable energy. This component aims to monitor and limit the production of greenhouse gases that stem from fossil fuel burning in Mexico. The project will provide approximately \$4 million to support research on activities that affect carbon dioxide emissions and fund pilot projects in alternative (renewable) energy sources.

As part of USAID's parallel commitment to the World Bank's Global Environment Facility (GEF) and with support from the Global Bureau's Energy Office, E/GCC is providing \$4.65 million to support renewable energy projects throughout Mexico. The U.S. Department of Energy is providing technical assistance and additional funding to promote renewable energy projects, involving pilot activities in off-grid productive applications.⁸ Sandia National Laboratory will implement renewable energy pilot projects through cooperative agreements with public or private institutions. These pilot projects will involve practical, replicable activities using commercially available products. Sandia is considering the use of photovoltaic,⁹ wind, solar thermal, or

small hydroelectric power sources. Productive applications might include such small-scale activities as water pumping for livestock, domestic use, or irrigation; ice making; lighting for commercial facilities; community power sources; or solar baking. Sandia will begin accepting bids for between 15 and 25 projects in mid-1994.

The Global Bureau's Energy Office is supporting a three-year (FY 1994-96), \$600,000 agreement with the International Institute of Education (IIE) to train Mexican NGO, government, and university representatives in energy efficiency. Training, through the *Energy Training Program* (ETP), will take place in Mexico and in the United States. In May 1994 the IIE completed the first in-country ETP course: a week-long session on energy efficiency in buildings, which was attended by 25 people, mostly from Mexican universities.

E/GCC Mexico supports several additional energy projects, which will begin in 1994. A pilot project for "cogenerating" electricity from steam produced in sugar processing was to begin in July. RCG/Hagler, Bailly Inc. will work on a project on demand-side management and converting standard motors to high-efficiency engines. IIE is developing a project to reduce carbon dioxide emissions through increased boiler efficiency in a Manzanillo industrial plant.

Policy analysis. E/GCC is carrying out studies and training to identify and analyze government policies and institutional structures that encourage forest destruction. Grants to ELI and the Mexican Foundation for Environmental Education (FUNDEA) support the promotion of improved environmental management through policy reform and environmental education.

ELI is carrying out research to develop legal and institutional strategies for addressing global climate change and is providing technical assistance on issues related to environmental law to government agencies and NGOs. Using the services of Mexican

consultants, ELI produced a draft report identifying and analyzing Mexican laws related to the problem of deforestation in Mexico. ELI coordinates with other E/GCC implementors in its ongoing research.

With FUNDEA, ELI organized a three-phase North American Conference on Environmental Law and Policy, which brought together Mexican, U.S., and Canadian experts, primarily lawyers, to study the evolution of environmental law in each of the three countries. At each phase of the conference (November 1992 in Mexico, June 1993 in the United States, and October 1993 in Canada), participants discussed their countries' advances and challenges regarding environmental law and the specific means for addressing particular problems, such as conservation among native communities and preventing pollution during transboundary movement of hazardous substances.

A number of ELI training programs and seminars for Mexican officials and NGO representatives focused on the scientific causes of global climate change and the tools that U.S. public and private agencies employ to combat it. One such program, a week-long workshop on meeting the challenge of global climate change for representatives of Mexico's Chamber of Deputies, took place in Washington, DC, in October 1993. Training events planned for the summer of 1994 include a legal information training workshop for NGOs working with WWF in southern Mexico and an enforcement skills workshop for government officials.

—Stephanie Joyce, *Datex*
6/9/94

¹ USAID has also identified Central Africa, India, Indonesia, Pakistan, the Philippines, the countries of the former Soviet Union, and Poland as key areas for global climate change.

² Management Systems International, *Preliminary Report on MIS Design for the Environment/Global Climate Change Project USAID/Brazil*, draft final report (Washing-

ton, D.C.: March 1993).

———, *Preliminary Report on MIS Design for the Environment/Global Climate Change Project USAID/Mexico* (Washington, D.C.: August 1993).

———, *Mid-Term Cooperative Evaluation: World Wildlife Fund Activities Under the E/GCC Program—Brazil* (Washington, D.C.: March 1994).

³ A rapid rural appraisal (RRA) is a method for determining resources available to rural communities. Multidisciplinary teams (disciplines might include sociology, forestry, agronomy, ecology, and other applicable fields of expertise) conduct surveys and interviews and thus prepare a model of the ecosystem under study.

⁴ Daniel C. Nepstad et al., *The Deep-Soil Link Between Water and Carbon Cycles of Amazonian Forests and Pastures*, draft (Woods Hole, Mass.: Woodshole Research Center, 1993).

———, *Forest Recovery Following Pasture Abandonment in Amazonia: Canopy Seasonality, Fire Resistance and Ants* (Woods Hole, Mass.: Woodshole Research Center, 1993).

⁵ Permanent conversion from forest to grassland due to fire.

⁶ Field activities and NGO operations have continued in Chiapas despite the unrest there, although decision making and actions related to government support have slowed or stalled.

⁷ World Resources Institute's Center for International Development and Environment and Grupo de Estudios Ambientales, A.C., *El Proceso de Evaluación Rural Participativa* (Mexico City: Grupo de Estudios Ambientales and WRI, 1993).

U.S. Agency for International Development and World Resources Institute, *Green Guidance for Latin America and the Caribbean: Integrating Environmental Concerns into A.I.D. Programming* (Washington, D.C.: USAID, 1993).

⁸ Off-grid energy refers to generation of energy (often electricity) from a local rather than centralized source. In Mexico's remote rural communities, off-grid energy technology would cost less than extending urban electric grids and would generate no emissions, if fossil fuel is not used.

⁹ Photovoltaics are silicon-based panels that use light to produce direct-current electricity (as opposed to solar thermal panels, which produce heat).



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



LAC

Regional

598-0795

Neotropical Migratory Bird Conservation

The *Neotropical Migratory Bird Conservation* (NMBC) program supports projects benefitting migratory birds and their winter habitats in the American tropics. The project began in 1991, originally as a two-year effort, with an initial USAID grant of \$500,000 to the National Fish and Wildlife Foundation (NFWF). The project is part of a larger umbrella project, Partners in Flight, which began in 1990. In September 1993 USAID extended NMBC through September 1996 with an additional \$750,000.

Partners in Flight is a comprehensive, cooperative effort to conserve neotropical migratory birds and their habitats. The program's collaborators include U.S., Canadian, Latin American, and Caribbean public and private entities, including 15 federal agencies, 50 state and provincial wildlife agencies, 29 nongovernmental organizations (NGOs), 15 organizations representing the forest products industry, and many universities and foundations. USAID, the U.S. Forest Service, Bureau of Land Management, Fish and Wildlife Service, Park Service, Environmental Protection Agency, and Department of the Navy signed a memorandum of commitment to the program in May 1991.

Highlights for FY 1993-94

- Supported purchase by Costa Rica's Tropical Science Center of a 103-acre farm, containing the last example of premontane wet forest in the area, as an outdoor laboratory.
- Financed migratory bird monitoring in Mexico's El Cielo Biosphere Reserve, providing training for four Mexican students and information on winter ranges.
- Supported workshop, hosted by the NGO Pro-Iguana Verde and attended by 25 biologists, to develop coordinated regional bird-monitoring program.

Project at a Glance

Funding: Life-of-Project \$1,250,000
Biodiversity Percentage 100%

Project Duration: FY 1991-96

Implementors:
National Fish and Wildlife Foundation

USAID Project Officer:
Karen Menczer/USAID/LAC

Background

More than half of the almost 500 land birds in the United States migrate to the neotropics (tropical zones of the Western Hemisphere) for the winter. Recent studies show that population declines have occurred in 71 percent of these species during the last several decades because of habitat loss and fragmentation, changes in forest composition, human-related increases in predation and parasitism, and pesticide use.¹ This decline has made coordination among national and international migratory bird conservation efforts increasingly critical to the survival of these birds.

Project Implementation

USAID funds NMBC's competitive grants program for projects in Latin America and the Caribbean, which NFWF administers.

NMBC emphasizes research, population and habitat monitoring, management, training, and public education on migratory birds in the Americas. Proposals are due twice a year on April 15 and November 15. Three NFWF liaisons, stationed in Mexico, Central America, and the Caribbean (the latter two through USAID funds), help grant seekers develop proposals based on Partners in Flight and USAID conservation guidelines and priorities; a panel of Partners in Flight members, which includes USAID, assesses the proposals. NMBC funding emphasizes proposals in which researchers from the Latin American and Caribbean area are the prime investigators or collaborators.

Project Progress

During its initial two years, the program awarded grants totalling approximately \$473,100. Specific projects aim to affect conservation at a

regional level; others focus on local efforts. For example, a \$22,000 grant to the Tropical Science Center (TSC) supports the purchase and conservation of Finca Los Cusingos, the farm of renowned ornithologist Dr. Alexander Skutch. This 103-hectare farm in southern Costa Rica's San Isidro Valley, which Dr. Skutch hopes to preserve as an "outdoor laboratory," is now the only example of premontane wet forest in the valley, which has been deforested for farming. Skutch identified 307 bird species on his property, 143 of which nest there. TSC purchased the property from Dr. Skutch in May 1993 and plans to preserve it as Skutch's legacy; allow very limited visitation by researchers, naturalists, and bird-watchers; and carry out research and monitoring.

Six of NMBC's first grants supported monitoring activities. For example, the project's first grant (awarded in April 1992) involved long-term monitoring of migratory birds in Mexico's El Cielo Biosphere Reserve. In this \$30,000 project, collaborators from the University of Missouri, Texas Southernmost College, and Mexico's University of Tamaulipas conducted a census of wintering migrants and documented their migration habits and population trends. In addition, the project provided training in bird monitoring and measurement techniques for four Mexican students, one of whom has now chosen ornithology as a career. Project researchers presented their findings in a November 1993 symposium put on by the Fish and Wildlife Service in Veracruz, Mexico. The researchers' conclusions (to be published) are that the density of wintering birds in the El Cielo reserve is as high as anywhere else in the tropics and that major wintering grounds cover a much larger area than was previously believed.

Several projects aim to develop local or regional conservation models. A \$128,000 grant to Costa Rica's

Monteverde Conservation League supports a pilot project to protect and revegetate forest corridors,² with subcomponents of research and participation by local farmers. Activities under this project will lead to habitat conservation as well as provide direct economic returns to the farmers. The project, which began in October 1992, has developed a map of the most important corridors in the area and has involved 23 farmers in the protection of 61 hectares of forest in three pilot areas. Three extension agents (who also received training on reforestation) worked with the farmers. To minimize wood extraction for fencing, the project has supported construction of cement and iron posts as well as the planting of nearly 5,000 living (sapling tree) fence posts. These fence posts, termite resistant as well as ecologically sound, now comprise 14,565 meters' worth of fencing. The league's nurseries have produced over 10,000 native trees for reforestation of altered corridor areas.

This project has become a model for conservation on a local level and is adaptable to a regional level. Research to adapt the Monteverde experience to protection on Costa Rica's Atlantic slope has begun.

In February 1994 the NGO Pro-Iguana Verde hosted a USAID-supported workshop in Costa Rica to develop a coordinated regional program for monitoring birds. Twenty-five biologists attended the event. As of May 1994 the proceedings were being prepared for publication.

NMBC received fifteen proposals for the November 1993 deadline. As of May 1994, the project tentatively approved nine grants totaling about \$625,000 to Central American, Caribbean, and U.S. NGOs and universities. Examples of new activities include three projects by Jamaican NGOs addressing migratory bird habitat conservation in several Jamaican ecosystems. Other proposals include biodiversity studies, training

programs, management plans, mapping, and a workshop on migratory shorebirds. NMBC is considering six additional proposals received by its April 15, 1994, deadline.

—Stephanie Joyce, Datex
5/30/94

¹ C. H. Robbins, J. R. Sauer, R. S. Greenberg, and S. Droege, "Population Declines in North American Birds That Migrate to the Neotropics," *Proceedings of the National Academy of Science*, 86 (1989): pp. 7, 658–662.

² Forest corridors are patches of terrain (usually privately owned and farmed) connecting two or more larger areas, which may or may not be protected.



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



Natural Resource Management and Protection

LAC

Belize

505-0043

U SAID's five-year (FY 1991–1995), \$8.5 million *Natural Resource Management and Protection* (NARMAP) project began in 1991 to help Belize balance economically sound agricultural development, natural resource conservation, and environmental protection. This large-scale project takes a holistic approach to natural resource management by designing activities that allow the education and involvement of Belizeans at all levels.

Highlights for FY 1993–94

- Awarded 20 scholarships to degree programs at U.S. institutions for ten undergraduate, four associate, and six master's degree students in agronomy, natural resource management, recreation management, and integrated pest management.
- Developing soil conservation techniques and investigating alternative cash crops to replace soil-depleting citrus crops in Stann Creek.
- Testing pesticide use on seedlings to avert insect-borne viral infections and increase yields of important crops such as tomatoes and sweet peppers in the Cayo district.
- Initiated boundary marking in two important Belizean protected areas: Cockscomb Basin Wildlife Sanctuary and Freshwater Creek, one of the country's few remaining broadleaf forests.

Project at a Glance

Funding: Life-of-Project \$8,500,000
Biodiversity Percentage 7%

Project Duration: FY 1991–95

Implementors:

World Wildlife Fund
Winrock International
Government of Belize Ministries of Natural
Resources, Agriculture, and Tourism and the
Environment
Various local NGOs

USAID Project Officer:

Joseph McGann/USAID/Belize

Background

Belize's wealth of natural resources consists of diverse terrestrial ecosystems that include highland and lowland forests. Its marine systems include coastal lagoons, mangrove swamps, sea grass beds, and a spectacular coral reef, ranking second in the world behind Australia's Great Barrier Reef.¹ But Belize has depended for its economic growth on resource extraction, such as agriculture, logging, fishing, and tourism. Although policies for resource management and conservation exist, clouded lines of authority as well as limited technical and financial resources hinder their implementation. The result has been extensive natural resource depletion. Over the last two years, for example, clearcutting for agriculture, farming of fragile lands, and improper use of agrochemicals have occurred. Soil erosion from deforestation has muddied the water near the coral reef and threatens hillside farming yields. Tourism has already supersaturated several important keys. Although Belize still retains an estimated 60 to 70 percent of its forest cover (compared with El Salvador's 15 percent), much of that cover is subject to degradation. Exotic native woods such as cedar and mahogany have been extensively logged. Belize needs to clarify its resource management policies and develop strategies for sustainable resource use to avoid falling victim to the cycle of deforestation and pollution that has devastated much of Central America.

Project Implementation

The major technical components of the project are environmental planning and monitoring, sustainable agriculture, and forestry development. Government of Belize agencies implementing NARMAP include the Ministries of Natural Resources, Agriculture, and Tourism and the Environment, especially the latter's Department of the Environment (DOE). World Wildlife

Fund (WWF) works with local nongovernmental organizations (NGOs) on all components. Winrock International (WI) specializes in sustainable agriculture.

Project Progress

Two aims underlie project activities: to increase public and private awareness and understanding of natural resource management and provide formal and informal technical knowledge for local people. NGO representatives sit on the project's technical committees for environment, forestry, and agriculture, which meet monthly to give technical direction to the project. To introduce and discuss proposed legislation for environmental protection, the project sponsors public sector workshops, followed by workshops for industry and other private sector entities.

Informal training workshops support activities in all three components. NARMAP also provides formal training. The project has awarded 20 scholarships supporting degree programs at U.S. institutions. Eleven scholarships went to government personnel and nine more to persons outside the government of Belize. The scholarships include ten undergraduate, four associate and six master's degrees. Concentrations include agronomy, forestry, natural resource management, recreation management, and integrated pest management.

Environmental planning. One aim of this component is to clarify the role of the DOE, which was created in 1989 to monitor the Belize environment. NARMAP is helping the DOE develop subsidiary legislation related to the 1992 Environmental Protection Act, including guidelines and procedures for environmental impact assessments. The DOE has also drafted a law on water effluent standards. Both laws were to have been signed by the end of 1994.

NARMAP will launch a two-pronged public awareness campaign, using media and schools to raise environmental consciousness. Local consultants designed the activity, which will transmit information about environmental issues to the general public through radio—the most popular mass medium in Belize—and local schools. A workshop on implementation of the project is scheduled for late May; following that, NARMAP will begin accepting proposals from local firms for the radio and school campaigns.

Sustainable agricultural production.

This component gives priority to promoting conservation practices, maximizing use of good quality land, and proper on-farm management, including appropriate technology for fragile lands, with the ultimate goal of increasing farm yields and incomes.² In 1993 field activities began in three regions: the traditional Mayan Indian communities in the lowland Toledo district (rice); hillside communities of Stann Creek district (citrus); and hillside communities in the Cayo district (vegetables).

In Toledo, NARMAP promotes a shift from slash-and-burn agriculture to more sustainable farming. The project is focusing on intensifying land use while maintaining or enhancing crop production and land quality. Winrock is promoting the use of *mucuna*, a leguminous plant, as a cover crop, combined with modest amounts of fertilizers, as a means of restoring land fertility. A systematic assessment of grain losses in field and storage has begun.

Citrus farming dominates the Stann Creek economy. Production has expanded into areas unsuitable for farming, such as steep hillsides, which are deforested to make way for the farms. Preliminary studies have shown that tree growth is depressed by 60 percent after the first year in such locations. NARMAP is trying to diversify farming in Stann Creek and to promote soil conservation through the use of contour farming and cover crops.

The project is also working to convince farmers to rehabilitate old citrus farms rather than moving to new areas.

NARMAP works with the economic and ecological effects of citrus farming. A study of the citrus farm economy through a range of ecologies, now under review by project and industry personnel, shows that citrus farming is most productive in alluvial soils. The study also indicates that the citrus market may slow or flatten in the future—a good reason to turn to other crops.

The project also has begun investigating cassava as an alternate cash and feed crop in Stann Creek. Cassava grows well in local flatland soil. A preliminary study, factoring in feed, production, and technology costs, showed cassava production to be 50 percent cheaper than corn. The project has begun conducting trials to identify ways of producing and processing cassava commercially.

In Cayo, a hilly district where continuous farming leaves the shallow soil vulnerable to erosion, efforts have begun to promote soil conservation and proper pesticide use for vegetable production. The project has established four model farms, which use contour farming and cover crops to preserve soil, and has begun working with vetiver grass to establish soil-saving "biological hedgerows" in the district's steep, often overgrazed pastures. NARMAP is promoting integrated pest management and is also testing seedling-stage use of pesticides. Preliminary tests show that this early protection may avert insect-borne viral infections and increase yields of important crops like tomatoes and sweet peppers.

A baseline survey report established indicators of yield and income in the three areas, but field activity is still too new for measurable changes to have occurred.³

Training conducted in 1993 included a workshop on sustainable agriculture, a course on safe pesticide management, and a workshop for schoolteachers on agriculture. Also, to improve land

titling in the project areas, the government of Belize and NARMAP began a land survey in Stann Creek in March 1994. Surveying in Cayo were to have begun in September 1994.

Forestry. This component is designed to reduce deforestation and decrease threats to protected habitats. Fieldwork, policy formation, and NGO involvement support efforts in forest and habitat protection.

Operating on the premise that much encroachment occurs because local people are unaware of the precise locations of protected areas, NARMAP has begun boundary marking in two important protected areas: Cockscomb Basin Wildlife Sanctuary, Belize's foremost reserve, which is greatly pressured by encroachment, and Freshwater Creek, one of the country's few remaining broadleaf forests. The project's physical presence is also being established in Cockscomb and Blue Hole National Park. Construction of conservation posts and residential facilities for rangers has started; six more protected areas are slated for similar construction.

Belizean government agencies and NGOs are working on a National Protected Areas Management Plan, which will ultimately ensure the establishment of fixed boundaries for parks and reserves and guide environmentally sound, sustainable decisions regarding their use and protection. The Belize Audubon Society is working on developing local community liaisons among groups living within protected areas.

Training under the forestry component ensures that the government of Belize and NGOs will have qualified staff able to manage protected areas. Several workshops on forestry took place over the last year. In November 1993 personnel from Colorado State University gave a workshop on conservation management for protected area personnel. Twenty-six people from government and NGOs attended; a follow-up program will use in-country trainers for future courses.

Also in November NARMAP and the Belize Audubon Society sponsored a workshop on the economics of natural resource management. In May 1994 The Nature Conservancy held a week-long workshop on protected area management.

Conservation Development Fund. In late 1993 NARMAP established its \$500,000 Conservation Development Fund, administered by WWF, to support NGO participation in conservation activities. Grants to NGOs and community organizations are between \$2,500 and \$50,000. Beginning in February 1994, NARMAP reviewed 15 proposals. Seven of these have received grants. Projects include: training of ecotourism guides, boundary demarcation, and a project to produce a total of 20,000 posters depicting Belize's natural resources. An additional project to mark the boundaries of Terra Nova, a government-owned park, awaits agreement between the government and the NGO proponent on a management plan.

Conservation and Environmental Data System. Consultants have begun designing the Conservation and Environmental Data System (CEDS), which will provide a computer data base on resource conservation. CEDS users at several locations will be able to download data from a central point. Present efforts aim to establish protocols on data sharing and standardizing systems. This preparatory work will be finished by 1995.

—Stephanie Joyce, *Datex*
6/7/94

¹ World Resources Institute, *The Information Please Environmental Almanac* (New York: Houghton Mifflin, 1993), p. 612.

² NARMAP Project, *Proceedings of Workshop on Sustainable Agricultural Production* (San Ignacio, Belize: USAID, May 1993).

³ Edward Pulver and Lalit Arya, *Results of Baseline Survey in Toledo, Stann Creek, and Cayo Districts* for the NARMAP project (Belize: USAID, 1993).

USAID

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



LAC

Costa Rica

515-0255

Forest Conservation and Management Project

USAID's *Forest Conservation and Management Project* (BOSCOSA) in Costa Rica is successfully linking conservation and economic development in the Osa Peninsula and the preservation of forest cover in the 62,000-hectares Golfo Dulce Forest Reserve, one of six protected areas on the peninsula. USAID has been the largest of five principal project donors, initially providing a three-year, \$1 million grant in 1990 and more recently a three-year, \$900,000 project extension signed in June 1993. USAID's contribution has been instrumental in leveraging additional donor funds for the initiative and in securing almost \$1 million for 11 grassroots organizations.

The Osa project's mandate is to complement park protection activities inside the Corcovado National Park, the crown jewel of Costa Rica's park system, by supporting an integrated program for sustainable development in the Golfo Dulce Forest Reserve, which serves as a multiple-use buffer zone to Corcovado. By creating economic and social incentives for sustainable development and conservation, BOSCOSA aims to shift the local economy from practices that historically caused environmental degradation to those that promote the rational use of the natural resource base. To this end, the project supports components in sustainable forestry, agriculture, environmental education and training, ecotourism, and research.

Highlights for FY 1993-94

- Leveraged additional donor funds for BOSCOSA through USAID contribution and secured almost \$1 million for grassroots organizations.
- Drafted nine sustainable management plans covering 100 hectares of tropical forest and granted \$50,000 for small-scale initiatives preserving 800 hectares of primary habitat.
- Helped maintain soil fertility on 50 farms through agroforestry program and, through root and tuber program, generated \$52,000 in export earnings for 350 beneficiaries.
- Constructed an education and training retreat center and sponsored 15 environmental and training seminars for 250 participants.
- Twelve "paraforesters" completed a yearlong community forestry course and formed a private association to provide agroforestry extension to local communities.
- Completed three major studies: an investigation of the evolution of environmental degradation in the project site, a management plan for Golfo Dulce Forest Reserve, and a strategy for agroecological zoning and environmental monitoring.

Project at a Glance

Funding: Life-of-Project \$1,900,000
Biodiversity Percentage 20%

Project Duration: FY 1990-95

Implementors:
Fundación Neotrópica

USAID Project Officer:
Michael Maxey/USAID/Costa Rica

Background

The Osa Peninsula is home to the only remaining lowland rain forest on Central America's Pacific coast. It harbors extraordinary and unique biological diversity—over 3,000 species of plants, 375 birds, and 104 mammals, many of which are endangered. Since 1975 when the first of six protected areas was established in the region, cattle pastures and farms have rapidly displaced the tropical forest. Insecure land tenure, social conflicts among the 12,000 residents and colonists, and the lack of financial and technical support for rational development have contributed to untenable land use throughout the peninsula.

Project Implementation

BOSCOSA is administered by the Costa Rican nongovernmental organization (NGO) Fundación Neotrópica and receives its core financial support from USAID/Costa Rica. Among the variety of donors that have supported BOSCOSA's initiatives is World Wildlife Fund's Tropical Forestry Program, which originally designed BOSCOSA in collaboration with Fundación Neotrópica and has provided financial support since the program's inception. BOSCOSA works with several government agencies. Staff members are actively involved in various regional land use planning initiatives with the Ministry of Natural Resources, Energy, and Mines. They also have designed forest management plans in cooperation with the Costa Rican Forest Service.

Project Progress

According to the project's environmental assessment released in March 1993, significant strides have been made in placing sustainable land use and conservation at the forefront of development activities in the Golfo Dulce area.¹ By the end of 1993, for

instance, various programs brought 6,800 hectares into appropriate land use; eight community groups were established and trained; local attitudes toward forest conservation and management improved considerably; and over 50 jobs were created, the majority in self-supporting economic activities such as handicrafts, wood processing, tree nurseries, and tourism services.

Forestry. Within the forestry component, BOSCOSA's activities proceeded on several fronts. One of the primary goals following USAID's project extension in June 1993 was to bring 2,000 hectares of forested land into sustainable timber production and conservation by 1996 by providing technical assistance in forestry management to landowners and local cooperatives. In 1993 project staff drafted nine forest management plans covering some 100 hectares of primary and secondary forest. Preparing these management plans was an involved process that required comprehensive forest inventories and biological and physical surveys of the areas to be harvested. To minimize the ecological impact of extracting timber, the project promoted a natural forest management system that mimicked natural forest regeneration by removing only selected trees in ways that maintained surrounding vegetation and soil structure. For primary forests that were ecologically significant, staff advised landowners to adopt strict preservation measures.

To buttress these efforts, small grants (totaling \$50,000 through a special trust fund) were awarded to a variety of sustainable development initiatives and to landowners to maintain a total of 800 hectares of primary forest in its natural state for five years.

A project reforestation program, responsible for recovering 290 hectares of previously degraded land, was phased out in 1993 because other projects launched their own reforestation initiatives on the Osa Peninsula and BOSCOSA staff decided to direct their efforts to the sustainable manage-

ment of existing forests. Two community-operated nurseries launched under BOSCOSA maintained a robust business, selling over 110,000 seedlings of mostly native species.

Sustainable agriculture. The goal of this component is to maximize agricultural income on land already altered as a way to reduce the risk that primary forests would be cleared even further for farming. To this end, BOSCOSA promoted nontraditional perennial crops and small-scale agricultural processing industries. Surveys conducted under the March 1993 assessment indicated that BOSCOSA's agroforestry program in nontraditional crops—guanabana, peach palm, and plantains—yielded tangible ecological benefits on 50 farms, helping to maintain ground cover and soil fertility. The project's root and tuber program, which focused on selling cassava, *ñame*, and *tiquisque* for export, showed similar ecological results and generated over \$52,000 for 350 beneficiaries. BOSCOSA's agricultural extension was linked to research conducted by project-funded agronomists. In 1993, for example, staff planted two trials of five grass varieties; three did very well.

Finding markets for nontraditional products was a vital element in the project's success. Staff conducted five studies on marketing crops from perennial trees and roots and tubers. By the end of 1993, a processing and packing center for these products had been established.

Improving security of land tenure was another activity undertaken to promote rational land use in the Golfo Dulce area. Project staff held a workshop in land titling for 120 public employees and helped 18 farmers apply for title to 800 hectares. By gaining legal land title, farmers will reap the long-term benefits from their investment in soil conservation and be able to take advantage of agricultural credits from banks.

Environmental education and training. This component involved substantial effort to heighten environmental awareness throughout the peninsula. Fundación Neotrópica constructed a Tropical Youth Center, a four-building educational and training retreat. Staff produced a series of educational materials for primary schoolchildren, held special environmental awareness classes for 70 students, and conducted workshops for 30 teachers on how to structure environmental classwork. In addition, an environmental radio series reached children outside the formal educational system.

For the Osa Peninsula's adult population, BOSCOA sponsored 15 training seminars in 1993 for ten community groups on topics such as business administration, financial management, and tourism. Over 150 participants attended. Seminars on handicraft production were among the most popular, reaching mainly women's and indigenous groups.

In July 1993, 12 "paraforesters," local residents elected as environmental leaders, completed a yearlong training course in community forestry that was conducted under the auspices of World

Wildlife Fund (WWF). Following graduation, the 12 formed a private association to provide extension services in small-scale agroforestry.

Ecotourism. The Osa Peninsula's natural splendor holds great promise for providing local residents with yet another conservation-based source of income. Fundación Neotrópica worked closely with governmental and community organizations to set up an ecotourism information office and chamber of tourism on the peninsula. Project staff published a visitor's guide to the peninsula, and naturalists trained by Fundación Neotrópica offered tourists the opportunity to hike on two trails cleared through rain forest in 1993.

Research. To ensure that the Osa Peninsula's development is grounded in solid scientific information, the project involved the University of Costa Rica in San José in launching environmental monitoring and management studies. The basis for these activities was a rapid ecological assessment conducted in August 1992 by a multidisciplinary team of U.S. and Costa Rican scientists sponsored by

WWF.² They inventoried and analyzed the peninsula's biological diversity and issued a set of recommendations for its protection.

To follow up the rapid assessment, project staff conducted additional scientific research and concluded three major works by the end of 1993: a report on the evolution of the Osa Peninsula's forested and highly degraded ecosystems, a management plan for the Golfo Dulce Forest Reserve, and a strategy for agro-ecological zoning and environmental monitoring. They also began mapping wetlands, vegetation, and coastal zones.

—Michele Zador, *Datex*
6/2/94

¹ Jim Tolisano, Peter Frumhoff, and Robert Lawton, *Environmental Awareness, BOSCOA: The Program for Forest Management and Conservation on the Osa Peninsula, Costa Rica*, prepared for USAID/Costa Rica (Washington, D.C.: Biodiversity Support Program, 1993).

² Richard Soto S., *Evaluación Ecológica Rápida: Peninsula de Osa, Costa Rica* (San José, Costa Rica: World Wildlife Fund and Fundación Neotrópica, August 1992).



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



LAC

Ecuador

518-0069

Sustainable Uses for Biological Resources

USAID's *Sustainable Uses for Biological Resources* (SUBIR) project, initiated in 1991, is a seven-year (FY 1991-97), \$9 million effort to identify, test, and develop economically, ecologically, and socially sustainable resource management models in three Ecuadoran parks and their buffer zones. Activities are under way in three Ecuadoran protected areas: the Cotacachi-Cayapas Ecological Reserve, Cayambe-Coca Ecological Reserve, and Yasuní National Park. The 600,000-hectare Yasuní National Park contains large expanses of moist tropical forests, lakes, and wetlands and is presently threatened by oil interests. Cotacachi-Cayapas and Cayambe-Coca, which encompass biozones ranging from the treeless Andean paramo to lowland humid rain forest, face encroachment by colonists. Indigenous groups live within all three parks.

Highlights for FY 1993-94

- Influential in creating a lumber commission to develop a "smart wood" program certifying the sustainable, ecologically sound harvesting of lumber.
- Launched a paralegal training program addressing land titling and tenure issues, which was officially recognized by Ecuador's National Association of Lawyers.
- Completed mapping of 31 sites, covering 3 million hectares. Involved 100 local people in inventory of plants and animals and trained 10 park rangers, campesinos, and indigenous people as "parabiologists" for ongoing data gathering on park biodiversity.
- Facilitated acceptance of a much contested boundary between two indigenous groups in Yasuní National Park.

Project at a Glance

Funding: Life-of-Project \$9,000,000
Biodiversity Percentage 100%

Project Duration: FY 1991-97

Implementors:

Ecuador's Forestry and Parks Agency and local NGOs

CARE

The Nature Conservancy

Wildlife Conservation Society

U.S. Peace Corps

USAID Project Officer:

Cisco Ruybal/USAID/Ecuador

Background

Ecuador ranks among the world's richest countries in terms of biological diversity. Its territory includes 25 of Holdridge's Life Zones, including tropical lowland forests, cloud forests, and the Galapagos Biome, and supports 1,550 bird species and over 20,000 plant varieties. The government of Ecuador has set aside about 3.5 million hectares, or 13 percent of Ecuador's territory, in parks and reserves; however, colonization of park buffer zones, expansion of the agricultural and coastal farming frontiers, and mining explorations have put pressure on these protected areas and their buffer zones. Ill-defined public policy regarding conservation and scarcity of trained Ecuadoran professionals have further thwarted the preservation and sustainable use of natural resources.

Project Implementation

In-country project implementors are the government of Ecuador's National Forestry and Parks Agency (INEFAN) and local nongovernmental organizations (NGOs). CARE, the project's major implementor, works through subcontracts with The Nature Conservancy (TNC) and the Wildlife Conservation Society (WCS). The U.S. Peace Corps is helping implement the project at local sites. The project's subcomponents include policy analysis and training, organizational development, protected area management, development of ecotourism, improved land use, and research and monitoring.

In its first phase, expected to end in December 1994, SUBIR concentrated on stemming encroachment into protected areas, strengthening local and national conservation policy, and establishing pilot projects.

Project Progress

Policy analysis. This component integrates policy analysis into the

project framework by linking "on-the-ground" experience with national perspectives. Extensive work with INEFAN and the government has helped to reform environmental policy. SUBIR is also helping develop a regulatory regime to contain oil industry pollution in the Ecuadoran Amazon and a framework for managing the country's protected areas. The project promotes policy changes that encourage reforestation of degraded lands in northwestern and eastern Ecuador and is developing models for use and management of protected lands by NGOs.

The government is working on an environmental action plan and in 1993 created a presidential task force to guide its development. With Fundación Natura, the task force is working on plans to host Ecuador's Second Environmental Congress (the first took place in 1988). This gathering, scheduled for February 1995, will present the government's environmental action plan for the approval of all Ecuadoran stakeholders in environmental issues.

The project's influence has contributed to the creation of a lumber commission (including representatives from timber companies, environmental groups, NGOs, the government, and indigenous federations) to develop a "smart wood" program. The "smart wood" seal certifies that lumber is harvested in an ecologically sound and sustainable manner. Preparations for sustainable management and fair market plans are still in the early stages. Additional policy-related activities are described in the component to which they apply.

Organizational development. This component aims to strengthen grassroots groups, indigenous organizations, colonist associations, and NGOs so that they can implement natural resource conservation activities. SUBIR seeks this objective through training, technology transfer, and development of institution-strengthening plans.

SUBIR works with indigenous organizations, campesino groups, and local NGOs living in the target areas and their buffer zones. The project coordinated and financed 13 training events, covering project planning and administration and interpretation of environmental laws. SUBIR has also worked extensively with issues surrounding land tenure, an important and volatile issue in rural Ecuador. In the fall of 1993, 15 community leaders, representatives from the government of Ecuador, and NGOs attended workshops on land titling. A paralegal training program addressing land titling and tenure issues began in the spring of 1994. Ecuador's National Association of Lawyers has granted this program official recognition and has signed the diplomas for community-based paralegals. In the April-May 1994 evaluation of Phase I activities, Tropical Research and Development cited SUBIR's paralegal program as a success story.¹

Natural area management. This component's purpose is to conserve biodiversity in the three project sites. Activities designed to involve and benefit the local communities include developing protected area management plans and park infrastructure, boundary marking, and training.

An important objective of the natural area management component is the drafting with INEFAN of a national policy statement covering the management (including community involvement) and administration of protected areas. A draft of this statement is now undergoing revisions by technical staff; the revised version is expected in 1994. An emergency management plan for Yasuni National Park has received approval and has publication scheduled before the end of 1994. Four rapid ecological evaluations have provided indicators for measuring the impact of SUBIR's activities.

Field activities predominate under this component. SUBIR supported the construction of seven guard houses in

the three project sites and provided equipment and on-the-job training for rangers. Border demarcation has successfully incorporated local communities into park management, especially in the Cayambe-Coca reserve. About 50 to 60 families have attended workshops on the reserves and the principles of conservation.

As part of its effort to involve local and minority communities in protected area management, SUBIR worked with Chachis and Afro-Ecuadorans in Cotacachi-Cayapas to help balance community land use with commercial (lumbering) interests. In 1993 the project sent a group of Chachis and Afro-Ecuadorans to visit parks in Mexico and Costa Rica where they observed the roles of native groups in managing protected areas. Following this visit, the Chachis and Afro-Ecuadorans began investigating ways of engaging in plantation forestry using native tropical species. In the spring of 1994 SUBIR planned an analysis of Chachi land use in Cotacachi-Cayapas. The analysis will include mapping of various types of land use (e.g., sacred land, hunting grounds, farming, and natural resource extraction areas) as well as mapping unique botanical attractions for possible development of ecotourism.

Ecotourism. This component aims to increase the perceived value of biological diversity, provide a source of recurrent income for the management of protected areas, and generate local employment.

SUBIR conducted ecotourism surveys in the three protected areas and facilitated a visit to Zabalo, an Indian community in Cuyabeno Animal Reserve near Yasuní. This community has developed a profitable tourist operation. Interested communities have begun developing plans and, in some cases, generating revenue from ecotourism enterprises.

San Miguel and Playa de Oro, in the buffer zones of the Cotacachi-Cayapas park, have begun tourism enterprises.

San Miguel received several hundred visitors in 1993; Playa de Oro received 64. (The community in Playa de Oro also rejected a proposed contract from a lumber company, choosing to develop ecotourism instead.) Early in 1994 ecotourism workshops were held in Cayambe-Coca—one in Papallacta, site of an active hot spring, and another in Oyacachi, a very remote but stable highland community of subsistence farmers and extractive forest harvesters. Both communities agreed to increase their investigation of ecotourism opportunities.

Improved land use. This component seeks to improve land use in protected area buffer zones through community forest management, agroforestry, improvement of agricultural practices, and promotion of nonforest products. Underlying the project's activities is the assumption that improving the productivity, economic viability, and sustainability of resource use will reduce pressure to clear wildlands for agriculture.

Project personnel have coordinated 12 training events on gardening, nurseries, forest inventory, and agroforestry in all the project's target areas. In addition, SUBIR produced a diagnostic report on agroforestry and a guide to forestry inventories.

In Cuellaje, in the upper reaches of Cotacachi-Cayapas, SUBIR has worked with farmers on intensifying (rather than extending) their land use to minimize the effects of agriculture. Working through the local farmers' association, project personnel have introduced the concept of multiple cropping systems and alternative vegetables and fruits, including fruiting trees. In the cattle-raising area of Borje, at the edge of Cayambe-Coca, SUBIR introduced the idea of using living fence posts (which do not rot and thus reduce the need to cut wood) of leguminous tree species. The project also helped ranchers intensify their grazing practices. In Coca, a river community on the Río Napo, cultiva-

tion of fruits and leguminous nitrogen-fixing plants such as peanuts has begun. Some 15 or 20 activities in this area focus on convincing farmers to conserve wood species and to cultivate native plants.

Research and monitoring. At the beginning of the project, none of the parks had been inventoried or thoroughly studied. SUBIR's monitoring component aims to provide basic knowledge of the dominant social factors in the project sites, and to inventory local biological resources and their possible economic uses in park buffer zones. Monitoring efforts are identifying the effects of national policy on resource conservation.

Fifteen applied studies are in various stages. The project has completed mapping of 31 sites, covering some 3 million hectares. Baseline data have been collected. Information gathered includes surveys on plant species, mammals, birds, reptiles, and amphibians as well as on attractive plants or areas suitable for tourism. About 100 local people performed much of this inventory under the supervision of professional contract biologists. The project also involved about ten people (park rangers, campesinos, or indigenous people) in training as "parabiologists" whose ongoing data gathering will provide a continuous flow of information about biodiversity in the parks.

In late 1993 SUBIR presented 12 documents to the government of Ecuador: a manual on research describing the basic methodology for obtaining baseline information and 11 documents containing the baseline data obtained in two years of monitoring.² In April 1994 the government of Ecuador sponsored a workshop on the results of this data gathering; a volume on SUBIR's resource inventory findings will appear in June.

Project-monitoring activities also focused on oil policy. SUBIR personnel met with Ecuadoran government officials to discuss the environmental

action plan for the development of an access road through Yasuní National Park for an oil development project. At INEFAN's request, USAID coordinated the monitoring of road-building activities to determine whether private-sector environmental management plans were being followed.

Minority participation. Underlying all SUBIR's activities is a commitment to involve local people, including indigenous groups and women, at all possible levels. This is especially vital for resolving land tenure and territory issues for indigenous groups such as the Huaorani, Cofani, Quichua, and Chachi. The project has had some direct and indirect impacts on the empowerment of these groups.

Project activities have helped Chachi women enter "green" export markets for their basket weaving and other types of sustainable production. Afro-Ecuadoran women in Cotacachi-Cayapas are presently exploring similar opportunities.

In December 1993 SUBIR helped INEFAN draft agreements with two indigenous federations in Yasuní National Park. Work in Yasuní

facilitated the acceptance by the Huaorani and Quichua groups of a much-contested boundary between their territories, which had been the source of bitter dispute before the project's intervention.

SUBIR has collaborated with the centrally funded USAID project *Gender in Economic and Social Systems* (GENESYS) as part of its effort to include all representative minorities. GENESYS advisors helped SUBIR staffers design a household survey of income sources and environmental resource use in the buffer zones near the three protected areas.

—Stephanie Joyce, *Datex*
10/24/94

¹ Tropical Research and Development, *Sustainable Uses for Biological Resources (SUBIR) Project: Phase I Evaluation* (Gainesville, Fla.: Tropical Research and Development, June 14, 1994).

² These include the following: Luis Suárez and Patricio A. Mena, *Manual de Metodologías Para Inventarios Faunísticos* (Quito: Ecuadoran Foundation for Ecological Studies, 1993).

Patricio A. Mena, ed., *Seminario de Etnobotánica y Valoración de los Recursos Faunísticos Silvestres* (Quito: Ecuadoran Foundation for Ecological Studies, 1993).

Carlos E. Cerón et al., *Diversidad, Composición Vegetal, y Notas Etnobotánicas en la Comunidad Cofán de Sinagüé, Provincia de Sucumbios, Ecuador* (Quito: Ecuadoran Foundation for Ecological Studies, 1993).

R. Alarcón et al., *Las Plantas de los Quijos-Quichua del Alto Napo, Ecuador* (Quito: Ecuadoran Foundation for Ecological Studies, 1993).

Esteban Suárez R., *La Importancia de los Roedores y los Marsupiales Silvestres en la Dieta de las Comunidades Afroesmeraldeñas y Chachis en la Zona Baja del Área de Influencia de la Reserva Ecológica Cotacachi-Cayapas, Ecuador* (Quito: Ecuadoran Foundation for Ecological Studies, 1993).

Marco Antonio Altamirano Benavides et al., *Diversidad y Abundancia Relativa de la Herpetofauna en Sinagüé Sucumbios, Ecuador* (Quito: Ecuadoran Foundation for Ecological Studies, 1993).

Patricio Mena Valenzuela, *Diversidad y Abundancia Relativa de los Mamíferos en Sinagüé, Sucumbios, Ecuador* (Quito: Ecuadoran Foundation for Ecological Studies, 1993).



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



Coastal Resources Management Project

LAC

Ecuador

936-5518

The eleven-year (FY 1985–94), \$2.9 million Ecuador project forms part of the centrally funded *Coastal Resources Management Project* (CRMP) (described in a separate project profile), implemented by the University of Rhode Island (URI), and has received financial support from the USAID mission in Quito. Ecuador was chosen as one of three CRMP pilot countries because it serves as a microcosm for coastal resource conflicts affecting Latin America.

Since its inception in 1985, the Ecuador CRMP has been a testing ground for new ideas and methodologies in sustainable development and integrated coastal resource management. The project's basic premise has been that coastal issues of common interest to communities throughout Ecuador need to be addressed initially in a few demonstration areas where attention can be focused on local participation and feasibility testing. Once coastal management methodologies are successfully developed at the local level, they can be applied on a national scale and offered as models to other Latin American countries confronting similar coastal degradation.

Highlights for FY 1993–94

- The Inter-American Development Bank approved a \$13.4 million loan in August 1993 to support full implementation of Ecuador's coastal zone management program.
- Set up coastal management committees in five specially designated zones (ZEMs) comprised of local government officials, resource user groups, and community members to oversee implementation of community-based ZEM management plans.
- Encouraged local participation in coastal management through grassroots exercises in mangrove protection, sanitation, fisheries, conservation education and training, and environmental monitoring.
- Documented nine years of its project experience in 15 review and policy papers in key management theme areas. Disseminated lessons learned through local, national, and international training seminars.
- Pilot program won both awards and accolades from local NGOs and international coastal managers for its outstanding contribution to conservation. At the local level, CRMP registered sharply increased public pressure to enforce coastal protection laws.

Project at a Glance

Funding: Life-of-Project \$2,900,000
Biodiversity Percentage N/A

Project Duration: FY 1985–94

Implementors:
University of Rhode Island's Coastal Resource
Center

USAID Project Officer:
John Wilson/USAID/Global

Background

Forty percent of Ecuador's 11 million people live on the coast and rely on its resources for their livelihood. Over the last 30 years, however, environmental degradation has become widespread. Through the destruction of 42,000 hectares of mangrove forest, the shrimp mariculture industry—a major foreign exchange earner—not only has contributed to disruption of traditional mangrove forestry activities but also to the decline of shellfish and finfish habitat and the displacement of fishing villages. Water pollution from agrochemicals and untreated urban and industrial waste, land use conflicts among competing resource users, siltation of estuaries, and overfishing have caused the virtual collapse of some coastal ecosystems, resulting in lower quality of life for coastal residents. Before the USAID project, the governance of these resources was weak and sectoral in scope. No constituency existed for the sustainable management of closely coupled coastal resources, and the people whose livelihoods depended on these resources had little say about their development and use.

Project Implementation

During its initial stages in the mid-1980s, CRMP prepared profiles for each of Ecuador's four coastal provinces. These profiles examined and recommended management alternatives on key issues—shrimp mariculture, mangrove protection, water quality, coastal law enforcement, and shoreline management—incorporating conclusions from open public meetings to explore site-specific problems. The participatory process created widespread support for Ecuador's National Coastal Resources Management Program, established by the republic's president in 1989 with technical assistance from URI. The national program was Ecuador's first integrated, multiagency coastal management

effort. A small technical office was set up in Guayaquil, the country's principal coastal city, to coordinate the program's three components: (1) developing management plans for five specially designated zones known as ZEMs (*zonas especiales de manejo*); (2) establishing seven Ranger Corps, a coastal law enforcement unit comprised of local governmental officials, citizens, and resource user groups; and (3) creating the National Coastal Resources Management Commission, a coordinating body of seven ministries, chaired by the Office of the President, charged with developing and executing national coastal policy. Since 1989 CRMP has assisted the technical office in working with ZEM residents to prepare and begin implementing the required ZEM plans, train and support the Ranger Corps, and work with the National Commission on policy matters.

Project Progress

Many of CRMP's activities in FY 1993 were directed to preparing Ecuador for the full-scale implementation of the national and ZEM-level plans. This is planned for mid-1994 when USAID-sponsored programs will be assumed directly by the government of Ecuador through a \$13.4 million loan from the Inter-American Development Bank.

Implementing ZEM management plans. In May 1992 Ecuador's National Inter-Ministerial Coastal Commission approved management plans for the sustainable use and development of coastal resources for each of the five ZEMs.¹ The approval followed an intensive planning and review process involving substantial input from local resource users, grassroots groups, and governmental officials. Although the ZEMs cover only about 8 percent of the shoreline, they represent a full range of coastal environments. The Machala ZEM in the south includes a rapidly growing urban area that lacks basic sanitation or sewerage facilities.

In the north, the Atacames ZEM is confronted with shrimp farmers encroaching on mangrove forests. The Playas ZEM encompasses a popular and crowded beach resort, while the Bahia ZEM covers a small estuary that borders on wide oceanfront beaches with substantial tourism potential. Finally, the Manglaralto ZEM comprises a fishing village in need of diversified sources of income and watershed management.

In 1993 each ZEM inaugurated permanent coastal management committees that for the first time legally integrated local officials, resource user groups, and community representatives. The committees' mandates were to oversee efforts to implement the ZEM plans, build local technical capacity, and fund selected activities.

With technical support from the CRMP Guayaquil office, the five ZEM field offices worked with communities and resource users to launch a series of "practical exercises." In fisheries and mariculture, CRMP provided extension and training to maximize the efficiency of harvesting shrimp larvae, finfish, and shellfish. For example, a CRMP fisheries expert designed and tested a new net for poor *larveros*, who catch shrimp larvae along Ecuador's beaches for sale to shrimp farmers. The new net proved to be easier to build than traditional nets, caused less damage to the shrimp larvae, and greatly reduced the bycatch of other marine larvae. *Larveros* reported that the quality of their harvest improved considerably with the new net, translating into additional income while lowering their impact on the marine ecosystem.

To protect mangrove forests, CRMP initiated community-based monitoring and management in several ZEMs. In the Atacames ZEM, for example, CRMP worked with a women's cooperative to monitor a parcel of mangroves where members gather conch for sale to restaurants. In the same ZEM, CRMP intervened in a controversial situation where construc-

tion of a shrimp farm threatened a mangrove forest thought to have the oldest and tallest mangroves in Latin America. In the Playas ZEM, fishermen, community members, and shrimp farmers signed a formal agreement to protect a small estuary from mangrove deforestation and water pollution. Other exercises have sponsored beach clean ups and the construction of latrines and a boardwalk through mangroves to promote tourism and environmental education.

In addition, public education assistants in each ZEM developed radio programs and press materials, sponsored weekly environmental programs for schoolchildren, and conducted community contests on coastal themes. These positive community projects have been complemented by support for the Ranger Corps to strengthen enforcement of coastal environmental laws, conduct patrols, and enlist community participation in environmental monitoring.

These community initiatives have created economic incentives for coastal zone management, heightened public awareness and involvement in conservation, helped to build a national team of technical experts with substantial field experience, and provided local leaders with expertise in participatory resource management.

Preparing the Inter-American Development Bank project. In 1992 and 1993, CRMP provided extensive technical assistance to design the four-year, \$13.4 million loan from the Inter-American Development Bank, which will fund the second phase of Ecuador's coastal program. Approved in August 1993 with the first disbursement planned to occur in mid-1994, the loan finances many of the activities specified in the ZEM management plans and significantly expands the country's coastal program in several areas—national policy development, public education, staff training, institution strengthening, and applied scientific research. Other international donors

also have become involved with the project. The United Nations Environment Programme (UNEP) and the Italian government, for example, commissioned CRMP to establish another ZEM for a section of wetlands surrounding a marine park.

Documenting and disseminating the lessons learned. As the USAID portion of the Ecuador experiment in participatory coastal resource management nears completion, CRMP began documenting its experience in 15 review and policy papers. One group of reports traces the evolution of CRMP's efforts in the five ZEMs. Another series provides technical information on management methodologies in five theme areas: mangroves, shrimp mariculture, water supply, wastewater and solid waste disposal, and shoreline and water quality management. Examples of these theme-based reports include a paper that describes the history of CRMP's efforts to foster community involvement in mangrove management;² another examined shore-use management and tourism development, providing specific policy recommendations.³

In training and outreach, the Ecuador pilot was featured at the first international course on special area management in Spanish for Latin American coastal practitioners, which was conducted in Ecuador in April 1993 and repeated in April 1994 by URI in collaboration with Escuela Superior Politécnica del Litoral (the polytechnical university on the coast). Forty course participants received practical training in designing and implementing plans in integrated coastal management, visiting several ZEMs as case studies. As part of CRMP's strong commitment to training and outreach, numerous other courses were held for Ecuadorian coastal managers on topics such as the interpretation of natural areas, conflict resolution, sanitation, and extension related to shrimp farming. CRMP's newsletter *Costas* was distributed

quarterly to key target audiences at the national, provincial, and local levels.

CRMP's successful approach to coastal zone management has won national and international accolades. In July 1993 Fundación Natura, Ecuador's premier nongovernmental organization, conferred its Blue Planet Award on the program for its outstanding work in environmental protection and conservation. The project also was featured in a November 1993 Worldwatch Institute paper⁴ and at the 1993 World Coasts Congress in the Netherlands.

In the field, where the true indicators of project success lie, concern by local communities to protect coastal resources and the environment increased noticeably. CRMP registered a sharp increase in the number of private citizens initiating reports to governmental authorities of illegal mangrove cuttings and noted growing public pressure on the Ranger Corps to enforce coastal protection laws.

—Michele Zador, *Datex*
6/11/94

¹ Programa de Manejo de los Recursos Costeros, *Plan de Manejo de la ZEM Atacames—Muisne*, *Plan de Manejo de la ZEM Bahía—San Vicente—Canoa*, *Plan de Manejo de la ZEM San Pedro—Valdivia—Manglaralto*, *Plan de Manejo de la ZEM Playas—Posorja*, and *Plan de Manejo de la ZEM Machala—Puerto Bolívar—Jambeli*. (Guayaquil, Ecuador: Fundación Pedro Vicente Maldonado, 1993).

² Donald Robadue and Alejandro Bodero, *An Initial Experience in the Co-Management of Mangrove Wetlands in Ecuador* (Narragansett, Rhode Island: University of Rhode Island, draft discussion).

³ J. C. Boothroyd, et al., *Shoreline Characteristics and Management Recommendations for the Coast of Ecuador* (Narragansett, Rhode Island: University of Rhode Island, Programa de Manejo de Recursos Costeros and the U. S. Agency for International Development, 1994.)

⁴ Peter Weber, *Worldwatch Paper 116*, "Abandoned Seas: Reversing the Decline of the Oceans" (Washington, D.C.: Worldwatch Institute, 1993).



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



LAC

El Salvador

519-0385

Environmental Protection

The four-year (FY 1993–96), \$20 million *Environmental Protection* (PROMESA) project directly addresses the USAID/El Salvador mission's strategic objective of improved environmental and natural resource management. Three mutually reinforcing components support the project: activities in policy reform will boost the effectiveness of El Salvador's environmental management, and environmental education activities will boost public understanding and involvement with natural resource conservation. Finally, demonstration projects in the Barra de Santiago watershed will illustrate the techniques and benefits of sustainable natural resource management. El Salvador's Ministry of Agriculture (MAG), the Executive Secretariat for the Environment (SEMA), and the Ministry of Education are PROMESA's Salvadoran counterparts.

USAID submitted PROMESA as part of its commitment to the Global Environment Facility (GEF) fund. The World Bank accepted the project as part of its GEF portfolio. This GEF designation gives PROMESA a higher profile among regional environmental activities.

Highlights for FY 1993–94

- Assisted El Salvador's Executive Secretariat for the Environment in developing a national strategy for environment and natural resource management—officially approved in 1994—and drafting several new environmental laws.
- Assisted the local NGO SalvaNatura in completing baseline studies and mapping of the Barra de Santiago watershed, site of future PROMESA demonstration projects in natural resource management.
- Will begin its environmental education component to improve environmental teaching tools for grade schools and coordinate a mass media effort in 1994.

Project at a Glance

Funding: Life-of-Project \$20,000,000
Biodiversity Percentage 25%
Global Environment Facility
Parallel-Financed

Project Duration: FY 1993–96

Implementors:

El Salvador's Ministry of Agriculture, Executive Secretariat for the Environment, and Ministry of Education
Academy for Educational Development
Abt Associates
More than 100 NGOs

USAID Project Officer:

Peter Gore/USAID/El Salvador

Background

El Salvador's main economic activity, farming, has displaced over 85 percent of the country's original forest cover. Deforestation on this scale has led to extreme soil erosion, siltation, and water pollution, recently augmented by 12 years of civil war. Unabated population pressure and inappropriate use of natural resources are depleting the country's soil, water, forests, and wildlife faster than they can regenerate. At risk are 128 vertebrates, including marine animals, 65 tree species, 52 varieties of orchids, and El Salvador's last natural forests, its coastal mangrove stands. Continuing soil erosion and fouling of watersheds threaten the agricultural activities on which half of El Salvador's economy depends.¹

Project Implementation

PROMESA began in April 1993. Support for the project's educational activities comes from USAID's centrally funded *Environmental Education and Communication Project* (GreenCOM). The Academy for Educational Development will carry out GreenCOM's activities. Abt Associates will implement the policy and demonstration components. In addition, PROMESA will provide activities that strengthen nongovernmental organizations (NGOs) through *Salvadoran Environmental NGO Strengthening* (SENS), whose prime contractor is the Pan American Development Foundation (PADF). Contracts with GreenCOM and Abt Associates were signed in February and March 1994 respectively, so the policy, demonstration, and environmental education components were still in the early start-up stages as of May 1994. Nevertheless, NGO strengthening has been under way since 1992. This report presents highlights from the SENS project activities, which will continue in close coordination with PROMESA.

Project Progress

Environment fund. The El Salvador Environment Fund (FONAES), to be established in mid-1994, will support environmental projects. Two *Enterprise for the Americas Initiative* (EAI) accounts have been established within FONAES. The largest number of NGOs (113) in any EAI country participated in setting up the fund and in the election of its seven-member board of directors. The fund was to begin receiving proposals in June 1994 for small environmental and child development grants; disbursement was expected to begin in July. International donors including Japan, Canada, and possibly the Inter-American Development Bank (IADB), have promised more than \$50 million over the next 20 years.

NGO strengthening. Part of PROMESA's holistic approach involves promoting local support for natural resource conservation by strengthening Salvadoran NGOs, many of which have only formed recently in the wake of the nation's civil war. PROMESA supports these groups by coordinating its activities with the 30-month, \$2 million SENS project, which has been in operation since 1992 and will end in July 1995.

The project's first aim is to strengthen the groups' organizational effectiveness through training in administration, fund raising, board leadership, and technical specialization. The project then accepts proposals and, upon approving work plans, awards small activity grants averaging \$8,000 each to environmental NGOs. Grant renewal depends on successful implementation during the first year. NGOs thus receive incremental funding balanced with training and practical experience.

SENS has working agreements with 17 NGOs. A total of 495 individuals (280 men and 215 women) participated in 24 training sessions in 1993. The sessions covered strategic planning, administrative procedure, subgrant management, project proposal writing,

and technical training. SENS produced draft manuals on reforestation and fund raising, which NGOs can adapt to their own specific needs.

The NGO-strengthening project activities have improved NGO links with other organizations. Of the 17 participating NGOs, nine worked together to prepare 33 small reforestation projects, which will restore cover to a total of 1,000 hectares in nine of El Salvador's 14 departments. The Inter-American Development Bank's Social Investment Fund supports the projects and related training by PADF. All 33 projects have been approved, and 16 received funds in 1994 (up from two projects in 1993 and none in 1992).

Under PROMESA, local NGOs will continue projects already begun in the demonstration zone during the SENS project. Asociación Amigos del Árbol (AMAR) is working to protect sea turtles in the Barra de Santiago estuary. (Turtles are endangered because their eggs are considered a delicacy locally.) AMAR is patrolling the beaches and licensing egg collectors in exchange for a percentage of eggs, which are then moved to a protected area to hatch. AMAR is also conducting an adopt-a-nest campaign in local high schools, has organized an exhibition on sea turtles, and is conducting limited tourism activities.

Another local NGO, SalvaNatura, is using USAID grant funds received from SENS to protect the El Imposible National Park. (The NGO has a ten-year management agreement with the Ministry of Agriculture to operate this park.) SalvaNatura's activities include protection, reforestation, development of a nursery for native tree species, and limited tourism.

SENS will work to increase NGO capacity to administer EAI funds that will become available this summer.

Policy. PROMESA's policy component will help the government of El Salvador develop effective environment policies. These policies will help create economic incentives for sustain-

able use of natural resources. The policy component will also establish financial support for NGO environment projects.

USAID has been working with the Salvadoran government's environmental secretariat (SEMA) since 1992 on a National Environment and Natural Resource Management Strategy.² This was approved by the government in January 1994. PROMESA will focus on the implementation of this strategy.

SEMA has proposed revisions to a number of environmental laws. Regulations for wild animal and protected area legislation (based on the Convention on International Trade in Endangered Species of Flora and Fauna) passed in May 1994. A new forestry law will be presented to the legislature and a general water law and legislation on land use are being prepared. An organic law for SEMA, which names the agency as the legal government entity in charge of coordinating environmental activities, is presently before the National Assembly.

Abt Associates, the prime contractors for the policy and demonstration components, will help SEMA develop these laws and prepare an environmental action plan. Abt will also conduct social and economic impact research on El Salvador's environment policy and provide training for ministerial and NGO personnel involved in policymaking. After the start-up phase, Abt will deliver action plans for the policy and demonstration components in July 1994.

Environmental education. This component reinforces PROMESA's policy activities by informing the public about the ongoing policy dialogue and by encouraging public involvement in policy formation.

The Academy for Educational Development, the prime contractor for the environmental education component, will target schools and mass media to raise public consciousness about environmental issues. The component's main objectives are improving environmental education

materials for grades K-6 and for teachers at all levels, increasing NGO effectiveness in environmental education, and maintaining coordinated mass-media education programs to provide informal education through radio and television.

GreenCOM's agreement contains provisions to promote women's inclusion and participation in environmental activities. For example, the project's employee working with NGO and municipality leadership will promote the need for women as leaders; the extension specialist will ensure women's inclusion in training programs, and the national parks specialist will ensure that material developed for visitors depicts both genders.

GreenCOM's current activities include setting up its office in San Salvador with PROMESA and preparing an action plan by July 1994.

Demonstration area. PROMESA will develop model projects in the Barra de Santiago watershed to provide tangible examples of the benefits of sustainable resource use. Abt Associates, with Winrock International and the University of Rhode Island, will implement this component using technology that can be applied elsewhere in El Salvador.

The 36,000-hectare demonstration area, located in the department of Ahuachapán, encompasses several types of terrestrial and marine ecosystems and is also home to a large human community. SalvaNatura, with assistance from USAID, has carried out baseline studies and mapping of this watershed.³ At its highest elevation, about 1,400 meters, is El Imposible National Park, a 3,000-hectare tropical moist forest housing 350 species of birds and 500 species of butterflies and surrounded by 2,000 hectares of coffee plantation. Five rivers descend the slopes, which contain scrub forest, corn *milpas* or farms, and a coastal plain where five land reform cooperatives grow sugarcane, melons, and rice.

The Barra de Santiago, located on the coast, also includes 2,000 hectares of

mangrove trees, an estuary, and a beachfront where about 100 artisan fishermen live. A 1991 study financed through the *Water and Sanitation for Health* (WASH) project showed well and surface water in the watershed to be "extremely contaminated" with fecal coliform bacteria and indicated soil contamination with pesticides and other chemicals.⁴ This pollution endangers the watershed's 50,000 inhabitants who depend on it for drinking water and irrigation. Pollution and sedimentation also threaten the region's estuarine ecosystems, which serve as fishing grounds for local communities and nurseries for many species of fish, shrimp, crustaceans, and mollusks.

Abt Associates and its local counterparts in the agriculture ministry will (1) carry out a population census for the watershed that identifies the area's problems, (2) examine land ownership patterns, and (3) reach out in the community to identify farmers and others interested in participating in demonstration projects. Abt Associates will work with cooperatives, NGOs, extension workers, government officials, and others, mainly through training sessions that can then be duplicated by the participants (echo workshops) with their own staff. Training will include improvement of farming practices, safe pesticide use, coastal zone management, and mangrove reforestation.

—Stephanie Joyce, *Datex*
6/7/94

¹ World Bank, *GEF FY92 Technical Assistance Projects-Third Tranche* (Washington, D.C.: World Bank 1992), p. 12.

² Secretaria Ejecutiva del Medio Ambiente (SEMA), *Consulta a Nivel Departamental sobre la Estrategia Ambiental y Plan de Acción* (San Salvador, El Salvador: SEMA, March 1994).

³ Francisco Serrano et al., *Biodiversidad y Ecología de la Cuenca de la Barra de Santiago-El Imposible*, vols. 1, 2, 3 (San Salvador, El Salvador: SalvaNatura, 1993).

⁴ L. Fernando Requeña and Becky A. Myton, *Surface and Groundwater Contamination in Selected Watersheds in Southwestern El Salvador*, prepared for WASH project (Washington, D.C.: USAID, 1991).

USAID

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



LAC

Guatemala

520-0395

Maya Biosphere Project

USAID has authorized \$10.5 million, the government of Guatemala \$7.5 million, and non governmental organizations (NGOs) \$4.1 million to the *Maya Biosphere Project*. The seven-year project, initiated in 1990, provides financial and technical assistance to Guatemala's National Council for Protected Areas (CONAP). Its primary components are biosphere administration, environmental education and awareness, and sustainable resource management for income generation.

Highlights for FY 1993-94

- Significantly slowed colonization in the Maya Biosphere Reserve.
- Helped two local NGOs, ProPetén and Centro Maya, establish themselves as local voices for conservation in the reserve.
- Established the "Eco-School" in San Andrés, teaching tourists environmental awareness as well as Spanish and, through home stays, providing income for 90 local families and incentives for forest conservation.
- Helped over 200 local farmers identify and use indigenous knowledge of sustainable agricultural practices. Involved more than 350 farmers in sedentary agricultural methods, including growing velvet beans to regenerate soil fertility and structure.
- Supported over 250 local families in identifying environmentally sound economic activities, such as manufacture and sale of natural oil extracts, gold leaf jewelry, natural dyes, biodegradable soap, and potpourri made of forest leaves and bark.

Project at a Glance

Funding: Life-of-Project \$10,500,000
Biodiversity Percentage 40%

Project Duration: FY 1990-96

Implementors:

Conservation International
The Nature Conservancy
CARE
Rodale Institute
ProPetén

USAID Project Officer:

Keith Kline/USAID/Guatemala

Background

Guatemala's Maya Biosphere Reserve (MBR) covers 1.5 million hectares (about one-and-a-half times the size of Yellowstone Park) of savanna, forest, and wetlands in the northern department of Petén.¹ The Petén reserve is part of Mesoamerica's largest remaining wilderness, the Maya Region, which stretches across southern Mexico, northern Guatemala, and western Belize. The MBR offers great biological diversity—jaguars, monkeys, over half of Guatemala's 644 species of birds, and valuable tropical hardwoods—as well as archeological treasures. Tikal National Park, site of the famous Mayan ruins, attracts at least 15 percent of Guatemala's tourists.

However, Guatemala's rapid population growth (3 percent annually) has fueled a steady stream of migration into the Petén. Economic distress among colonists, drug and artifact smuggling, and uncontrolled resource mining are laying waste to the Petén forest and threatening the reserve. If the current rate of depredation continues, the reserve's primary forests will disappear within an estimated 20 years.

Project Implementation

A \$1.2 million debt-for-nature swap, financed by the *Maya Biosphere Project*, administered by Conservation International (CI) and completed in May 1992, will generate additional funds to support activities in the Petén. Several U.S. NGOs participate in the project. The Nature Conservancy (TNC) is working on biosphere management and institution strengthening. CARE works with community education and agroforestry activities. The Rodale Institute is helping to develop Centro Maya, an agroforestry research and extension center in the Petén's southern buffer zone. CI works on sustainable resource management and is helping develop ProPetén, a

local NGO created to strengthen renewable forest extraction economies for communities working in the reserve.

Project Progress

Resource management in the Petén presents an enormous challenge. Its vast expanse has attracted migrant settlers and served politicians that are pressured to provide land to the poor. Obstacles to conservation efforts in the region include poverty, logging interests, lack of land tenure, impunity to law enforcement, and the military-socioeconomic power structure. Violence, arson, and threats against CONAP personnel have been common since the project's early stages. Political instability in Guatemala has diverted attention from the Petén and impeded the progress of CONAP.

The U.S. ambassador has addressed environmental issues, and the *Maya Biosphere Project* in particular, during several meetings with the Guatemalan president. The project's progress in the near future will depend primarily on the development of NGOs and on the involvement of local people.

One of the project's main accomplishments has been to establish a protective presence, which has greatly slowed colonization in the Petén. The Eco-School in San Andrés has increased environmental awareness and brought a steady—and ecologically sound—income to about 90 local families. Two newly created NGOs, ProPetén and Centro Maya, are establishing a local voice for conservation.

Biosphere administration. Migration into the Petén has been heavy, running about 150,000 annually. With USAID support, CONAP established a presence in the Maya Biosphere Reserve beginning in 1991; *Maya Biosphere Project* partners helped train about 150 guards. The CONAP checkpoints at major entrances to the reserve significantly deterred migration into the reserve.

CONAP's presence has also drawn attention to the problems brought about by logging and to the potential benefits of the reserve. In 1992, for example, the reserve was closed to loggers until studies aimed at improving management of timber and other resources could be completed. As a result, timber outside the reserve increased in value, underscoring the benefits of good forest stewardship. In early 1993 CONAP achieved vital support from the Guatemalan military, obtaining control of timber permits in the reserve's buffer zone.

A major challenge for CONAP is to evolve from a policing and enforcement organization to a resource for local communities interested in sustainable forest use. CONAP personnel met with local groups with a stake in the reserve's environmental soundness, including labor unions, communities, mayors, NGOs, and exporters of forest products (*xate*, *chicle*, spices, etc.). Many of them helped to define policies and enforcement mechanisms for more sustainable forest use. Following development of a formal management policy, local communities reviewed the master plan in a series of public meetings. The revised plan is now under review at CONAP.

CONAP has been developing strategies to achieve a sustainable income and decrease its dependence on outside funding. Since 1991 the institution has netted over \$200,000 annually from *chicle* harvesting. This and other income from extractive operations provide an independent income source for CONAP. By law such monies must be reinvested in reserve management.

TNC assigned one full-time employee to work with CONAP on administration and financial management. Since the project's inception, TNC helped mark 110 kilometers around the southern reserve border and has begun marking interior multiple use zones. A rapid ecological assessment provided maps of reserve terrain

and ecosystem, which will serve as baseline information for monitoring and making reserve management decisions.

CONAP has experienced serious staffing problems. During the project's first three years, the agency had three directors and three reserve managers; recently, following a strike, many employees were dismissed. These problems regularly recur, and USAID has suspended assistance to CONAP until the agency delivers a 1994 work plan, an institutional strategy, and documentation for standardized audits for the last three years.

Environmental education. Efforts by CONAP and NGOs helped keep issues related to the reserve in the public eye. In 1993 the reserve was the subject of over 100 local radio reports, two CNN features, and a monthly supplement in the Petén newspaper. Some 120 teachers and 1,000 students participated in environmental training activities. Six natural history trails are in use in various areas of the reserve.

In July 1993 CI launched its "Eco-School" in San Andrés. Tourists who pay \$50 a week to learn Spanish also receive environmental awareness training. Local families provide housing at \$25 a week. About 300 students have attended the Eco-School since its inception (the school has had to turn students away), and about 90 families, including shopkeepers and restaurant owners, have benefitted. A school based on this model is under development in Flores, capital of the Petén department. The Eco-School also provides alternative income and incentives for forest conservation in an area where logging interests predominate.

Building local sustainable resource management. TNC conducted an analysis of Petén society and of the capacity of Guatemala's nature conservation groups. The analysis revealed that local people do not feel they obtain direct benefits from the *Maya Biosphere Project*. Based on this

finding, TNC will establish a Small Projects Fund to work on concerns such as agroforestry and ecotourism with local communities. The Small * Projects Fund will serve a dual purpose: to increase community involvement in resource management in the reserve and to help CONAP improve its relations with the community through extension work.

CI catalyzed the creation of a locally based NGO called ProPetén to establish direct links with the reserve's local community and to establish a conservation "voice" for this frontier area. Originally functioning as a branch of CI, ProPetén has now begun seeking legal recognition as a Guatemalan NGO, a process that can take up to two years.

In 1992 the Rodale Institute established its research project, Centro Maya, supported mainly by the Guatemalan government. *Maya Biosphere Project* funding helped Centro Maya to obtain legal NGO status and to craft an institutional development plan. Centro Maya has conducted baseline studies on the MBR. For the last two years, project personnel have worked with farmers to stabilize agriculture by turning away from slash-and-burn to more sedentary production methods and by using velvet beans in the cropping system to regenerate soil fertility and structure. About 355 farmers participated in these trials. Centro Maya also plans to reconstruct ancient Mayan agricultural systems. A CARE agroforestry effort in the buffer zone has helped communities identify ways to maximize indigenous knowledge in land use. Over 200 small farmers have begun applying more sustainable agricultural practices on their farms. More than 250 families have begun working on environmentally sound economic activities. These include development of over 20 new products and value-added enterprises, including biodegradable soap, natural dyes, gold leaf jewelry, natural oil extracts and bone, wood, and stone carvings. About 100 people collaborate

in a potpourri enterprise that involves collecting leaves and bark from the forest floor in the appropriate season and coloring them with natural dyes. This number includes about 90 families who had formerly depended on traditional agriculture for their living. A business plan is under development.

The Rodale Institute is helping the community of Bethel implement a forest management plan, which will include development of nonextractive products and will increase the sustainability of extractive products like *xate* and *chicle*.

Beginning in December 1993 ProPetén and CI began working with travel agencies and with communities interested in alternative ecotourism options. Several communities have formed guide associations and have started standardizing fees and improving rustic camp facilities made of materials left by previous colonists. The Bethel community has built a small Mayan lodge and campground with some amenities.

In March 1994 CONAP authorized a new system for granting concessions for long-term forestry and nonforestry production in the reserve's multiple use zone. As of April 1994 CONAP had received two proposals: one for an agreement for CONAP/community management of a 7,000-hectare area in the multiple use zone; the other an industry proposal involving forestry in an area of about 30,000 hectares. A USAID contract team will perform an environmental assessment for both these proposals from April to September 1994.

—Stephanie Joyce, Datex
5/17/94

¹ A biosphere reserve is a UNESCO designation for a protected area whose species diversity or ecological uniqueness gives it global significance. A typical biosphere reserve is inhabited and contains a core protected area, a multiple use zone, and a buffer zone.



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



LAC

Haiti

521-0191

Targeted Watershed Management

U SAID's Latin American and Caribbean Bureau authorized the *Targeted Watershed Management* (TWM) project with a funding level of \$15.75 million for a period of eleven years (FY 1986–96). The goal of TWM is to arrest the process of environmental degradation in the southwest peninsula of Haiti. The purpose of TWM is to extend soil-conserving and fertility-augmenting land management practices to the Pic Macaya watersheds and to apply lessons learned from this field effort to national-level hillside management planning. From its inception until the September 1991 coup d'état, TWM provided technical assistance stabilizing hillsides and distributing improved plant materials (food crop, forage, trees, and grafted fruit trees) to more than 17,000 farmers in southwest Haiti.

Highlights for FY 1993–94

- Introduced improved agricultural, soil, and water conservation strategies for several thousand hectares of agricultural land in southwest Haiti.
- Decreased erosion rates by encouraging velvet beans as a cover crop and such practices as growing hedgerows and tree crops to increase protective hillside cover.
- Combined ecosystem protection and rehabilitation with sustainable development in Parc National Pic Macaya (Parc Macaya) by creating a biosphere reserve and buffer zone and encouraging environmentally appropriate farming and alternate income sources.
- Through the Parc Macaya Protection Project component, planted more than 480,000 trees covering 190 hectares, restored 4.5 kilometers of ravines, installed 424 gully plugs, and decreased logging activities.
- Provided direct technical assistance to over 500 farmers. Established more than 55 vegetable gardens to enhance household nutrition. Provided over 21,000 farmers with temporary work on project-related activities, reducing pressure on the park.

Project at a Glance

Funding: Life-of-Project \$15,750,000
Biodiversity Percentage 100%

Project Duration: FY 1986–96

Implementors:

Associates in Rural Development
Four Haitian PVOs
University of Florida
Union des Cooperatives de la Region Sud D'Haiti
Biodiversity Support Program

USAID Project Officer:

Abdul Wahab/USAID/Haiti

Background

Slash-and-burn agriculture and indiscriminate tree cutting are destroying the natural habitats of and causing irreversible ecological damage to the Parc Macaya area, the last remaining rain forest in Haiti. This area is also the primary source of water for seven rivers that support agricultural production activities on surrounding plains covering more than 200,000 hectares of fertile lands, including the Plaine des Cayes. Parc Macaya and its 2,347-meter summit (Pic Macaya) is considered an important center for biological diversity, including endemic and rare species. Relatively undisturbed until recently, many of these species are now endangered due to deforestation.

Project Implementation

The original project comprised two components: *Proje Sove Te* (Project Save the Land) and Parc Macaya. Project Save the Land (PST) was implemented by four Haitian private voluntary organizations (PVOs) supervised by the U.S. firm, Associates in Rural Development. The University of Florida was responsible for providing direct assistance to make Macaya National Park, legislated in 1983, fully functional. In July 1993 USAID/Haiti transferred \$416,000 to the *Biodiversity Support Program* (BSP) under an amended TWM project known as the Parc Macaya Protection Project. Under the redesign, a subpurpose was added: to instill better land-use practices by the farmers of the Park Macaya buffer zone to reduce ecological pressure on the park.

Project Progress

Proje Sove Te. Despite its short effective life span, the project resulted in improved agricultural, soil, and water conservation strategies for several thousand hectares of agricultural land in southwest Haiti. Success-

ful strategies include hedgerows planted on the contour, use of herbageous legumes for improved fallow and as intercrops, and construction of furrows and berms along the contour.¹ PST substantially raised the level of nongovernmental organization (NGO) activity and knowledge of effective technical and management strategies. Other accomplishments included increases in food production and farmer revenue through higher yielding crops, adoption of appropriate land use and agricultural practices, and improved farmer access to plant materials. Erosion rates have decreased as farmers have adopted velvet beans as a cover crop and incorporated agroforestry practices that increase permanent vegetative cover on the hillsides, such as the adoption of hedgerows and tree crops. Funding for PST has not been renewed since the coup.

Parc National Pic Macaya. The University of Florida applied the concept of establishing a biosphere reserve with a buffer zone while making available to peasant farmers new, environmentally appropriate agricultural techniques and other alternate means of generating income. This innovative strategy, combining ecosystem protection and rehabilitation with sustainable development, was a new technique for environmental protection.² Although activities in the park were suspended after the military coup in September 1991, the University of Florida was able to complete its contract in March 1992.

Park management. In planning management of the biosphere reserve, the University of Florida applied the rapid rural appraisal tool known as Sondeo, aerial photographic surveys, and mapping to develop a work plan and biosphere zonation system of appropriate land use. As a result, 2,000 hectares of Parc Macaya and a surrounding buffer zone of 20,000 hectares were included as the Macaya Biosphere Reserve. The management

and development strategies included developing an endangered species recovery plan, installing 4,000 meters of fencing between forestry and agroforestry zones in critical areas, erecting 25 interpretive and announcement signs in the reserve area, constructing living and classroom facilities at Kay Michel, improving the access road, and organizing an NGO/Macaya Biosphere Reserve Committee.

Buffer zone management. Technical assistance by the university to 1,750 farmers in the buffer zone included conducting farming system trials in 100 plots with over 30 varieties of vegetables, 27 bean varieties, and legume cover crops. On-farm variety trials included bean, carrot, onion, beets, cabbage, and corn. A total of 26 male and 58 female rustic pigs were distributed to farmers. Soil conservation practices were demonstrated and resulted in the planting of one thousand meters of hedgerows and a one-hectare plot of forage species (Napier, Wynn grass, and Guatemala) for reproduction and distribution.

Environmental rehabilitation. To rehabilitate degraded critical zones, the university established four nurseries, producing 90,000 seedlings, of which 30,000 were established in plantations. Another 40,000 seeds were directly planted in critically deprived areas. To help check gully erosion and facilitate surface water recharging, 169 check dams were erected.

Educational program. The university also created a data base, which included 3,500 bibliographic entries, a survey of land tenure, biological surveys, and technical information. It also presented seven in-house seminars and nine outside seminars for field staff. Two videos were produced.

Parc Macaya Protection Project. The departure of the University of Florida left the farmers in the buffer zone without direct technical assistance and

the park unprotected from encroachment. The result was disastrous as evidenced by the clearcutting of 200 hectares of virgin forest in the park within a period of six months. In response to this crisis, a local NGO, Union des Cooperatives de la Region Sud D'Haiti (UNICORS), submitted an unsolicited proposal to USAID/Haiti to implement limited activities inside and around the park. The proposal was accepted and a cooperative agreement signed in September 1992. An August 1993 agreement allowed for a centrally funded activity, the BSP—a USAID-funded consortium of World Wildlife Fund, The Nature Conservancy, and the World Resources Institute dedicated to conserve biodiversity—to strengthen the capacity of UNICORS and other collaborating NGOs to support effectively the integration of biodiversity conservation with sustainable agriculture and other programs in the buffer zone and core area of Parc Macaya.

BSP aims to provide technical assistance and training to UNICORS for community-based, integrated conservation and development, research activities, and organizational development. BSP and UNICORS are promoting the participation of as many "stakeholders" as possible in Parc Macaya endeavors. The program supports networking among host country individuals and institutions and also links Haitian NGOs to international conservation organizations and funding sources. This project emphasizes institution building of local NGOs and encourages exploring alternate patterns of resource use and conservation strategies within the park and surrounding areas. BSP assists in the development of simplified monitoring techniques and the identification of strategic performance indicators of

biodiversity conservation, particularly those that might be used at the community level. To assist the BSP, a local ecologist/natural resource specialist acts as liaison for all BSP-supported activities in Haiti. With the assistance of BSP, UNICORS has achieved the following during the past 18 months.

Land conservation. More than 480,000 trees (mostly *Pinus occidentalis*), covering approximately 190 hectares and having an 80 percent survival rate, have been planted. This provides renewed habitat, soil retention, and enhancement of ecosystem protection. In addition, the area's environment has benefitted from the restoration of 4.5 kilometers of ravines and the installation of 424 gully plugs.³ In a unique effort to combat illegal logging in the park, local project staff engaged area military leaders in constructive dialogue regarding the park's value, resulting in a decrease in logging activities.

Training. BSP assisted UNICORS in presenting a three-day Training-of-Trainers seminar for 15 public awareness extensionists. The seminar focused on the rationale for protected areas, the unique biological diversity in Parc Macaya, and basic ecology, using Parc Macaya as an example. The extension workers also promote traditional methods of land tenure and farming that utilize local flora and increase agricultural production while promoting public awareness of the benefits and purpose of the park. The BSP representative in Haiti, working with UNICORS staff, conducted 42 meetings with farmer groups, attended by 1,025 male and 656 female farmers.

National park awareness. As part of a national awareness program, UNICORS published a long article on Parc Macaya and conservation activities in a leading Haitian newspaper. UNICORS also participated in symposiums held on parks in Haiti and the Dominican Republic.

Farmer assistance. Over 500 farmers have received direct technical assistance from the project. More than 55 vegetable gardens were established to provide farm households with enhanced nutritional profiles as well as an income-generating alternative. Over 21,000 farmers have received revenue from temporary work on project-related activities, subsequently reducing ecological pressure on the park. This includes repair and maintenance of critical sections of the access road to Formond and the park's headquarters. This activity facilitates training and the transport of perishable farm goods to market, further enhancing a partnership between UNICORS and the local peasants for wisely managing their natural resources.

—Brad Williams, Datex

7/27/94

¹ Associates in Rural Development, "Proje Sove Te Final Report of Project Activities" (Burlington, Vt., September 1992), pp. 21–24.

² Florence E. Sergile, Charles A. Woods, Paul E. Paryski, "Final Report of the Macaya Biosphere Reserve Project," (Gainesville, Fla.: Florida Museum of Natural History, 1992).

³ J. Ronald Toussaint, "BSP Assistance to UNICORS Parc Macaya Project: Report for January to March 1994" (Washington, D.C.: World Wildlife Fund, 1994).



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



LAC

Honduras

522-0385

National Environmental Protection Fund

The *National Environmental Protection Fund* was created by the Honduran government in 1991 to stem the rapid loss of biological diversity and watershed resources, launch pollution prevention and abatement programs, and promote environmental education. The fund forms a partnership among the government, international donors, and nonprofit environmental groups in support of the country's conservation goals and takes a decentralized approach to environmental protection by providing grants for small environmental "subprojects" that are designed and implemented exclusively by local and U.S. nongovernmental organizations (NGOs) and private voluntary organizations (PVOs). These groups are effective agents of conservation because they often enjoy wide support in small communities and have a proven track record in fostering economic and social development. One Honduran NGO, the Fundación VIDA, is responsible for raising financial support for the fund, administering the project, and selecting and overseeing the subprojects. Other development and environment NGOs and PVOs actually formulate and carry out the subprojects. USAID has been supporting the effort since July 1993 with a seven-year (FY 1993-99), \$10 million grant. The Honduran government has provided \$5 million to the fund, and the United Nations Development Programme has contributed \$680,000 to defray Fundación VIDA's operating costs.

Highlights for FY 1993-94

- Fundación Vida, the Honduran NGO administering the fund, is building an institutional framework for the project by adopting a series of organizational and operating plans and establishing standardized evaluation criteria for grants selection.
- Actively encouraging Honduran NGOs to submit grant proposals. By May 1994 over a dozen Honduran and U.S. environmental groups prepared grant proposals, three of which had been approved.

Project at a Glance

Funding: Life-of-Project \$10,000,000
Biodiversity Percentage 75%

Project Duration: FY 1993-99

Implementors:

Fundación VIDA
Planning Assistance
Chemonics International
Price Waterhouse
Biodiversity Support Program
Various U.S. and Honduran NGOs and PVOs

USAID Project Officer:

John Warren/USAID/Honduras

Background

Although Honduras established some 30 national parks in the late 1980s, only five have any infrastructure or personnel. In 1993 Honduras adopted a far-reaching program to set aside for conservation a proposed 104 parks covering 12 percent of the country. Within the national park system lies an exceptional array of wildlife habitats, including some of Central America's largest broadleaf tropical forests, montane cloud forests that harbor unique plants and animals, segments of the Caribbean's vast coral reefs, and mangroves that are breeding grounds for finfish and shellfish. Other parks safeguard major watersheds on which the national economy depends. As with many developing countries, however, Honduras lacks the money and technical expertise to manage these protected areas effectively. As a result, some of the country's richest ecosystems are highly threatened and the deterioration of the natural resource base is contributing to the low level of socioeconomic welfare of many Hondurans.

Project Implementation

Through this project, USAID is helping Honduras to safeguard its biological diversity and watersheds, increase public awareness about environmental issues, and build a cadre of environmental professionals and institutions. The Agency is financing three project components to achieve these goals: subproject grants, technical assistance, and training.

Subproject grants. USAID is providing \$5 million to the environment fund to finance 10 to 15 subprojects that range from \$50,000 to \$500,000 each. The environment fund also supports smaller subprojects with financing from the other donors. The larger USAID subprojects are being jointly designed and implemented by Honduran NGOs and U.S. NGOs and PVOs,

at least in the subproject's formative years. These joint ventures allow Honduran NGOs the opportunity to learn from the experience of the U.S. groups and develop their own expertise to manage the subprojects alone in later phases.

Technical assistance. International and local technical advisors will work with Fundación VIDA and other Honduran NGOs to build an institutional and scientific foundation for the environmental subprojects. Subjects covered include financial administration and community participation in subproject design and implementation. In addition, two resident advisors will be stationed within VIDA: one will provide assistance with policy and procedural matters; the other will have field-oriented responsibilities, including subproject monitoring and evaluation.

Training. Local project staff of Fundación VIDA and participating NGOs will receive in-country training—workshops, seminars, and technical meetings—in a variety of disciplines, including watershed planning, environmental impact assessments, integrated pest management, and ecological planning. Funding is also allocated for international conferences and observational tours to visit successful protected area management programs in other countries.

Project Progress

As a first step to project start-up, Fundación VIDA worked with Price Waterhouse and the *Biodiversity Support Program* to develop its institutional capacity to manage the Environmental Protection Fund and its subprojects. Fundación VIDA drafted and began implementing a series of organizational and operating plans and procedures. One important step was the establishment of standardized evaluation criteria for reviewing and selecting subproject proposals. Subprojects are selected by Fundación VIDA with

technical advice from a committee of experts based on the initiative's environmental and social impact, technical feasibility and sustainability, financial soundness, and the proposing NGO's ability to manage the grant. During the project's first months, Fundación VIDA also embarked on an active campaign to encourage Honduran NGOs to submit subproject proposals. A series of workshops for local groups informed participants about the selection process and opportunities for technical assistance and training.

By May 1994 Fundación VIDA had received subproject grant proposals from over a dozen Honduran and U.S. groups. Three subprojects have been approved so far and implementation will begin shortly.

Management of the Cerro Azul Meambar National Park. The NGO Aldea Global (Global Village), which is incorporated in the United States and Honduras, plans to implement the operating plan for Cerro Azul Meambar National Park, whose 15,000 hectares contain cloud forests within two major watersheds. Activities will include delimiting the protected area, hiring and training local guards and other personnel, constructing a visitor's center and interpretive trails, launching an environmental education program with local communities, and promoting the park at the national level.

Community forestry development in La Mosquitia. Central America's largest contiguous forest is located on the La Mosquitia Caribbean coast of Honduras and Nicaragua. Despite Mosquitia's biological wealth—the area contains lowland broadleaf and cloud forests, pine savannas, lagoons, and corals—unsustainable logging practices and shifting agriculture are rapidly degrading the ecosystem. Under the subproject, Mosquitia Pawisa (Development of La Mosquitia), which has worked with indigenous groups since 1985, and

World Wildlife Fund will establish a community forestry project in Mocerón, a village of 150 indigenous families. The subproject will set up a technical office and forestry cooperative to promote sustainable forest management and timber extraction on communal lands. The initiative will also sponsor forest inventories and the development of a management plan for the area.

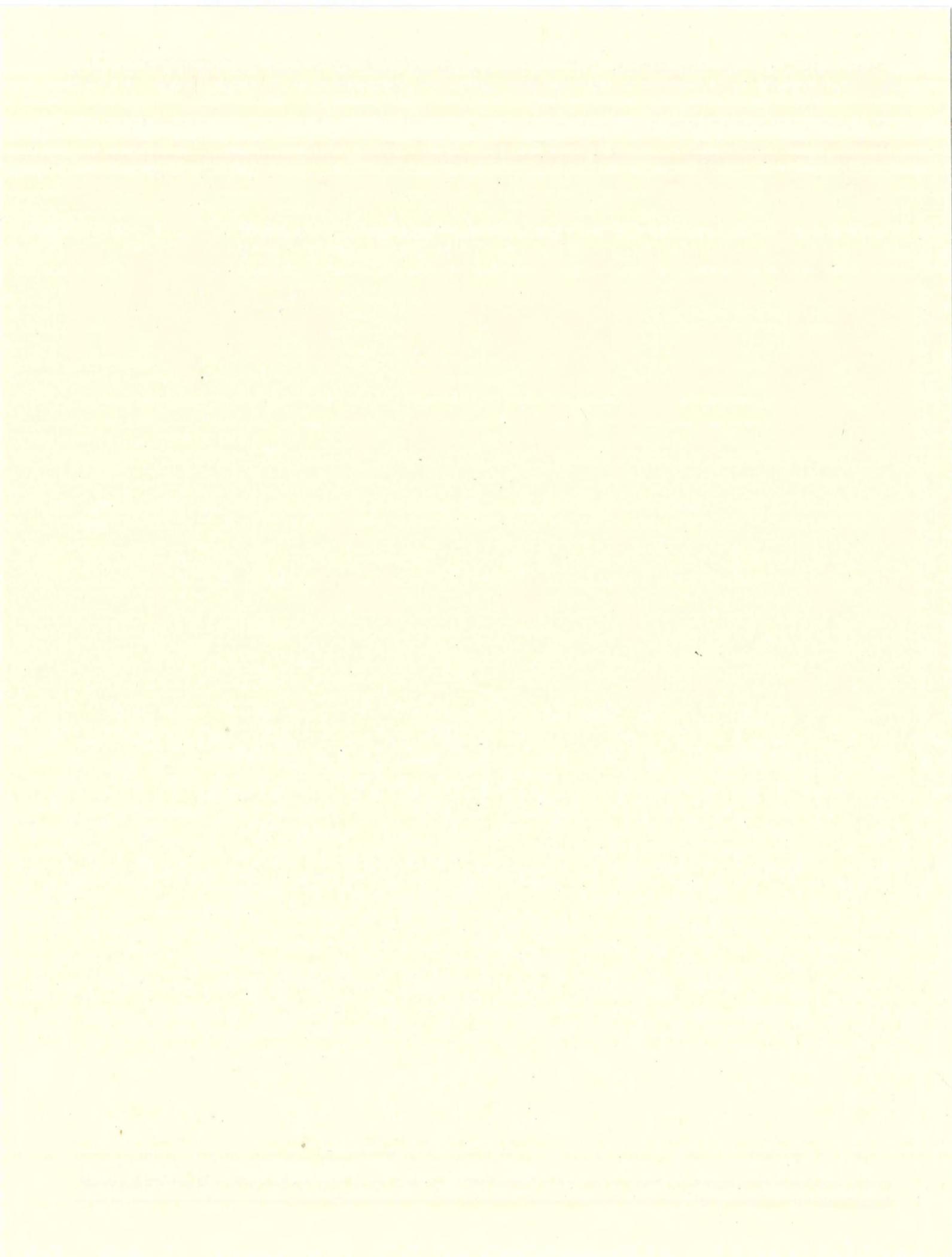
Sustainable Agriculture Training Center. In many areas of Honduras, farmers practice agricultural techniques unsuitable for the mountainous terrain. In one region alone, soil erosion is

responsible for an estimated \$93 million in economic losses each year. The Sustainable Agriculture Training Center in northern Honduras will address watershed and soil degradation by setting up extension services and demonstration plots in integrated farming systems, soil conservation, animal husbandry, fisheries, and agroforestry. The subproject will be implemented by the Organización de Desarrollo Empresarial Femenino (Women's Business Development Organization) and the U.S. group Katalysis, which works with low-income communities in Central America.

In June 1994 USAID contracted the consulting firms Planning Assistance and Chemonics International to provide training and technical assistance to Fundación VIDA and local NGOs. The two contractors will concentrate initially on strengthening VIDA's ability to evaluate grant proposals and oversee the implementation of approved subprojects. Once this initial goal is well under way, the firms will work in collaboration with VIDA to assist local NGOs with both management and technical issues.

—Michele Zador, *Datex*

10/17/94



USAID

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



LAC

Jamaica

532-0148

Protected Areas Resource Conservation

USAID's five-year (FY 1989-93), \$1.9 million *Protected Areas Resource Conservation Project* (PARC), launched in 1989, aims to help preserve Jamaica's endangered biological diversity by laying the foundation for a national parks system. The project follows up on the recommendations presented in USAID's 1987 publication, the *Jamaica Country Environmental Profile*. PARC's original commitment (through August 1992) was extended through October 1993 to allow for a transition between the completion of pilot activities in phase one and the design of a second phase, PARC II, focusing on long-term sustainability goals. PARC II has been integrated as a component of the *Development of Environmental Management Organizations* project (see separate project profile).

PARC I worked toward two complementary major goals: establishing two pilot parks and laying the foundation for a National Parks and Protected Areas System. The pilot parks satisfy the need to conserve specific habitats; the country-scale parks plan establishes a framework for conservation, clarifying the roles of various public and private agencies within that framework. PARC I met or exceeded its main objectives. On World Environment Day in June 1992, the project received Jamaica's Best Environmental Project award.

Highlights for FY 1993-94

- Helped complete renovation of park facilities at Blue and John Crow Mountains National Park (BJCM). Began monitoring and research programs and boundary marking.
- Strong local involvement has boosted BJCM's potential for sustainability: the local advisory committee in Hollywell has established a trust fund and petitioned the government for the right to manage the Hollywell area of the park.
- Supported Jamaica's Natural Resources Conservation Authority in drafting a National Parks System Plan in coordination with local environmental NGOs and 15 government agencies.

Project at a Glance

Funding: Life-of-Project 1,950,000
Biodiversity Percentage 100%

Project Duration: FY 1989-93

Implementors:

The Nature Conservancy
U.S. Forest Service
U.S. National Park Service
Jamaica's Natural Resources Conservation Authority
Planning Institute of Jamaica
Jamaica Conservation and Development Trust

USAID Project Officer:

Jane Ellis/USAID/Jamaica

Background

Jamaica abounds with natural riches. Its mountain forests house 220 species of migrant and resident birds, 119 butterfly species, and over 800 different plants endemic to Jamaica. Its coral reefs rank among the world's most diverse; however, intensified use of coastal and land resources, overfishing, and water pollution have stressed the island's resources. By 1993 Jamaica retained only an estimated 25 percent of its original natural forest cover and was continuing to lose 3 percent annually. Although laws exist to protect the island's natural resources, until recently Jamaica has lacked the means to enforce them. Until 1992 the island was one of three countries in the world without national parks.

Project Implementation

PARC's chief implementing agencies in Jamaica are the government's Natural Resources Conservation Authority (NRCA), and the Planning Institute of Jamaica. The Nature Conservancy (TNC) provided technical assistance and training.

The major components of PARC I were establishing two pilot parks and building a framework for a national park system in Jamaica. The latter component included drafting system plans for the pilot parks and legislation for the park system, establishing a National Park Trust Fund to finance recurring park costs, and establishing a Conservation Data Center. All activities emphasized involving local communities as part of PARC's ultimate goal of ensuring the sustainability of Jamaica's national park system.

Project Progress

Pilot parks. This component provided immediate protection for two pilot areas. Supporting elements included

training; establishment or improvement of park infrastructure, such as guard headquarters and commodities; and community outreach.

The 1,530-hectare Montego Bay Marine Park, Jamaica's first national park, opened in July 1992. One of the Caribbean's largest protected marine areas, Montego Bay combines several marine ecosystems (mangroves, sea grass beds, and coral reefs) in one of Jamaica's most important tourist centers.

Major activities for Montego Bay in PARC I included training, establishment of a park headquarters, public awareness and protection activities, and the formation of a local advisory committee. The park's 12 full-time employees have received basic training. The location of a main office has yet to be resolved, but park protection and public awareness-building continue. Specific accomplishments include mapping and marking of the park boundaries with mooring and marker buoys, providing equipment such as power boats, and training personnel in diving, research, water quality monitoring, and park management. Research and enforcement of the park's laws are also under way. A priority focus for phase two will be strengthening the management plan drafted during PARC I.

Public awareness activities launched by Montego Bay rangers have included publicity campaigns, surveys, and community education on the park and the laws that govern it. Most of the area's schoolchildren have visited the park. Locally produced pamphlets describe the park, outline its laws, and offer tips for sound ecological use. As a result of ranger monitoring and outreach, accidents and illegal dumping have diminished noticeably.

An informal volunteer group helped with fund-raising events and beach cleanup. Community leaders, nongovernmental organization (NGO) representatives, and businessmen formed a Montego Bay local advisory commit-

tee, which aimed to serve as a resource for park staff and as a liaison between the park and the community. Partly because of widely differing priorities among council members, this committee foundered at the end of PARC I. Project principals view the revitalization of Montego Bay's local leadership as a priority for PARC II.

Jamaica's second protected area, the 81,000-hectare BJCM, was inaugurated in February 1993. This park's forest-cloaked mountains are significant to Jamaicans both culturally and ecologically. Blue Mountain, rising to 7,402 feet, has come to represent Jamaica's spirit; every weekend several hundred Jamaicans trek from its base to its cloud-covered peak in a symbolic rite of passage. The BJCM is also home to endangered species such as the giant swallowtail butterfly and the Jamaican coney, the country's only endemic mammal. Furthermore, its watersheds supply drinking water to the country's capital, Kingston.

Major activities for the BJCM park included infrastructure improvement, training, community outreach, and development of a management plan. PARC I helped complete the renovation of park facilities and commodities. Monitoring and research programs have begun. Boundary marking is under way.

TNC, Jamaican government departments, the U.S. Forest Service (USFS), and the U.S. National Park Service (NPS) provided training and technical assistance for the park's staff (15 full-time employees). In the spring of 1993, the U.S. Park Service trained 21 employees from both Jamaican parks at St. John's National Park in the U.S. Virgin Islands and then conducted follow-up training in Jamaica. The training included tour guide and interpretive skills and the development of concession and tourism businesses in and around the BJCM. The following September, the USFS's Sister Forest Program hosted several BJCM employees who visited North Carolina's forests.

BJCM park staff members established functioning community outreach programs, including the production of park maps, pamphlets, and slogan buttons as part of community education campaigns. In the fall of 1993, more than 100 persons from the public and private sectors attended a workshop on enforcement.

During PARC I the BJCM staff drafted a management plan, which the local community vetted following extensive revisions. Park rangers are required to display thorough knowledge of the new management plan. PARC II efforts will focus on strengthening the plan, especially long-term planning provisions.

Three local advisory committees address resource management issues that affect communities in and around the BJCM: water shortages, ecotourism, and agricultural practices in the buffer zones. Community involvement has already brought the promise of economic benefits, especially in the Hollywell area near Kingston. There the advisory committee has established a trust fund and has petitioned the NRCA for the right to manage the park adjacent to the Hollywell area. Higher up in the mountains, a local community group called Top of Jamaica has begun leading groups of tourists to the top of Blue Mountain.

Local community support has been particularly strong in the BJCM. On the park's first anniversary, for instance, the local people prepared everything but the formal ceremony, including dancing, crafts exhibits, and food.

PARC I has involved women in activities at all levels. The Montego Bay deputy manager and BJCM's manager are women, and several women are park rangers. A woman presides over one of the local advisory committees, and many women serve as tour guides.

Parks management plans. The NRCA, the administrative manager of

Jamaica's parks, has received technical assistance from USAID in Jamaica, including working with local environmental NGOs and 15 government agencies to produce a draft National Parks System Plan. This draft, presently under review by the government of Jamaica, contains sections on government policy, classification of parks, descriptions of proposed parks, and management and budget requirements. PARC II will finalize the system plan, especially addressing long-term development of national parks.

The Montego Bay and BJCM parks have produced management plans and financial strategies, including a provision for user fees. Phase two will focus on strengthening the soundness of long-term plans. The project will work with NRCA to increase attention to long-term land and resource use in both park management plans. PARC II will also help each park develop a financial sustainability plan to ensure that monies from various sources will be available to run the parks after the project ends.

During the PARC project, TNC conducted a pilot of its rapid ecological assessment (REA) technique. The REA process involves satellite and aerial mapping and intensive on-site analysis of local ecosystems and the disturbances that threaten them. The site-specific REAs provide a guide to the development of resource management plans and identify areas where ecotourism and other environmentally safe, economically sustainable activities might provide opportunities. On-site ecological analyses also employ methods simple enough for nonspecialists to carry out, thus providing the additional benefit of on-the-job training for the park's rangers, volunteers, and technical staff.

National Parks Trust Fund. The National Parks Trust Fund is designed to support the recurring costs for Jamaica's parks beyond the life of the PARC project. A USAID matching grant to TNC provided the initial

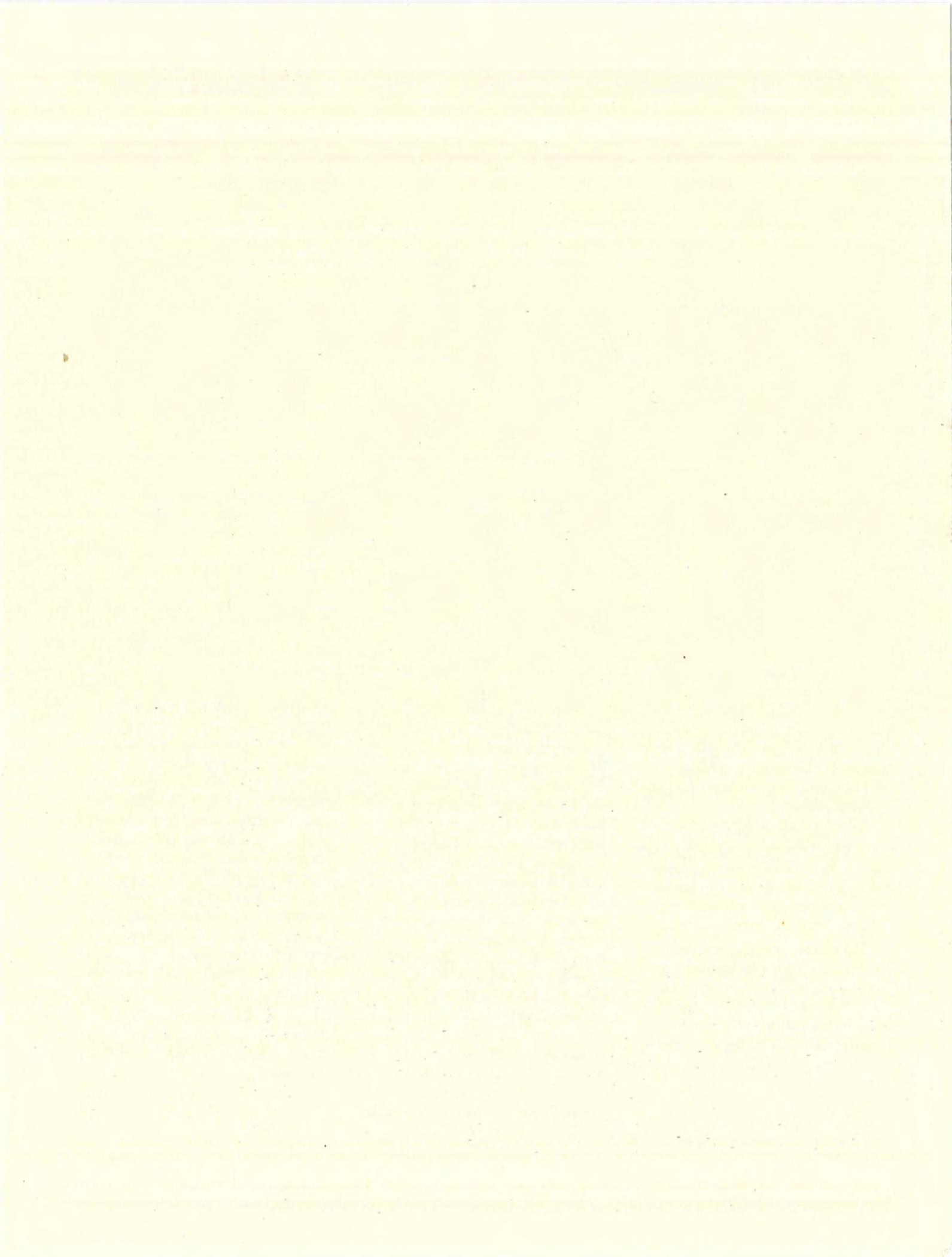
capitalization in 1992 through a debt-for-nature swap (worth \$582,000 in local currency), the first in the English-speaking Caribbean. A second swap, completed in March 1994, provided an additional \$135,000. An international fund-raising campaign called Jamaican Splendor, launched with TNC's assistance, also boosted the fund's holdings. Since March 1993 the trust fund has paid most of the salaries for the pilot parks.

The Jamaica Conservation Development Trust, an NGO formed in 1988, has received stewardship of the trust fund. During PARC I, TNC provided technical assistance to the trust on legal and financial management. In PARC II, the emphasis will be on providing long-term sustainability for the trust. This will include establishing local fund-raising operations to support additional conservation efforts without depleting the National Parks Trust Fund and developing a long-term management plan.

Conservation Data Center. A computerized Conservation Data Center (CDC) at Kingston's University of the West Indies, established in PARC I, allows networking with conservation data bases in other countries. TNC provided technical assistance to CDC's two full-time employees, a marine ecologist and a data manager. The CDC has catalogued most of Jamaica's flora and fauna and continues to store incoming research data from the two pilot parks. This data will help identify threats to biodiversity in Jamaica and determine sustainable levels of resource use. The center has also begun to supplement its income by selling data to local and international consultants.

PARC II will address the CDC's ultimate purpose and sustainability. A business plan and strategy is scheduled for completion in June 1994.

—Stephanie Joyce, Datex
5/18/94





U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



LAC

Jamaica

532-0173

Development of Environmental Management Organizations

The *Development of Environmental Management Organizations* (DEMO) project, initiated in 1992, continues USAID support for environmental management in Jamaica. DEMO aims to help Jamaica's private and public organizations manage its most economically important natural resources and develop model conservation and management plans that can be applied throughout Jamaica.

The five-year (FY 1992-97), \$7.75 million DEMO project builds on the initiatives of the first phase of the *Protected Areas Resource Conservation* (PARC I) project, which helped Jamaica establish its first national parks and a framework for a national parks management system. DEMO focuses on building administrative and financial sustainability for Jamaica's environmental agenda from the grassroots to the national levels. As originally conceived, DEMO consisted of three components: institutional support to the Natural Resources Conservation Authority (NRCA) and to the National Environmental Societies Trust (NEST) (an umbrella nongovernmental organization) (NGO), and the creation of natural resource conservation "laboratories" through Strategic Interventions in the Environment (SITE) activities. In October 1993 USAID added a fourth component, PARC II, which will focus on the sustainability of Jamaica's new parks and the fledgling systems that support them (see separate project profile on PARC I).

Highlights for FY 1993-94

- Supported the Environmental Foundation of Jamaica, helping to launch over 20 small projects, including a tree-planting program, guide to Jamaican flora and fauna, and financial workshop for hoteliers and environmental groups.
- Identified two ecologically critical sites, Montego Bay and Negril, in which to carry out pilot environmental management projects.
- Worked with the NRCA to produce a national protected area plan for Jamaica and an evaluation of revenue-generating activities for protected areas to ensure their sustainability.

Project at a Glance

Funding: Life-of-Project \$7,750,000
Biodiversity Percentage 75%
Global Environment Facility
Parallel-Financed

Project Duration: FY 1992-97

Implementors:

Ministry of Public Service and the Environment
Natural Resources Conservation Authority
National Environmental Societies Trust
Jamaica Conservation and Development Trust

USAID Project Officer:

Stephen Reeve/USAID/Jamaica

Background

Jamaica's rich natural resources are endangered by urban development; unmanaged expansion of industry, agriculture, and tourism; stresses on natural systems from fishing, agriculture, and mining; and poorly managed urban waste. Coastal ecosystems have undergone particular damage. Near highly populated areas, large portions of the coral reef ecosystems are dead. This degradation of natural resources threatens many sectors of Jamaica's economy, especially tourism, the country's largest and most dependable source of foreign exchange.

Project Implementation

The NRCA, a division of the Ministry of Public Service and the Environment, will be responsible for DEMO's overall management; a technical assistance contractor will help the NRCA coordinate local activities with NGOs and local environmental management councils. The contractor will also manage procurement and expenditures.

Project Progress

Natural Resources Conservation Authority institutional support. The NRCA has assembled its key senior staff and prepared action plans for major functional units in waste management, pollution control, protected areas, and effluent discharge control. Procedures for controlling effluent discharge, a priority action, are in place.

The NRCA has prepared a national protected areas strategy, which DEMO will further develop to strengthen its provisions for sustainable resource use. Another DEMO priority, related to the financial sustainability of Jamaica's protected areas, will be developing revenue-generating measures, such as user fees and penalties. Eventually these measures should cover at least 15 percent of DEMO's operating costs. An

update of the 1987 Jamaica Country Environmental Profile began in the summer of 1993.¹

National Environmental Societies

Trust institutional support. The Environmental Fund of Jamaica (EFJ), earmarked exclusively for NGO use, supports National Environmental Societies Trust (NEST) activities. Initial capitalization for the fund came through the Enterprise for the Americas Initiative, with a \$10 million PL 480 Food Aid Debt Relief agreement between the United States and Jamaica. In the summer of 1993 an additional \$11 million debt-relief agreement went into the fund to support NGO environmental efforts aimed at child health and development.

To ensure the trust's financial sustainability, the NEST umbrella group has prepared a business plan designed to draw membership service fees and supporting funds from local and international donors.

The trust has also prepared plans to help NGOs avail themselves of the fund's grant program. As of March 1994 the fund had awarded over 20 grants worth \$1.4 million and had disbursed \$220,000 to 13 projects. The first grant, for example, awarded \$4,000 to the Jamaican Natural History Society for a complete guide to Jamaican flora and fauna now on sale throughout Jamaica. Other grant projects include a financial workshop for hoteliers and local environmental groups, a project for improved toilet receptacles in Kingston, and a tree-planting program.

In 1993 DEMO helped NEST grant seekers develop guidelines for approaching the fund's grant-making process. The project is designing a training program on developing project proposals.

Strategic Interventions in the Environment activities. The Strategic Interventions in the Environment component will eventually feature four pilot "laboratories." Each laboratory

will develop practical resource conservation management models, such as for waste management, that can be applied in other areas of Jamaica.

As of April 1994, two of the four laboratory sites had been identified: Montego Bay and Negril. The Greater Montego Bay Redevelopment Company has taken on the management of Montego Bay. The company has hired and begun training a director and has drafted a protected area plan for Montego Bay.

In late 1993 the Negril watershed was chosen as a second model site. DEMO helped establish a new environmental trust to manage this site; its board of directors includes representatives from NGOs and environmental interest groups. The board has identified a system of protected areas, which was forwarded to the NRCA for approval in late March 1994.

Protected Areas Resource Management (PARC II). The PARC II component continues and expands the activities begun under PARC I. The phase one project established two pilot parks, set up an NGO trust fund to cover recurrent park management costs, established a national Conservation Data Center, and helped build a framework for a national park system in Jamaica. PARC II will work with these same components, focusing on moving the new parks and their supporting elements toward financial independence.

National parks. The two parks established in phase one, Montego Bay Marine Park and Blue and John Crow Mountain Park, have drafted management plans. The second phase will strengthen and implement these plans, paying particular attention to strategies for land and resource management and revenue generation. By obtaining long-term funding sources, the project will seek financial independence for existing parks by 1995. After achieving this goal, DEMO plans to begin work on two new proposed parks.

Park employees received training and began monitoring and patrolling the parks during the first phase. These activities will continue during the second phase. Rangers will continue and expand the outreach efforts begun in the first phase.

Input and leadership from local communities, a vital element in the success of PARC I, will be essential to the sustainability of Jamaica's parks. PARC II will emphasize interaction among local communities, NGOs, park personnel, and the NRCA as well as park-related enterprises, such as handicrafts and ecotourism businesses that benefit local populations and thus increase their stakes in the parks. PARC II will stress the revival of Montego Bay's Local Advisory Committee, which foundered during the first phase, partly because of widely varying priorities among its members.

National Parks Trust Fund. This fund was established during PARC I through several debt-for-nature swaps with assistance from The Nature Conser-

vancy (TNC). Augmented by an international fund-raising campaign called Jamaican Splendor, the fund has grown to nearly \$1 million, and will be used for recurring park costs. A Jamaican NGO, the Jamaican Conservation and Development Trust, administers the fund. PARC II will focus on increasing the fund's capitalization through local and international fund raising while strengthening the trust's managerial capacity to contain costs. The project will also generate local income sources to reduce the existing parks' dependence on the fund, thus freeing revenues for supporting other protected areas, especially in rural communities.

Conservation Data Center. During the first phase, the University of the West Indies granted space for the start-up of the Conservation Data Center. The center has two full-time employees and has established a data base and begun supplementing its income by charging users. Phase two will focus on developing a business plan for the

center and on increasing its financial independence and usefulness.

National parks system plan. During phase one, the NRCA received technical assistance from USAID and TNC to help draft a national park system plan covering government policy, classification of parks, descriptions of proposed parks, and management and budget requirements. The government of Jamaica has granted preliminary approval to the plan. In phase two, DEMO will help the NRCA strengthen the plan and increase its administrative and money-managing capacities so that the newly fledged national park system will become a functioning, sustainable force for conservation in Jamaica.

—Stephanie Joyce, Datex
5/30/94

¹ Ralph M. Field and Julie E. Troy, *Jamaica Country Environmental Profile* (Washington, D.C.: International Institute for Environment and Development, 1987).



USAID

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



LAC

Nicaragua

524-0314

Natural Resources Management

USAID's six-year, \$9 million Nicaragua *Natural Resources Management* project, launched in FY 1991, has three primary foci. First, it is helping strengthen the capacity of Nicaragua's new Ministry of Environment and Natural Resources (MARENA) to regulate and form environmental policy and legislation, regulate and oversee protected area management (and eventually also fragile ecosystems), and implement a national environmental education program. Second, the project promotes environmentally sound and least-damaging pest management practices nationwide. Third, it protects biodiversity in two priority sites: the Miskito Cays Protected Area on the North Atlantic Coast and the Bosawás Reserve in north central Nicaragua. Originally, the project aimed also to protect Chococente Wildlife Refuge, a nesting area for two species of endangered sea turtles on the Pacific Ocean; however land ownership disputes derailed that effort. Consideration is being given to replace Chococente with protection of Volcán Masaya National Park.

Highlights for FY 1993-94

- Organized a workshop to legalize indigenous land claims in Bosawás Forest, declared a National Reserve in 1993, and initiated surveys of local socioeconomic conditions.
- Completed studies on sea turtle exploitation and coral reefs to help in developing a management plan for the Miskito Cays Protected Area.
- Supported a local NGO in providing Miskito women training in sewing and business skills and a forum for discussing the women's concerns. Resulting economic gains will help build incomes for entire families in each community.
- Trained staff of Nicaragua's former Natural Resources and Environment Institute in management, team building, and finances to ease its transition in early 1994 to its upgraded status as the MARENA.
- With MARENA and the Peace Corps, developed proposal to improve natural resource management at Volcán Masaya National Park and develop income sources for local people other than cutting park trees.
- Trained hundreds of growers in integrated pest management and produced many publications on pest control. In research trials, reduced the need for pesticide spraying of cotton by nearly 30 percent and of melons by almost 50 percent.
- With USAID's *Regional Environment and Natural Resource Management* and other programs, helped the Ministry of Environment draft a new forestry law and worked with the Ministry of Education to develop an environmental education strategy.

Project at a Glance

Funding: Life-of-project \$9,000,000
Biodiversity Percentage 47%
Global Environment Facility
Parallel-Financed

Project Duration: FY 1991-96

Implementors:

Nicaraguan Ministries of Environment and Natural Resources, Agriculture and Livestock, and Education
Tropical Research & Development
The Nature Conservancy
Caribbean Conservation Corporation
Pan American Agricultural School
Costa Rican Tropical Agricultural Research and Training Center
Various Nicaraguan Grassroots Organizations

USAID Project Officer:

Jurij Homziak/USAID/Nicaragua

Background

Nicaragua's tropical climate houses a rich variety of animal and plant species and, despite 11 years of civil war, maintains the largest remaining forest area in Central America. Soil erosion, however, is rampant throughout western Nicaragua, and pesticide use across the country has risen dramatically over the past 20 years, even on small farms. Toxic residues are regularly found in human breast milk, food, air, soil, and water. The use of wood for charcoal and deforestation from logging and beef raising are significant contributors to forest loss.¹ At the same time, the country's environmental policy structure and institutional capacity to enforce regulations is weak and inadequate to address these issues in the context of Nicaragua's current economic crisis.

An illustration of this predicament is evident in Nicaragua's protected areas. Bosawás, for example, is a major forest reserve featuring endangered species, such as the harpy eagle and tapir, and diverse ecosystems, such as a pristine coral reef with one of the highest degrees of biodiversity in the world. In December 1993 it was declared a National Reserve. Yet a local unemployment rate of well over 90 percent and the vestiges of a vicious, protracted war have left a legacy of great desperation for its human neighbors.²

Another example is the Miskito Cays Protected Area. It encompasses more than 7,700 square kilometers of the largest expanse of unspoiled wilderness remaining in Central America. It includes some of the richest sea grass pastures, coral reef, and estuarine ecosystems in the region. These habitats provide foraging grounds for the most important population of green sea turtles in the entire Caribbean; manatees and dolphins; and significant populations of lobster, shrimp, and finfish, which provide the basis for critical fisheries for local people. Their need for economic alternatives and

protection of the resource base is profound.

Project Implementation

With support from USAID/Managua and contributions from USAID's *Regional Environment and Natural Resource Management* (RENARM) program, the project is being implemented primarily through arrangements with U.S.-based and Central American institutions to support the Nicaraguan Ministries of Environment and Natural Resources, Agriculture and Livestock, and Education. Tropical Research and Development (TR&D) is providing technical support and advice to MARENA under a USAID contract signed in early 1994, and The Nature Conservancy (TNC) has a cooperative agreement with USAID to help local people and MARENA protect the resources of Bosawás Reserve. The Caribbean Conservation Corporation (CCC), under a cooperative agreement with USAID, focuses on management initiatives and long-term planning for the Miskito Cays Protected Area. The Ministry of Agriculture and Livestock signed agreements with the Pan American Agricultural School in Honduras and the Costa Rican Tropical Agriculture Research and Training Center (CATIE) to provide research, extension, and training in pest control methods for the project's integrated pest management component. Lastly, Tropical Research and Development is working with the Ministry of Education on an environmental education strategy.

Project Progress

Institution strengthening and policy development. Activities under the institution-strengthening component are designed to help build capacities within the Nicaraguan government's primary environmental regulatory and policy body, MARENA, to draft and implement environmental rules and

legislation and to administer the ministry's resources more efficiently. For example, in early FY 1993 the ministry, then in its previous incarnation as the autonomous, governmental Natural Resources and Environment Institute, utilized USAID project support to restructure its financial and administration systems with new staff and computer equipment. The agency now has a new Management Information Center to streamline its accounting, personnel, and other administrative applications.

The institute was upgraded to cabinet status by presidential decree in January 1994. TR&D plans to conduct training with MARENA in management, team building, and finances during the summer months of 1994, helping the ministry make the difficult transition from a semiautonomous institute to a full-fledged ministry. One of their first workshops, held in April 1994, familiarized top ministry officials with Nicaraguan Finance Ministry requirements for accounting and budgeting; another upcoming workshop will help design MARENA's budget for FY 1995 as well as operational plans for the ministry's divisions. A TR&D consultant recently completed an analysis of MARENA's institutional structure and capabilities that looked toward its role in the immediate future and to the year 2000 and how TR&D can help the ministry achieve its goals. The conclusions of the report are under review.

Deforestation is one of Nicaragua's most critical problems in protecting biodiversity. Under this project's policy component, USAID's RENARM program, based in Guatemala, provided technical assistance to MARENA to inventory Nicaragua's environmental policies. Land use maps and a forestry action plan were developed in late 1993; these led to the preparation of a new forestry law. TR&D is now advising the ministry on redrafting the law and on a process for gaining popular support for the draft. For example, communities are being

asked to comment on methods for awarding future logging concessions. Legislation on other environmental issues, such as the integration of protected area management into the ministry's portfolio of responsibilities and institutional capabilities, is also being discussed.

Environmental education. TR&D is also providing technical assistance on environmental education to MARENA and the Ministry of Education. A specialist has completed a draft national education strategy, and the USAID mission is considering expanding this component in the future.

Environmentally improved pest management. The Pan American Agricultural School in Honduras and CATIE are training extension workers and farmers in pest control methods for horticulture and coffee. These organizations established test sites for integrated pest management practices and initiated workshops on pest control for growers of cotton, coffee, and melons. Pest problems on onions will also be addressed. The Pan American School trained 98 growers in pest management and produced several reports and publications on pest control issues. CATIE is providing technical support to the National Coffee Council and has influenced the practices of hundreds of coffee farmers. CATIE will soon expand its activities beyond coffee to tomatoes and plantains.

USAID has supported a cotton specialist to assist the Agriculture Ministry's Center for Cotton Experimentation for the past two years. Ongoing work on cotton boll weevil control using pheromone traps, parasitic wasps and viruses, and other physical and biological methods has reduced the need for spraying by more than 50 percent.³ These efforts have also dramatically decreased production costs for cotton. Every cotton producer in Nicaragua has received information

on integrated pest management techniques. The government has now established stronger general pesticide regulations, banning several highly toxic pesticides, and is collecting data on poisoning cases for future preventive action.

Protected area management. In a 1991 decree the Nicaraguan president established several new protected areas—including the Miskito Cays on the North Atlantic coast, SIAPAZ on the Costa Rican border, and Bosawás on the Honduran border. The project has undertaken a number of activities to protect the resources of the Miskito Cays and Bosawás Protected Areas and developed an activity to improve resource management at Volcán Masaya National Park.

Miskito Cays Protected Area. The CCC began to undertake preliminary studies for a master design and management plan for the Miskito Cays in 1993. Studies on biological, ecological, and ethnographic topics, including sea turtle exploitation, the coral reefs, and wetlands birds, were completed. Mapping with satellite and geographic information system technology and other legal and cultural studies, such as one on traditional plant use, also continue.

The master plan is being developed in cooperation with the 34 communities who live in the protected area and depend on its resources for their livelihood. They have helped identify traditional local resource uses through a participatory mapping process designed to complement CCC's studies. MIKUPIA (or "environment heart"), a local NGO working in the area, is receiving financial and technical assistance from World Wildlife Fund (WWF)—under a WWF grant from the MacArthur Foundation—to collaborate on the plan's development with the government's Miskito Cays Protected Area Commission. The

commission, recently established by Nicaragua's president, comprises representatives of government agencies and MIKUPIA, whose role is to incorporate local community concerns into the plan. The commission's technical team—with representatives from MIKUPIA, CCC, and other organizations—has developed a draft plan, which the full commission has reviewed and accepted.

CCC intends to develop a fully functional infrastructure, including shore and marine facilities and a well-trained management staff, by the close of its agreement in 1996. So far eight Miskito personnel have begun training in technical skills; a temporary operational headquarters has been established (which will eventually be converted for permanent use); and vehicles, including a pickup truck, a research boat, and a dugout canoe, have been purchased. CCC also promotes publicity on the protected area; a first edition of a newsletter, for example, was produced this summer.

Large and possibly unsustainable harvests of marine life, especially the spiny lobster, are being studied by the CCC to find alternative methods of regulation. They are also providing diver training to make diving for lobsters, the main source of income for many Miskito people, safer. Miskito divers have suffered many deaths and injuries. CCC is also directly addressing part of its programs on local economic enhancement to empowerment initiatives for Miskito women. MIKUPIA helped local women obtain a grant from CCC to start up Women's Sewing Associations, which will provide training in sewing and business skills and a forum for discussion of women's concerns. Economic improvements gained through these efforts will build incomes for whole families in each Miskito Cays community.

Bosawás Protected Area. TNC, which began its efforts in the Bosawás Protected Area in late 1993, will make cooperation with local communities a priority in protecting the area. One of TNC's first efforts was to organize a workshop to legalize Sumu and Miskito Indian communal land claims in the reserve, using maps drawn by indigenous peoples in cooperation with the Centro Humboldt, a local NGO. Land-titling efforts will increase local involvement in park management and secure governmental support for this process. Socioeconomic surveys for the area have begun. Bosawás and the Honduran Mosquitia Protected Areas

together may soon form the cross-border Parque de la Solidaridad, which, under a current, joint presidential agreement, are already considered one contiguous protected area.

Volcán Masaya National Park. MARENA, Peace Corps/Nicaragua, and USAID developed a proposal to improve resource management at Volcán Masaya National Park and develop income-generating alternatives with residents of nearby Nindirí, whose primary livelihood comes from cutting park timber. Short-term plans include rehabilitation of the park's infrastructure and development of a multiyear

plan for approval by USAID. Mission staff have replaced the planned Chococente activity with the effort at Volcán Masaya.

—Kara Page, Datex
6/10/94

¹ World Resources Institute *The 1994 Information Please Environmental Almanac* (Boston, Mass.: Houghton Mifflin, 1994), pp. 634–635.

² Wayne Williams, Regional Environmental Advisor, USAID/Guatemala/CAP, personal communication, May 1994.

³ USAID/Managua figures, May 1994.



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



LAC

Panama

525-0308

Natural Resource Management

U SAID's \$18 million, eight-year (FY 1991–98) *Natural Resources Management* project, is helping Panama's public and private organizations manage the country's renewable natural resources, especially in the 326,000-hectare Panama Canal watershed. USAID, The Nature Conservancy (TNC), and the government of Panama will commit \$25 million to establish an environmental trust fund to carry out some of the project's activities. USAID's contribution for the fund totals \$8 million and marks the first time USAID funds have capitalized an endowment.

Highlights for FY 1993–94

- Formed a 34-member interagency committee, which is drafting a Panama Canal management plan scheduled for completion in September 1994.
- Assisted Panama's National Institute of Renewable Resources (INRENARE) in drafting three new environmental laws on reforestation incentives (passed in 1993), reforestation management (approved in 1994), and environmental regulations.
- Provided basic training in wildland management to nearly all of INRENARE's 150 park rangers. Training in 1994 will cover fire control, first aid, and forest management.
- Provided LANDSAT imagery, equipment, and training necessary to determine accurately the rate of deforestation in Panama, to be determined by fall of 1994. Periodic aerial images will track deforestation and help prioritize endangered areas.

Project at a Glance

Funding: Life-of-Project \$18,000,000
Biodiversity Percentage 25%

Project Duration: FY 1991–98

Implementors:

The Nature Conservancy
Panama's National Institute of Renewable Natural Resources
Fundación Natura
U.S. Department of the Interior

USAID Project Officer:

Jesus Saiz/USAID/Panama

Background

Panama's population has more than doubled since 1960. With the population rise has come an unmanaged wave of land clearing for agriculture and ranching. By 1985 only 40 percent of Panama's original forest remained intact, mostly on the Atlantic side. Deforestation has resulted in soil erosion, decreased land productivity, and seasonal flooding and drought. If this degradation continues, it may affect the navigability of the Panama Canal during the dry season.

Panama has set aside parks and reserves covering 14 percent of its terrain, but legislation to enforce park protection is weak and government presence in the parks is minimal or absent. Continuing population pressures have forced Panamanians to colonize the Atlantic forests, which up to now have remained largely intact. If this colonization goes unchecked, it will raze Panama's remaining forests.

Project Implementation

INRENARE and Fundación Natura will implement the project in concert with TNC and the U.S. Department of the Interior. The project will help secure the sustainability of 14 Panamanian parks and reserves through three components: the conservation endowment, management of the Panama Canal watershed, and parks and wildlands management within and outside the watershed.

Project Progress

Conservation endowment. A project paper was ready in 1987; however, political unrest in Panama delayed planning until 1990. At the project's inception, a debt-for-nature swap administered by TNC was to have supplied the initial endowment capitalization. Once again, the swap arrangements foundered. The present agreement commits \$15 million from

the Panamanian government, \$8 million from USAID, and \$2 million from TNC to a conservation trust fund. The fund's trustees will be the government and TNC, and Fundación Natura will be the beneficiary. About half of the Ministry of Environment and Natural Resources' (MARENA's) \$2 million annual funding will go to INRENARE; the rest is mandated for use by nongovernmental organizations (NGOs).

MARENA is in the process of selecting an agency to administer the fund. The selection should be finished by the end of May 1994; in June an amendment will be signed changing from the debt swap to the trust fund and the funds will become available.

Canal watershed management.

INRENARE is receiving technical assistance from the U.S. Bureau of Land Management (BLM) and USAID in managing the Panama Canal watershed. INRENARE, formerly a department within Panama's Ministry of Agriculture, was elevated to institutional status in 1987. The agency, however, lacks strength; only about 20 percent of its employees are professionals, and environmental concerns rate relatively low among Panama's problems. Much of the project's effort will be directed at improving INRENARE's institutional effectiveness and, thus, its influence over the Panama Canal watershed.

USAID has provided some basic equipment including six vehicles and several boats and, through the U.S. Park Service, training for key INRENARE employees. The Agency's technical assistance also includes a full-time organizational advisor and contract assistance in financial and accounts administration.

INRENARE and the project have formed a 34-member Inter-Agency Committee, which includes representatives of the Panamanian government and private agencies involved in

the Panama Canal watershed such as the Canal Concession, the Inter-Oceanic Regional Authority, the Water Authority, the Ministry of Health, and the Smithsonian Institution. In 1993 the committee attended several workshops organized by BLM and is drafting a Panama Canal management plan scheduled to be completed in September 1994.

U.S. Park Service specialists are providing assistance in management planning and personnel training to INRENARE officials working on management plans for 12 Panamanian parks. Priority planning goes to parks within the Panama Canal watershed. By September 1994 this planning will result in five action plans (specifying immediate park protection requirements) for parks within the canal watershed and master plans (projecting future development) for each area.

INRENARE has worked on three environmental laws already approved or pending approval by the government. A law defining incentives for reforestation was approved in 1993; a second reforestation law, which includes laws on forest management, passed in January 1994. A third, covering environmental regulation, was in the first of three parliamentary debates as of April 1994, with passage expected by the end of the year.

A new agency, the ARI, will provide additional support to resource conservation in the canal watershed. ARI, created early in 1993, will administer all buildings and financial proceeds resulting from the watershed's transfer from U.S. to Panamanian control. Although created by the Panamanian government, ARI is a nonpolitical agency directed by a nine-member board and will operate independently of the government and changes in administration. Its presence adds an important and stable voice for Panama's canal watershed.

ARI has obtained \$5 million from the Inter-American Development Bank to prepare a general plan and a regional plan for management of the watershed.

The agency is in the process of contracting with Nathan Associates to draft the plans; the deadline is August 1995.

Parks and wildlands management. This component provides the necessary infrastructure and training needed to protect Panama's 14 parks and reserves. Supporting elements include training, equipment, and mapping.

Most of the assistance in wildlands management up to now has consisted of training INRENARE rangers by the U.S. National Park Service. Most of the agency's 150 rangers have received basic training. In 1993 the service offered four training sessions. About 45 rangers attended basic training, either in a two-week session in January or an eight-day September session. About 25 rangers attended a two-week class in April introducing nature interpretive skills. Twelve park managers attended a two-day planning seminar in August. The service also advised INRENARE about options for demarcating park boundaries.

Four ranger training sessions will take place in 1994, including sessions on forest fire control, first aid, and forest management. Between 25 and 40 rangers will attend each session.

As of April 1994, 50 percent of

INRENARE's rangers were equipped with radio units. By the end of the year, MARENA plans to provide another 100 units.

In FY 1994 the project is providing \$1.3 million in material support for five parks within the Panama Canal watershed, which MARENA has identified as a priority area. The funding will provide construction of park offices, office furniture and equipment, beds for rangers, computers, and other necessities.

The project is also providing satellite information to monitor annual deforestation, which is now estimated between 30,000 and 70,000 hectares. In 1993 MARENA provided the Panamanian geographic institute, Tommy Guardia, with 1986 and 1992 LANDSAT images as well as equipment and training in the United States. Comparing these images will show the rate of deforestation; this should be completed by October 1994. New images, delivered every three years, will show changes in deforestation and help prioritize especially endangered areas.

Fundación Natura will provide training to about 100 Panamanian NGOs. The entity has prepared a system for classifying NGOs and is presently working with about 22 groups, providing education on grant

writing and environmental issues.

Through TNC, USAID will grant \$835,000 to Fundación Natura, which has already awarded about \$50,000 in contracts and has begun funding ten projects in park buffer zones within the Panama Canal watershed. Project focuses include sustainable agriculture, reforestation with native trees, environmental education, construction of interpretive nature trails, and soil conservation.

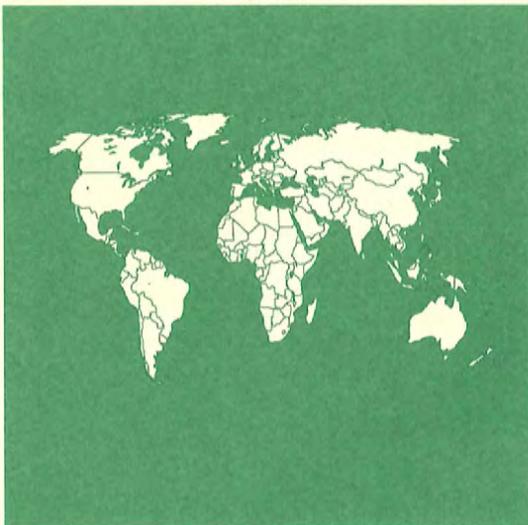
Cooperation with Parks in Peril.

USAID's *Parks in Peril* (PiP) project provides additional assistance to INRENARE in areas outside the Panama Canal watershed. The NGO National Association for Nature Conservation (ANCON) has been providing INRENARE with material support such as machetes and fuel for the past five years. PiP's contribution employs an agreement between ANCON, INRENARE, and TNC to implement park infrastructure support and resource management in Darién, near the Colombian border, and Bocas del Toro, near the Costa Rican border.

—Stephanie Joyce, Datex

6/3/94

GLOBAL



USAID

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



Global

936-5517

Environmental Planning and Management Project

USAID created the thirteen-year (FY 1982–95), \$36 million *Environmental Planning and Management* (EPM) project to strengthen the capacity of public and private institutions in developing countries to better manage and conserve natural resources for long-term sustainable development. EPM approaches this objective by providing technical support with state-of-the-art environmental planning methods and by facilitating the formulation and implementation of natural resource management policies and strategies for local and national development. A 1991 project evaluation found that EPM is making a solid and substantial contribution to enhancing the way in which governments, nongovernmental organizations (NGOs), and donors collaborate on formulating and implementing strategies for improving environmental and natural resource planning, management, and policy development.¹

Highlights for FY 1993–94

- Supported in part the landmark Central America Convention on Forestry.
- Funded the Environment and Natural Resources Information Center, which supports environmental program planning and produced two major reports on USAID environmental activities.
- Prepared, with the *Biodiversity Support Program*, a forthcoming report on methods for setting geographic biodiversity conservation priorities.
- Expanding its 1993 directory of country environmental studies (prepared as a book and on diskette) to include previously excluded European countries for publication in 1995.
- Led workshops on designing and implementing environmental impact assessments in Asia in the latter half of 1993.
- Financing a publication based on 22 case studies undertaken with African researchers and Clark University on natural resource management activities in African communities.
- Finished studies on pest and pesticide management in nontraditional agriculture in Guatemala. Lessons learned will be released in 1994 in a publication on sustainability and equity of recent agro-export diversification strategies.

Project at a Glance

Funding: Life-of-Project \$36,000,000
Biodiversity Percentage 16%

Project Duration: FY 1982–95

Implementors:

World Resources Institute
Datex, Inc.
Center for International Development and the Environment

USAID Project Officer:

John Wilson/USAID/Global

Project Implementation

EPM is primarily implemented through a cooperative agreement with the Center for International Development and Environment (CIDE) of the World Resources Institute (WRI). EPM's operational framework in a particular country or region centers on the planning and policymaking process and the institutions involved. EPM concentrates its in-country policy advice and technical support and its collaborative research on understanding and affecting these different processes and institutions. EPM focuses its activities in four areas: natural resource management strategies and assessments, community planning and NGO support, sectoral resource policy and planning (agriculture, forestry, and biodiversity conservation), and natural resource data management.

EPM also funds the Environment and Natural Resources Information Center (ENRIC), established in September 1991 to serve USAID's strategic planning and reporting needs on the environment. With annual USAID funding of about \$1 million, ENRIC has created an information system and project record program that tracks USAID environmental activities. ENRIC also prepares reports on project activity progress and trends.

Project Progress

Natural resource management strategies and assessments. EPM has made major contributions to the expansion and evolution of national multisectoral environmental planning through National Environmental Action Plans (NEAPs), country environmental profiles, and natural resource assessments. These documents have become instruments of institutional change. EPM activities in natural resource management strategies and assessments include:

Promoting sound natural resource policies in Africa. CIDE and the Africa Bureau are focusing several activities on the linkages among national policies, intermediary government institutions and NGOs, and natural resource use at the local level to determine how local people can influence national decision makers. EPM is financing the publication of a document to be printed in 1994 entitled *From the Ground Up: Lessons Learned*.² This publication is based on 22 case studies undertaken in cooperation with African researchers and Clark University on natural resource management activities in African communities. In Nairobi EPM recently supported a workshop on the relationship of gender to natural resource management at the community level.

In collaboration with the Africa Bureau, EPM organized the Policy Consultative Group (PCG), an advisory group composed of practitioners and scholars of policy planning and resource management, to strengthen natural resource policy initiatives, particularly of African governments. The process and institutions used by African countries to implement national and subnational conservation strategies are being studied. The PCG works on developing the capacity of environmental institutions at national and subnational levels to plan and implement NEAPs, projects of the Global Environment Facility, and community development initiatives. EPM has provided assistance in preparing and implementing NEAPs in Madagascar, Uganda, Tanzania, The Gambia, Malawi, and Guinea. In Botswana and Ethiopia, CIDE is helping the governments develop national conservation strategies into NEAPs.

EPM worked to establish legal standing for the Network for Environmentally Sustainable Development in Africa (NESDA), the African-based secretariat on NEAPs. It encouraged NESDA to provide leadership in developing and implementing an

analytical agenda to examine environmental policy initiatives (such as NEAPs) and to identify opportunities and constraints to policy reform. EPM is working with NESDA and an African expert on NEAPs to survey institutional capacities in nine African nations.

Guiding USAID environmental efforts in Latin America and the Caribbean. At the request of the Latin America and the Caribbean (LAC) Bureau, EPM prepared the report *Green Guidance for Latin America and the Caribbean: Integrating Environmental Concerns into A.I.D. Programming*,³ which provides guidance for implementing the LAC Regional Environmental Strategy. Intended for a broad audience, this manual examines the root causes of urban, industrial, and natural resource problems in the region; identifies priorities and strategies for sustainable development; and suggests ways to integrate environmental concerns into sectoral policies. Well-received by USAID missions and now in its second printing, the report has been translated into Spanish to enlarge its LAC audience.

Strengthening institutions in Latin America and the Caribbean. USAID's steady support and technical assistance through EPM for the Central American Commission on Environment and Development (CCAD) has strengthened the institution's ability to promote dialogue and action on environmental issues. CCAD has been instrumental in promoting initiatives such as the Biodiversity Treaty for Central America and the Central American Agenda for Sustainable Development presented at the 1992 United Nations Conference on Environment and Development in Rio de Janeiro.

EPM has provided technical assistance for Chile's national environmental commission (CONAMA). CONAMA is charged with formulating, coordinating, and monitoring environmental policy. EPM has

assisted CONAMA in gathering environmental data, monitoring trends throughout the country, and supporting the development of guidelines for environmental impact assessments (EIAs). This information is being used to design a national environmental monitoring system funded by the World Bank and to provide information for Chile's first State of the Environment Report. This is the first document to give the government of Chile environmental information with which new legislation and policy change can be promoted. CONAMA has also formulated and secured the passage of a national environmental law.

Developing methods and tools for planning and management in Asia. To move toward sustainable development, many Asian countries are adapting improved methods and tools for environmental planning and management. EPM is assisting Asian nations with two important management tools: natural resource tenure rights recognition and EIAs. With participating host-country governments, NGOs, and citizens, CIDE is studying laws and policies on tenurial rights within public forest and marine zones. Case studies on tenurial rights will be completed in 1994. In addition, CIDE is developing strategies to strengthen the capacity of Asian nations to undertake EIAs for development planning and environmental management. In mid- and late 1993, CIDE led workshops on designing and implementing EIAs in Asia.

Natural resource sector planning and assessments. This component of EPM covers policy research, strategies, assessments, and community-based training aimed at developing and implementing sustainable practices in agriculture, forestry, and biodiversity conservation. In 1991 EPM began to study the environmental and socioeconomic impacts of agricultural export strategies, especially for nontraditional agricultural exports (NTAEs). Initial findings showed that NTAEs provide benefits such as jobs and export

earnings; however, critical social and environmental problems were also identified including health risks from pesticides. In Ecuador CIDE has prepared documents that identify socioeconomic and environmental impacts of NTAEs, determine effective actions and policies to overcome problems, and ensure the sustainability of agricultural strategies. CIDE recently completed studies on pests and pesticide management in nontraditional agriculture in Guatemala. Lessons learned from these studies were to be released in a 1994 publication entitled *Bittersweet Harvests in Global Supermarkets: Sustainability and Equity of Recent Agro-Export Diversification Strategies*.⁴

In the area of tropical forest and biodiversity conservation, CIDE has contributed to efforts that will facilitate the implementation of the Convention on Biodiversity. EPM funds have partially supported the landmark Central American Convention on Forestry and a forthcoming report on setting priorities for the conservation of biodiversity, prepared in collaboration with USAID's Biodiversity Support Program.

Community planning and NGO support. EPM activities in this area strengthen the capacity of NGOs, policy research organizations, and grassroots groups to analyze environmental and natural resource conditions that may affect their livelihoods. Once issues concerning natural resources are understood, the organizations are counseled on how to formulate responses to those issues and participate effectively in planning and policymaking processes in their countries. This activity builds institutional capacity through environmental training as well as through the preparation and dissemination of guidelines and manuals on new methodologies and strategic planning techniques for environmental policy and natural resource management. The program also focuses on strengthening the abilities of local, regional, and national

government programs to engage the participation of nongovernmental groups. Technical assistance in strategic planning, design, and implementation of the consultation processes with resource-user groups is being provided.

In Mexico, for example, CIDE is helping develop and implement the Program for the Protection of the Mexican Tropical Forest (PROAFT). CIDE provides technical assistance in strategic planning and implementing a consultation process between PROAFT and forest resource users that will integrate these key stakeholders into the policy and management process. As a result of collaborative efforts between CIDE and the Mexican Grupo de Estudios Ambientales (GEA) to facilitate the work of Mexican NGOs with local communities in defining and resolving natural resource management problems, GEA has become a leading NGO in boosting local participation.⁵ A GEA consultant now coordinates workshops for PROAFT's grassroots operations. GEA is also providing technical assistance in participatory rural appraisals to such international organizations as the Inter-American Foundation, The Nature Conservancy, the U.N. Food and Agriculture Organization, and NGOs in Central and South America.

Natural resource data management. EPM is involved in efforts to assist policymakers and planners in compiling, accessing, and using environmental data effectively. This assistance includes developing statistical indicators for monitoring and assessing environmental conditions and trends, compiling directories and guides to information sources, and developing information policies and strategies for international agencies, national governments, and NGOs. Activities in this area include the following examples:

Strengthening information services in Africa. To meet anticipated increased demand for environmental information in Africa in collaboration with the

Africa Bureau, EPM established the Natural Resource Information Consultative Group (NRICG). The NRICG is a group of environmental information specialists drawn from universities, research institutions, government departments, and international organizations. The group provides consultative and advisory services on natural resource information management issues to WRI, USAID headquarters, missions in sub-Saharan Africa, African governments, and private organizations. It also helps organize and develop case studies, guidelines, and lessons learned for use by policymakers and resource planners in Africa.

Tools for accessing information. In publishing the 1993 *Directory of Country Environmental Studies*,⁶ CIDE is increasing international awareness of the hundreds of natural resource and environmental studies in developing countries. Prepared in book form and on diskette, the directory provides abstracts and bibliographic information on 354 studies of 129 developing countries and 12 regions. The directory also includes 66 national reports prepared for the 1992 United Nations Conference on Environment and Development held in Rio de Janeiro. CIDE is expanding the directory for 1995 to include previously excluded European countries.

Environment and Natural Resources Information Center (ENRIC).

During FYs 1993 and 1994 ENRIC continued to work on improvements in formulas and database programs for

analyzing USAID's environment portfolio. Numerous special analyses and presentations were carried out in support of efforts to re-organize USAID and implement the new *Strategies for Sustainable Development*. Research and progress reports on USAID's environment program culminated in a comprehensive report on the program,⁷ a focused report on tropical forest and biodiversity conservation,⁸ and a special report in newsletter format on USAID's biodiversity program for the June 1994 meeting of the Intergovernmental Committee on the Convention on Biological Diversity, held at U.N. Environment Programme headquarters in Nairobi.

To better communicate individual USAID environmental project achievements ENRIC researchers undertook preparation of project profiles in FY 1994. Pilot efforts to geo-reference field activities were also initiated in FY 1994. A survey of U.S. and other efforts to map and monitor tropical forests with satellites was undertaken during FY1993-94 and results were presented at a June 1994, U.S. State Department workshop on the use of geographic information systems (GIS) in sustainable development. Survey recommendations are being considered for action in USAID program planning.

—Brad Williams, Datex
8/22/94

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³ U.S. Agency for International Development and World Resources Institute, *Green Guidance for Latin America and the Caribbean: Integrating Environmental Concerns into A.I.D. Programming* (Washington, D.C.: USAID, 1993).

⁴ L. A. Thrupp, *Bittersweet Harvests in Global Supermarkets: Sustainability and Equity of Recent Agro-Exports Diversification Strategies* (Washington, D.C.: World Resources Institute, forthcoming).

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⁷ U.S. Agency for International Development, Environment and Natural Resources Information Center, *Environment Program Report: FY 1992-93* (Arlington, VA: USAID, 1993).

⁸ U.S. Agency for International Development, Environment and Natural Resources Information Center, *Conservation of Tropical Forests and Biodiversity: Program Update* (Arlington, VA: USAID, 1994).

⁹ P. H. Freeman and R. Fox, Environment and Natural Resources Information Center, *A Sourcebook on Tropical Forest Mapping and Monitoring Through Satellite Imagery: The Status of Current International Efforts* (Arlington VA: USAID, 1994).

USAID

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile

**Global****936-5518**

Coastal Resources Management Project

Since 1988, the \$20.8 million *Coastal Resources Management Project (CRMP)* has been instrumental in helping three pilot countries—Ecuador, Sri Lanka, and Thailand—address their serious environmental problems on the coastal zone. This eight-year project has assisted them in formulating and implementing integrated coastal management programs and has also provided technical assistance and training to other coastal nations supported by USAID.

To accomplish this task, CRMP has embraced a two-track strategy. First, CRMP has focused on strengthening coastal zone policies and management agencies within central governments and on building a cadre of trained nationals to sustain coastal programs beyond the project. Secondly, it has worked closely with local citizens who have a vested interest in rationally using their resources in formulating management plans in “special management zones” where CRMP has tested a variety of conservation techniques quickly without the expense or added complexity of undertaking a nationwide coastal protection plan. Experience from the special demonstration zones have laid the basis for action at the national level.

Highlights for FY 1993–94

- Completed preparations for the government of Ecuador to assume direct control of the pilot initiative in mid-1994 through an Inter-American Development Bank loan of \$13.4 million. The Ecuador pilot project received national and international awards.
- Launched grassroots coastal resource management exercises in Ecuador in mangrove protection, sanitation, fisheries, ecotourism, conservation education and training, and environmental monitoring.
- Pilot projects in Sri Lanka and Thailand, assumed by local USAID mission and host government respectively, made progress in linking coastal management with economic development.
- Released resource management strategy for Sri Lanka’s coastal region, product of a five-year planning effort. Resulted in the establishment of two special area management zones, encouraging participatory approaches to coastal resource management.
- Published 30 policy and technical papers on lessons learned and management models emerging from nine years of project experience in three pilot countries.
- Expanded coastal networks through regional newsletters and local and regional training seminars in Ecuador, the Philippines, Sri Lanka, and Thailand, reaching 167 coastal managers from 47 countries.

(continued)

Project at a Glance

Funding: Life-of-Project \$20,800,000
Biodiversity Percentage 75%

Project Duration: FY 1988-95

Implementors:

University of Rhode Island’s Coastal Resources
Center

USAID Project Officer:

John Wilson/USAID/Global

- Provided technical assistance to a broad range of multilateral development organizations, USAID missions, and federal agencies on several coastal management initiatives.
- Began a year-long program to prepare coastal resource management strategies in two pilot sites in Kenya and Tanzania.

Background

The decline of coastal resources in low- and middle-income countries is an urgent issue that potentially affects billions of people. Tropical coastal zones contain a high proportion of the world's most productive and biologically diverse environments. The majority of citizens in developing countries live along coasts, which support a large percentage of the world's agriculture, industry, and tourism. Despite the importance of these areas, coastal degradation is on the rise. Fishery stocks are collapsing. Critical habitats and the best agricultural lands are being rapidly lost through inappropriate coastal development and lack of effective planning.

Project Implementation

CRMP, which is implemented by the University of Rhode Island's (URI's) Coastal Resources Center, has yielded effective methodologies for managing coastal regions. Due to their success, many of CRMP's centrally funded activities have been assumed by host governments and local USAID missions. The Thai government took over elements of CRMP's country program in 1992. In Sri Lanka, the USAID mission has incorporated a continuing coastal element, executed by URI, in its *Natural Resources and Environmental Policy Project* (NAREPP). More recently, the government of Ecuador took direct control of USAID-sponsored programs and launch the second

phase of the country's coastal program in mid-1994 through a loan from the Inter-American Development Bank.

Project Progress in Pilot Countries

In anticipation of project completion in May 1995, in FY 1993 the focus of CRMP shifted away from directly supervising the pilot projects in Ecuador, Sri Lanka, and Thailand toward providing technical support in particular management areas, documenting the lessons learned from the pilot exercises, and disseminating replicable models for coastal management to other developing countries.

Ecuador. CRMP was responsible for establishing Ecuador's *Coastal Resources Management Program* (see separate project profile), which was legally created under a 1989 presidential decree with the aim of designing and implementing community-based management plans for five specially designated zones located throughout the coast. Ecuador's coastal region, on which the country depends for food and foreign currency, is facing serious decline due to clearing of mangrove forests, water pollution, siltation, and overfishing, exacerbating conflicts among coastal resource users.

Beginning in 1993, CRMP received financial support from the centrally funded project and the USAID mission in Ecuador to carry out three main activities:

Implementing special management plans. In May 1992 Ecuador's National Inter-Ministerial Coastal Commission approved management plans for each of the five specially designated zones following an intensive planning and review process involving substantial input from resource users, grassroots groups, and governmental officials.

One month later, the Ecuadorian president recognized the five plans and created permanent coastal management committees in each special zone, as sought by local groups, as well as a stronger national coastal program office.

Since approval, the management plans have yielded a series of new initiatives. Activities have been launched to protect mangrove forests at the local level, sponsor beach clean ups and other sanitation improvements as a focal point for community involvement, promote ecotourism to create economic incentives for conservation, and provide extensive education and training to maximize the efficiency of harvesting shrimp larvae, finfish, and shellfish. A national team of technical experts has directed many of the initiatives, which has provided local leaders with substantial experience in participatory resource management.

Technical assistance for project design. In 1992 and 1993, CRMP provided extensive technical assistance to design a four-year, \$13.4 million loan from the Inter-American Development Bank to support Ecuador's coastal program following the completion of the USAID pilot project. Approved in August 1993 with the first disbursement planned for mid-1994, the loan finances many of the activities specified in the local management plans, and expands the country's coastal program significantly in several areas: national policy development, public education, staff training, institution strengthening, and applied scientific research.

Documenting the lessons learned. As part of CRMP's project completion in Ecuador, project staff documented their experience in management theme areas such as mangrove ecosystems, mariculture, water quality protection, tourism, and environmental sanitation.

CRMP's approach to coastal zone management has won both national and international accolades. In July 1993

Ecuador's premier nongovernmental organization (NGO), Fundación Natura, conferred its Blue Planet Award on the CRMP for its outstanding work in environmental protection and conservation. The project also was featured in a Worldwatch Institute paper¹ and presented at the 1993 World Coasts Congress in the Netherlands.

Sri Lanka. Sri Lanka's program grew in response to the urgent need to manage shorefront erosion along its densely populated southwestern coast. Unlike Ecuador, where CRMP built a program from ground zero, the project in Sri Lanka set out to strengthen an existing program housed in the Coast Conservation Department. CRMP initially launched a modest \$0.5 million, five-year effort in late 1985 to develop the Coastal Zone Management Plan, which helped Sri Lanka address resource conflicts in a narrowly defined coastal zone. This program focused on four key issues: shoreline development, erosion, habitat loss, and the decline of cultural and recreational sites.

In 1989 CRMP followed up this first stage and began preparing papers examining Sri Lanka's development process and environmental change since the nation's independence in 1948. The papers defined key issues and priorities, and plotted a future course for managing the country's entire shoreline. CRMP integrated a cross section of top governmental and nongovernmental specialists while drafting the documents. Despite delays caused by civil strife on the island, the effort culminated in 1993 with the release of the report, *Coastal 2000: A Resource Management Strategy for Sri Lanka's Coastal Region*.² The strategy outlined in the report employs participatory approaches to coastal management and lays out plans and profiles for establishing two special area management sites. Adopted by the Sri Lankan cabinet in 1993, the framework for a second generation program is now in place.

The soundness of CRMP's approach to resource management was demonstrated when the USAID mission in Colombo adopted the project's participatory strategy in its own *Natural Resources and Environmental Policy Project* (NAREPP). Moreover, beginning in 1992, the mission took over full funding of the Sri Lanka pilot by providing a five-year, \$2.4 million extension through NAREPP. By mid-1993, special area management planning programs were initiated at two sites, Hikkaduwa (a marine sanctuary and major tourist resort) and Rekawa Lagoon (a fishing village). Planning meetings have been held with communities and local authorities to define key management issues and solutions in both pilot areas.

Thailand. Working with the Thai Office of the National Environmental Board, CRMP created momentum for integrated coastal management by focusing on the nation's ailing coral reefs, threatened by destructive fishing practices (dynamiting and trawling), tourism activities, and sedimentation and pollution from nearby land development. The project first set out in 1986 to combine national public awareness campaigns, community-based conservation initiatives, and appropriate technologies to conserve coral reefs in a demonstration area of the southern Phuket Province. After two years, the project forged cooperation among government and diverse users, resulting in a strong local and national constituency for coral reef management and tangible management actions in Phuket.

Building on the demonstration project, CRMP worked from 1989 to 1991 on *A National Coral Reef Protection Strategy for Thailand*,³ published in 1992, which mapped out a comprehensive strategy for local and national partnerships to manage Thailand's coral reefs. With an initial \$80,000 allocation from the Thai government, a team of local experts began implementing the strategy that year.

Along with its work in coral reef management, CRMP helped establish in 1990 the Coastal Resources Institute (CORIN) at the Prince of Songkla University. CORIN is a focal point for coastal conservation in southern Thailand and is charged with formulating management strategies and coordinating education, research and development, and public participation for coastal projects. Selected CORIN faculty are completing doctoral studies at URI, while several others already have received short-term training at U.S. universities. The CORIN effort has been a model for universities in Sri Lanka and Ecuador, helping to define how a university-based coastal center can contribute to resource management.

Progress in Training and Outreach

Training. As part of CRMP's mandate to strengthen the ability of developing country professionals to manage coastal resources, the project provided numerous training courses. In June 1994, 24 participants (9 women and 15 men) from 13 countries attended URI's Summer Institute, a four-week course in designing and managing integrated coastal resource programs. In the same year, CRMP collaborated with technical universities in Ecuador and the Philippines to sponsor regional courses for Asian and Latin American practitioners on special area management. As of 1994, more than 167 participants (51 women and 116 men) from 47 nations have attended these international courses. CRMP also has developed a wide range of curriculum materials, including a teaching case study on implementing coastal resource management policy⁴ and a guide to environmental impact assessment in coastal areas.⁵

Outreach. As CRMP entered its latter stages, it emphasized documenting and disseminating lessons learned and management models that emerged from

the pilot projects, as well as building regional and global networks of coastal resource managers. Project outreach was accomplished through a variety of means.

Publications. In 1993 CRMP published 30 policy and technical papers, as well as six coastal management plans and strategies, on a variety of areas related to the pilot projects. Papers included an analysis of tourism in the Galapagos Islands,⁶ strategies for managing Thailand's coral reefs,⁷ seminar proceedings on coastal zone management and economic development in Sri Lanka,⁸ and an action agenda for Central America.⁹

Global and regional networks. CRMP has helped expand regional networks of coastal practitioners through its seminars and three newsletters based in Chile (Spanish Latin America), Sri Lanka (tropical Asia), and the United States (global). Over 5,000 subscribers from 160 nations participate in networking activities.

Technical assistance. In 1993, CRMP provided in-country assistance to USAID missions in El Salvador, Indonesia, Panama, Papua New Guinea, and the Philippines to help design new programs with coastal components. CRMP also provided assistance to the U.S. State Department

to develop the U.S. Coral Reef Initiative and prepare for the World Coast Conference and the United Nations Global Conference on the Sustainable Development of Small Island Developing States. In May 1994, CRMP began a yearlong initiative to prepare coastal resource management strategies for two pilot sites in Kenya and Tanzania. The effort, sponsored by USAID's Regional Economic Development Services Office for East and Southern Africa (REDSO/ESA) in collaboration with the United Nations Environment Programme's Regional Seas Programme, also will promote regional learning about coastal management and information exchange among practitioners.

Assistance to other donors. Over the past year, CRMP has provided technical advice on coastal management initiatives sponsored by the United Nations Development Programme, United Nations Environment Programme, the Inter-American Development Bank, and the World Bank. It also helped the Consultative Group on Biological Diversity to define a coastal management agenda.

—Michele Zador, *Datex*
6/1/94

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² S. Olsen et al., eds., *Sri Lanka Coast 2000: A Resource Management Strategy for Sri Lanka's Coastal Region* (Narragansett, Rhode Island: University of Rhode Island, Coastal Resources Center, 1993).

³ Michele Lemay et al., *A Statement of Need and Policies and Action Plan*, volumes I and II of *A National Coral Reef Protection Strategy for Thailand* (Bangkok: University of Rhode Island and Thailand Office of the National Environment Board, 1991).

⁴ Lynne Z. Hale and Enid Kumin, *Implementing a Coastal Resource Management Policy: The Case of Prohibiting Coral Mining in Sri Lanka* (Narragansett, Rhode Island: University of Rhode Island, Coastal Resources Center, 1992).

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⁶ Bruce Epler, *An Economic and Social Analysis of Tourism in the Galapagos Islands* (Narragansett, Rhode Island: Coastal Resources Center, University of Rhode Island, 1993).

⁷ Lemay, *National Coral Reef Strategy*.

⁸ Alan T. White and Mervyn Wijeratne, *Are Coastal Zone Management and Economic Development Complementary in Sri Lanka?* (Narragansett, Rhode Island: Coastal Resources Center, University of Rhode Island, 1993).

⁹ Gordon Foer and Stephen Olsen, eds., *Central America's Coast: Profiles and an Agenda for Action* (Narragansett, Rhode Island: Coastal Resources Center, University of Rhode Island, 1992).



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



Conservation of Biological Diversity

Global

936-5554

USAID is working to stem the loss of unique plant and animal species through a range of research and conservation initiatives. This effort includes activities not only in parks and other protected reserves but also in areas where human activities are transforming the landscape and reducing the diversity of the planet's ecosystem, species, and genetic resources. Since 1988 USAID's Global Bureau (then the Bureau of Science and Technology) has sponsored the ten-year (FY 1999-97), \$40 million *Conservation of Biological Diversity* (CBD) project, which is designed to improve the capacity of public and private institutions to identify the critical need for and economic potential of conserving biological resources. CBD's major activity is the *Biodiversity Support Program* (BSP), a consortium of World Wildlife Fund (WWF), The Nature Conservancy, and World Resources Institute. It also supports three other components: the *International Cooperative Biodiversity Groups* (ICBG) program, which aims to facilitate the discovery of medicines from tropical natural products to make conserving endangered habitats economically viable; the *Consultative Group on Biological Diversity* (CGBD), a coordinating secretariat for private donor foundations supporting biodiversity activities; and the *Biodiversity Rapid Assessment Program* (RAP), which sponsors biological inventories by Conservation International to aid in identifying and managing potential conservation areas.

Highlights for FY 1993-94

- Reorganized BSP project components in FY 1994 to integrate training into all activities, added analysis as a new component, and folded pilot demonstration projects into a technical assistance and implementation component.
- Launched the *Geographic Biodiversity Conservation Investment Priorities Program* in early 1994 to strategically plan and guide USAID's conservation project portfolio in sites that are biologically valuable, under threat, and possess propitious policy conditions for conservation.
- BSP awarded more than \$850,000 for 35 demonstration projects, research grants, and networking and dissemination activities through the *Biodiversity Analysis for Africa* (BAA) project to strengthen the Africa Bureau's efforts to conserve biodiversity by better targeting future USAID efforts to meet the continent's needs. A 1993 BAA report called for new aggressive biodiversity conservation strategies.

(continued)

Project at a Glance

Funding: Life-of-Project \$40,000,000
Biodiversity Percentage 100%

Project Duration: FY 1988-97

Implementors:

World Wildlife Fund
The Nature Conservancy
World Resources Institute
U.S. National Science Foundation
Consultative Group on Biological Diversity
National Institutes of Health
Conservation International

USAID Project Officer:

Mike Philley/USAID/G

Highlights *(continued)*

- BSP awarded more than 120 small research grants since program inception, of which 42 are completed.
- BSP granted more than \$350,000 in research funds by FY 1994 under the *Global Climate Change for Africa II* project. Examples include a recently completed preliminary field assessment of the Lake Lobeke area in Cameroon.
- Through BSP, USAID recently completed a proposal to establish the *Indonesian Biodiversity Foundation* through an endowment for the long-term financing of innovative and sustainable management of that country's enormous biological wealth.
- USAID/Mexico, BSP, and the Wildlands and Human Needs Program of the WWF, in collaboration with several Mexican partner nongovernmental organizations (NGOs), designed an integrated conservation and development program to help decrease greenhouse gas emissions due to deforestation in southern Mexico. The initiative is also helping conserve the region's rich biodiversity and improving the quality of life of the region's rural population.
- Organized the *International Cooperative Biodiversity Groups*, an unusual assemblage of scientists, government officials, and private sector companies. Collected and screened close to 800 plant and insect extracts for potential medicinal properties.
- Supported the *Consultative Group on Biological Diversity*, which worked with 35 U.S. private donor foundations to coordinate and facilitate grant making on

biodiversity issues, focusing on the marine environment, global institutions, biodiversity awareness, and international grantmaking.

- CBD will launch the *Biodiversity Rapid Assessment Program* in late 1994 to help identify and protect areas with high potential for conservation in Andean South America, East Asia, and the Pacific, and to build in-country biological assessment capacity.

Project Implementation

This project is implemented through a number of cooperative agreements with environmental and professional organizations and, recently, the NIH and NSF.

Biodiversity Support Program.

Originally a ten-year, \$12.8 million project, BSP has been increased to \$31.8 million through a cooperative agreement between World Wildlife Fund (WWF) and the Global Bureau. The program completed the first of two five-year phases in FY 1993, during which a significant activity was the renewal of the cooperative agreement. The program's goal is to conserve biological diversity while enhancing human livelihoods through improved conservation and use of biological resources. Specific goals are to develop and support efforts with far-reaching impacts by testing new approaches, answering critical research questions, and building indigenous capacity and knowledge. Described as "extraordinarily successful" in a 1991 midterm review, the program had supported more than 300 conservation activities in 60 countries by early FY 1994. More than 80 U.S. and international conservation, scientific, and educational institutions have participated in implementing or collaborating on conservation projects.

The tasks regarded by the program as critical to the achievement of its goals

and objectives include: (1) support and assess the effectiveness of innovative conservation methods that conserve biological diversity, while promoting sustainable development, (2) develop processes that include local communities and institutions as full participants in analyses and decisions involving biological resources and transfer necessary skills and technologies to local participants, (3) develop monitoring and assessment programs and improve local capacity for research and analysis to evaluate impact, improve accountability, and strengthen implementation, (4) increase public access to the technical expertise and knowledge of the conservation, social science, and economic communities and increase awareness of the need for integrating these disciplines, and (5) identify and support economic and noneconomic (e.g. cultural) incentives to encourage a broader approach to conservation of biological diversity.

During its initial five-year tenure, the program consisted of five priority components: technical assistance, training, information and evaluation networking, research, and pilot demonstration projects. In its second five-year phase, beginning in FY 1994, BSP will reorganize the components slightly. Training will be integrated into all project activities, analysis will be added as a new component, and pilot demonstration projects will be folded into a technical assistance and implementation component. Due to funding constraints, no new research was funded in FY 1994; emphasis now will be placed on analysis and dissemination of lessons learned from the program's first five years. Some of the actions recently completed or under way are described below under their original component designation.

Biodiversity Rapid Assessment

Program. The RAP component is CBD's most recent addition. USAID signed a \$3.0 million cooperative

agreement with the environmental group Conservation International in October 1994 to undertake biological assessments in Andean South America, East Asia, and the Pacific, specifically in areas thought to be especially rich in biological diversity but where baseline ecological information remains scarce or nonexistent. The three-year component is supported by USAID parallel funding to the Global Environment Facility.

International Cooperative

Biodiversity Groups. ICBG is a \$10.0 million, five-year program sponsored jointly by USAID, the National Science Foundation, and the National Institutes of Health; the latter has entered into a cooperative agreement with USAID to serve as the program administrator. The initiative, which was launched in 1993, functions as an umbrella for five separate biodiversity groups whose members comprise an unusual assemblage of U.S. and host country researchers, environmental organizations, pharmaceutical companies, government agencies, and national herbariums. These groups are focusing efforts in Argentina, Cameroon, Chile, Costa Rica, Nigeria, Peru, and Suriname to achieve several goals: gather data on conventional medicines, prospect for, and test, biological chemicals active against diseases, train local communities to assist with project activities, and share the patents and royalties from any commercial products with people from the region where the material was found.

Consultative Group on Biological Diversity. CGBD was established in 1987 by USAID and six foundations to serve as a coordinating secretariat for U.S. private donor groups on biodiversity issues. Located in New York City, the group initially set out to increase attention on biodiversity conservation among leading philanthropic organizations. With rapid growth in membership, currently numbering 35 foundations, CGBD's

mission has been expanded to focus on strategic planning and coordination in biodiversity grant making. USAID contributes \$75,000 annually for the operational upkeep of the secretariat.

Project Progress

Biodiversity Support Program. BSP has made notable progress in the following areas.

Technical assistance. The program plays an important role in assisting USAID and others in designing and evaluating conservation approaches, such as a comprehensive monitoring and evaluation system for the USAID/Asia Bureau *Profitable Environmental Protection* (PEP) project in the South Pacific. The system uses a participatory process involving local communities. Also recently completed is the USAID Biodiversity Analysis for Africa project. It was designed to strengthen the Africa Bureau's efforts to conserve biological diversity by examining past projects and studying how future USAID efforts could be better targeted to address the continent's needs. The information will be used to revise and update the Bureau's biodiversity strategy.

BSP has played a vital role in the development of a recently completed a proposal to establish the *Indonesian Biodiversity Foundation* through an endowment fund for the long-term financing of innovative and sustainable management of that country's enormous biological wealth. The endowment will fund small grants to local NGOs and communities to support Indonesia's National Biodiversity Action Plan. This project, part of USAID's contribution to the Global Environment Facility, is a joint conservation effort between the U.S., Japan, and Indonesia.

BSP fielded the initial design team, then organized, fielded, and participated on subsequent technical teams. BSP has provided grants, first to the

Indonesian NGO Yayasan Pelangi, and then to the foundation itself, to undertake the specific tasks for the fund to become operational. Specific accomplishments under these grants include: incorporating the foundation, selecting a board of trustees and directors, recruiting and hiring key foundation staff, and developing guidelines and procedures for financial management, grant making, and investments.

Training. A variety of training projects help host-country individuals and institutions develop conservation and management skills that enhance the long-term viability of local organizations. The ongoing *Organization Development, Institutional Strengthening, and Training III* project, a continuation of a three-year joint undertaking between BSP and WWF's Organizational Development Program, helps train developing country scientists, researchers, and other environmentalists. It focuses on imparting the organizational skills needed to enhance the competence of environmental professionals. This phase of the training focuses on human resource development as an important part of strengthening organizations and on transferring training capability to the field. Phases I and II addressed proposal design and financial resource development, respectively. Products resulting from the project to date include English and Spanish versions of a training facilitator's manual for conducting human resource development workshops and English, Spanish, and Portuguese guides to proposal, financial, and human resource development.

Information and evaluation networking. By disseminating information on recent advances in biodiversity conservation, the program develops and strengthens the network of people and organizations working in biodiversity conservation worldwide. It also supports the participation of individuals from developing countries in environmental networking activities.

For the 1991 *Forests and People in Kalimantan Conference* held at the New York Botanical Garden, for example, the program supported participation by 14 scholars and government representatives from Indonesia and other developing countries. The conference provided a unique opportunity for social and natural scientists to discuss conservation issues. (The proceedings will be published by the New York Botanical Garden in late 1994). More recent information and evaluation activities include the establishment of guidelines and processes for the monitoring and evaluation of BSP-funded projects, focusing specifically on analysis of protected area management systems and indigenous management systems, and sponsoring round tables, workshops, and community fora at various locales worldwide that provide information on the conservation of biodiversity.

Research. By emphasizing small, applied conservation research projects (up to \$15,000) through its *Research Grants Program*, BSP has financed scientific studies that otherwise risk being overlooked. The grants encourage participation by local researchers. BSP staff also contribute to institutional capacity building by providing technical assistance in financial and project reporting. Grantees funded through the competitive program are typically graduate students, universities, museums and herbariums, and in-country NGOs and research institutions from developing countries.

Although ongoing research grants will continue to be funded through FY 1994, no new research funds will be awarded until FY 1995 because of budget constraints. Instead, BSP is emphasizing analysis of previously funded projects to determine lessons learned and to disseminate that information.

More than 120 small research grants have been awarded since the program's inception, of which 42 have been completed. In FY 1993, 43 of 323 proposals submitted were funded. The environments addressed by the program's grants range from coastal mangroves and benthic systems to arid savannahs and tropical montane forests. Sample topics are beekeeping projects, legislative studies, agroforestry, species interaction, and gender issues, to name a few. BSP funded travel and participation costs for 22 grantees at the 1993 annual meeting of the Society for Conservation Biology (SCB) in Arizona, for which it also organized a symposium in which the grantees presented their research findings. Another 20 grantees are scheduled to do so at SCB's 1994 annual meeting.

Pilot demonstration projects. The largest share of BSP technical and financial support during its initial period has been devoted to innovative initiatives that support the conservation of biological diversity. These pilot demonstration projects, funded largely through buy-ins¹ from USAID missions or regional bureaus, vary greatly in size and complexity. Many incorporate other BSP components in their project activities.

A notable example of a large-scale pilot demonstration project that addresses a number of components is the *Biodiversity Analysis for Africa* (BAA) project. Based on the assumption that successful conservation efforts must be locally managed and developed in tandem with appropriate national and international policies, this project is designed to develop new priorities and test strategies for conservation in Africa. More than \$835,000 has been awarded for 35 demonstration projects, research grants, and networking and dissemination activities. The grants range from \$3,000 for a study of public attitudes and human needs around a park in Malawi to \$131,000 for monitoring of an integrated

conservation and development project in Madagascar.

The African Biodiversity Advisory Group, convened by BSP and composed primarily of African scientists and conservationists, has worked closely with the program to identify and prioritize the critical issues for biodiversity conservation in Africa and to recommend actions and guidelines for future biodiversity conservation efforts. A 1993 BAA report officially launched by USAID Administrator J. Brian Atwood calls for new and aggressive strategies for biodiversity conservation.² The report notes that these strategies must respect and incorporate African values, knowledge systems, and priorities; involve local people and conserve biological diversity in all African nations (not just those with the greatest biological diversity); and link conservation with sustainable development.

Future activities for BAA include intensive analyses of selected projects, focusing on themes highlighted in the 1993 report, with the ultimate goal of disseminating information on lessons learned from these projects. Among those targeted for analysis are an integrated monitoring program for transboundary forest conservation and management in Congo, Cameroon, and the Central African Republic and the development of monitoring procedures and analyses of community-based conservation in Namibia.

Also noteworthy is the *Global Climate Change for Africa II* (GCCA) project, an add-on to the Africa Bureau's African Global Climate Change project. A principal goal of GCCA is to improve African expertise on both deforestation and biomass burning and their impacts on the environment to enable the sub-Saharan countries to more effectively (1) manage their resources for sustainability and (2) participate in international policy discussions that will influence both their own economic development and future greenhouse gas emissions from the rest of the world.

In an earlier GCCA report, BSP called for a combined research and management program to provide African countries with the necessary tools for combating the causes and impacts of global climate change.³ By FY 1994 research funds totaling more than \$350,000 had been granted, including a recently completed preliminary field assessment of the Lake Lobeke area in Cameroon. The assessment supported a strategic planning effort that should lead to the recognition and long-term management of a regional conservation area. Six other research grants are currently under way.

In addition to the above pilot projects are smaller innovative pilot projects, including the *Conservation of Pic Macaya* project in Haiti, which emphasizes institution building of local NGOs and explores alternative patterns of resource use and conservation strategies in and around the park, and the *Nepal Data Base Background Study*. Under the latter project, staff members are gathering background information on the status of biological data in Nepal, carrying out a user survey for establishing data base needs, recommending a national biogeographic classification system, and recommending a standard data base format appropriate to Nepal's needs and capacity.

In Mexico a BSP initiative is helping conserve the region's rich biodiversity and improving the quality of life of the region's rural population. USAID/Mexico, BSP, and the Wildlands and Human Needs Program of the World Wildlife Fund, in collaboration with several Mexican partner NGOs, designed an integrated conservation and development program to help decrease greenhouse gas emissions due to deforestation in southern Mexico. Mexico is one of the largest producers of greenhouse gases in the world and is the key country for special attention under USAID's *Global Climate Change (GCC) Initiative*.

New Directions. One of BSP's newest and highly anticipated activities is the *Geographic Biodiversity Conservation Investment Priorities Program*, which aims to help USAID strategically allocate funding for biodiversity conservation on a regional scale. The program responds to the recognition that environmental funding is limited, and that international conservation efforts need to focus on protecting a representative network of biologically important areas within major habitat types. Through the new activity, BSP is identifying conservation sites that merit proportionally greater investment utilizing three parameters: (1) the biological value of an area; (2) the threat the area confronts and the conservation opportunity it presents, examining factors such as the degree of fragmentation, habitat loss, and degradation; and (3) the policy and institutional characteristics that indicate whether a conservation investment in a given area is likely to have a positive impact and the potential human utility of the biodiversity. This integrated approach represents the first time that policy and human utility issues are being incorporated into conservation planning on a regional scale, and departs from the ad-hoc decision making that has often characterized biodiversity funding within the international donor community to date.

To launch the program, BSP convened a working group in January 1994 consisting of five U.S. environmental NGOs to develop a methodology for the initiative and to collect and synthesize data for the first priority-setting exercise in the Latin America and Caribbean region. In September 1994, a workshop with 75 participants brought together in Miami experts from Latin America and the Caribbean, USAID officials, and representatives of the NGO working group to review the data and finalize a list of priority terrestrial sites in the region. The meeting's final recommendations, which will be issued in November, are expected to have ramifications beyond USAID's aid program, to benefit

developing country governments, NGOs, and other international donors in formulating their own conservation strategies. BSP plans to utilize the experience as a model for a similar exercise in the Asia and the Pacific region starting in November 1994, with a workshop planned for mid-1995.

Biodiversity Rapid Assessment

Program. This new CBD component builds on two USAID-funded rapid biological assessments undertaken by Conservation International in Peru and Papua New Guinea in 1994 and a half dozen previous assessments conducted over the last four years in countries like Ecuador, Guyana, Belize, and Bolivia with private foundation support. Rapid biological assessments provide low-cost and quick alternatives to comprehensive biological inventories, which can take years to complete and be prohibitively expensive for budget-strapped park management agencies. These rapid assessments provide baseline ecological information that is indispensable for protecting biodiverse ecosystems in developing countries, where there is often a dearth of scientific knowledge about the local environment. The assessments are conducted by a team of international experts in tropical biology, who are joined by local scientists for four-to-six week expeditions to the field. Scientists identify and count species from various taxonomic groups (mammals, reptiles, birds) to determine the biological richness of a site and provide management guidelines for its protection.

The RAP component—scheduled to begin in late 1994—will also aim to develop in-country technical capacity to conduct rapid biological assessments through a five-pronged approach: (1) provide field experience and training for local biologists, (2) strengthen local institutional infrastructure, (3) provide technical training in biological data utilization, (4) make data accessible to local organizations, and (5) build conservation partnerships with host country groups.

International Cooperative Biodiversity Groups. Since the ICBG program was launched in December 1993, project scientists have conducted biological inventories in four countries—Argentina, Chile, Costa Rica, and Suriname—and have sent nearly 800 plant and insect extracts to U.S. pharmaceutical companies. The extracts are currently being screened for their drug potential, and preliminary results are expected in late 1994. If any compounds with therapeutic properties are identified, patents and licenses will be issued to ensure that potential royalties are distributed equitably among commercial enterprises and local communities. Additionally, ICBG is working to strengthen the capacity of host country scientists to conduct biological inventories and remove plant extracts by training them and providing basic equipment.

ICBG also is leveraging added benefits for local communities: Bristol-Myers Squibb Pharmaceutical Research Institute has provided a \$50,000 grant to the Forest People's Fund in Suriname to support sustainable development and conservation projects implemented by native communities. On the northeastern Andean slopes of Peru, ICBG is working with Amerindians to grow trees with known insecticidal properties. As ICBG enters its next stage, Conservation International will launch its "Shaman's Apprentice" program in Suriname, which will document local knowledge of medicinal plants and work with youth to ensure that experience gathered over the centuries in traditional medicine is passed on to future generations.

Consultative Group on Biological Diversity. CGBD is at the fulcrum of U.S. private donor foundation activities in biodiversity conservation, helping members to form partnerships and map out coordinated strategies for grant making. Through frequent conference calls, periodic issues briefings, a bimonthly newsletter, and biannual participants' meetings, CGBD enables member foundations to maintain continuity in communications. It also helps participants fill gaps in the biodiversity grant portfolio and identify project opportunities in developing countries.

In 1993 CGBD established working groups made up of representatives of over ten foundations that focus on five program areas: marine biodiversity, global institutions, biodiversity education and awareness, international grant making, and forests of North America. The working group on biodiversity education and awareness, for example, determined that educational efforts rarely target mass media, although the sector is highly influential in forming public opinion. CGBD commissioned studies to analyze how foundations can strengthen awareness of biodiversity issues in the United States. One study, *An Analysis of Public Opinion on Biodiversity and Related Environmental Issues*,⁴ found that the word "biodiversity" is poorly understood among the U.S. populace—46 percent of self-identified members of environmental groups had never heard of the term "loss of biological diversity." The study issued a series of recommendations to redress the problem, including a media campaign

to raise consciousness about biodiversity issues within key target audiences.

CGBD's working group on international grant making held conference calls with over a dozen foundation representatives and experts on biodiversity conservation to explore grant making opportunities in Costa Rica, Philippines, Indonesia, Mexico, and the former Soviet Union. In the global institutions working group, foundation representatives discussed efforts to channel funds into facilitating and monitoring policy reform within the multilateral development banks and United Nations agencies.

—Lili Sheeline and Michele Zador
Datex
10/27/94

¹ A buy-in is a transaction between USAID projects whereby one project transfers funds to another in order to access special services or expertise.

² Biodiversity Support Program, *African Biodiversity: Foundation for the Future, A Framework for Integrating Biodiversity Conservation and Sustainable Development* (Beltsville, Md.: Biodiversity Support Program, 1993) pp. xi–xiii.

³ Biodiversity Support Program, *Central Africa: Global Climate Change and Development, A Synopsis* (Washington, D.C.: Biodiversity Support Program, 1992), p. 18.

⁴ Communication Consortium Media Center, *An Analysis of Public Opinion on Biodiversity and Related Environmental Issues, 1990–1994* (New York: Consultative Group on Biological Diversity, 1994).



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



Forest Resources Management II

Global

936-5556

The *Forest Resources Management II* (FRM II) project supports forest and biodiversity conservation activities worldwide. Initiated in FY 1991, this nine-year, \$25 million effort provides technical assistance, information, and training to USAID missions, U.S. Peace Corps Volunteers, host country agencies, private voluntary organizations (PVOs), and nongovernmental organizations (NGOs).

FRM II is a follow-on to the successful, ten-year *Forest Resources Management* (FRM) project, USAID's first centrally funded, technical support project in forestry, which concluded in FY 1991. The initial project served as an important catalyst in the fivefold growth (from \$27 million in FY 1981 to \$125 million in FY 1991) of USAID's forestry programming. Although funding dropped sharply in FY 1994, FRM II is building on the track record of the initial FRM project by collaborating with the U.S. Forest Service's (USFS) newly reorganized International Forestry (IF) organization.

Highlights for FY 1993-94

- Completed 81 technical assistance activities in more than 40 different countries in Africa, Asia and the Near East, Latin America and the Caribbean, Central and Eastern Europe, and the New Independent States of the former Soviet Union (NIS).
- Supported a study on biological diversity monitoring in Kenya and Uganda, provided forestry assistance to the World Bank to develop a national biological diversity strategy for Russia, and developed a framework for a USAID Forestry and Biodiversity Conservation Initiative.
- Improved socioeconomic impact analysis of USAID agroforestry projects by, for example, supporting a national agroforestry training workshop in Madagascar and a case study of rapid rural appraisals in Filipino villages.
- Supported a number of social forestry and natural forest management activities, including a workshop in Cameroon on women and natural resources and building a network of field projects in Latin America to facilitate information exchange.
- Encouraged participation by local communities and resource users through, for example, a yearlong appraisal of PVO/NGO effectiveness in African natural resource management.
- Continued USAID/Peace Corps collaboration on natural resource activities, with 964 Peace Corps Volunteers participating in environmental assignments, a number projected to increase to over 1,100 by FY 1995.
- Initiated many of the recommendations of the 1992 FRM II's "20-Month Evaluation," including program expansion into Central and Eastern Europe and the NIS.

Project at a Glance

Funding: Life-of-Project \$25,000,000
Biodiversity Percentage 90%

Project Duration: FY 1991-99

Implementors:
U.S. Forest Service
U.S. Peace Corps
World Wildlife Fund

USAID Project Officer:
Michael Benge/USAID/Global

Project Implementation

FRM II implements project activities in three program areas: technical assistance, private enterprise initiatives, and U.S. Peace Corps collaboration. The project is an example of effective collaboration among U.S. government agencies; most of the project's funds support USAID field activities in developing countries through separate interagency agreements with the USFS and U.S. Peace Corps.¹

A second-year "20-Month Evaluation" of FRM II in late 1992 found that the project is fulfilling its goals and objectives. The project has successfully initiated many of the evaluation's recommendations, including improving coordination and communication in annual work planning, program expansion into Central and Eastern Europe and the New Independent States of the former Soviet Union, improving the operation of the skills roster, and drafting a memorandum to formalize the existing relationship between USAID and USFS.

Project Progress

Forestry Support Program. Under the reorganization of IF, two new USFS staff units—International Forestry Operations and International Policy and Planning—have integrated the former Forestry Support Program of USFS, a major implementor of FRM II technical assistance activities. This move is intended to provide USAID with better access to the entire range of skills within IF's staff. During FY 1993–94 the project carried out a variety of new program activities and, overall, 81 technical assistance activities in more than 40 different countries within the four geographic regions (see table for regional breakdown).

Technical assistance. Technical assistance constitutes the bulk of IF's work through FRM II. Technical experts provide assistance to USAID in

agro-forestry, education and training, social forestry and natural forest management, PVOs/NGOs, and donor coordination.

Project-funded activities are producing analyses of agroforestry systems to maximize benefits to rural landowners and improve access to agroforestry technical information. The project supported eight agroforestry-related activities worldwide in FY 1993, including Madagascar's second National Agroforestry Extension Training Workshop, which brought together 20 extension agents and natural resource managers from around the country. Field work also began for a study of USAID agroforestry projects. A case study in the Philippines involves rapid rural appraisals (RRA) of villages. The data on household and farm incomes will form the basis for developing a framework for improving the socioeconomic impact analysis of USAID-funded agroforestry projects.² In FY 1994, a workshop held in Bogor, Indonesia, assisted development of a plan for a collaborative international network on *Leucaena* research and development.

In FY 1993 the project placed new emphasis on the importance of social forestry and natural forest management within the FRM II project. Social forestry activities included a workshop on women and natural resources in Cameroon, coordinated and imple-

mented in conjunction with USAID's *PVO/NGO Natural Resources Management Support* program, the USAID Cameroon Mission, and the Africa Bureau. Natural forest management activities included signing a cooperative agreement with World Wildlife Fund (WWF) in support of community forestry. Under the agreement, WWF is building a network of natural forest management field projects to facilitate information exchange; for instance, the Latin American network currently includes 15 field projects. In 1994 this program has expanded to the Central African Republic and other central African nations. Further expansion to Asia is expected in FY 1995.

Involving local communities and resource users is a crucial element in seeking sustainable development solutions to environmental problems. The project recognizes this by supporting NGOs in involving local people in the decision-making process surrounding their immediate environment. To this end, the project completed a yearlong appraisal of PVO/NGO effectiveness in natural resource management in Africa during FY 1993–94. The appraisal included background studies, a conference, analytical studies, dissemination of eight separate publications, and a follow-up workshop. As part of the appraisal process, NGO participants identified project success factors in implementing natural resource management and developed a shared vision for future USAID-NGO relationships.

FRM II regularly informs USAID missions of education and training opportunities worldwide. The project uses a data base to track short courses offered and provides this information to the Agency through a quarterly memo and periodic reports. In other education and training activities in FY 1993, the project sent a team to the South Pacific Islands to assess training needs for small-scale, wood processing in the western Pacific and awarded several scholarships for participation in the Tenth International Seminar on

FRM II Activities by
Geographic Region, FY 1993

Geographic Region	Number of Countries	Number of Activities
Africa	10	22
Asia/Near East	11	29
Latin America & Caribbean	11	26
Central & Eastern Europe/NIS	9	4
Total	41	81

Forest Administration and Management. In FY 1994 other activities include working with the Institute of Forestry in Nepal to design a pilot environmental impact assessment workshop and updating a guide to international programs at U.S.-based natural resource schools.³

FRM II implemented a number of biodiversity activities worldwide. In FY 1993 a one-month study conducted in Kenya and Uganda resulted in the publication of a report on biological diversity monitoring.⁴ The project provided program design expertise for USAID/Madagascar's biodiversity planning activity and natural resource program and technical assistance to the World Bank in forestry for the development of a national biological diversity strategy in Russia. FRM II supported two participants to attend an international forest biodiversity workshop in Taiwan and, in Latin America, four participants at a Smithsonian biodiversity-monitoring workshop.

In FY 1994 the project reached a final agreement with the Primorski Region Association of Indigenous Peoples to develop a land management plan for the conservation of biological diversity and sustainable development in the Bekin River Basin (located in the far east of Russia). Planning is also under way, with the Foundation for the Development of the Central Volcanic Mountain Range (FUNDECOR), for a biodiversity-monitoring program in Costa Rica.

Donor coordination. With increasing world attention on the loss of biodiversity and tropical forests, organizations and donors have responded with a range of projects. These efforts sometimes overlap and work at cross-purposes, reducing their effectiveness. USAID and the USFS increasingly recognize the need to coordinate these efforts. Under FRM II the Agency and USFS completed a number of activities in FY 1993-94 to seek out and respond to opportunities for coordination among organizations

and countries such as the World Resources Institute, Canada, Japan, the Global Environment Facility of the World Bank, and the International Tropical Timber Organization (ITTO). Activities in donor coordination include:

- Securing commitments from the USFS, World Bank, and USAID and sponsoring, with the Department of the Interior's Bureau of Indian Affairs and the U.S.-based Intertribal Timber Council, an international workshop on natural resource management of tribal lands in January 1994. Attended by 60 participants, including leaders of indigenous groups in developing countries, the workshop covered intergovernmental relations, planning for sustainable forest management, and conflict resolution.
- Developing a framework for a USAID Forestry and Biodiversity Conservation Initiative and analyzing the factors affecting U.S. participation in the U.N. Development Programme's Country Capacity Project for Forestry.
- Coordinating the delivery and implementation of the Canadian International Model Forest Program.

Services and support. The international skills roster is the primary means by which FRM II delivers services and support to USAID and other cooperating development agencies. This data base includes professionals with experience in natural resources, forestry, and other environmental fields. During FY 1993 more than 130 searches of the data base were conducted, with referrals sent to USAID and other requesting organizations. The project made several improvements to the data base including upgrading both hardware and software and adding new technical and geographic codes to improve searching capabilities. Other service and support activities include

the brown-bag seminar series, which has provided opportunities for dozens of individuals to address the environment and development communities in Washington, D.C. Held periodically, the project averages from seven to ten seminars per year. A recent one, for instance, covered the development of forest distribution maps for Central America and Mexico.⁵

Forest Private Enterprise Initiative Program.

The Forest Private Enterprise Initiative (FPEI) focuses on building private sector capabilities in forest resource management. Initially activities concentrated on developing technologies and institutions in the manufacturing and wood-processing sectors. Current research studies at the Southeastern Center for Forest Economics Research (SCFER), a joint program of Duke University, North Carolina State University, and USFS's Southeast Experiment Station, concentrate on less exploitative uses of forest resources, such as ecotourism, extractive reserves, and agroforestry. New research in 1994 is examining the potential for marketing rattan in international markets. Of the numerous nontimber products available from second-growth forests (rattan, bamboo, firewood, orchids, and wild game), rattan is by far the most important commercial product. The project is preparing several publications.

Peace Corps collaboration. For some 30 years USAID has been working with the Peace Corps on natural resource activities. One of the most successful of these collaborative programs began in FY 1980 under a FRM I agreement. With support from USAID, the Peace Corps' Office of Training and Program Support (OTAPS) has been developing and promoting the use of sustainable natural resource practices, strengthening cooperation between the Peace Corps and other organizations, and increasing the number of Volunteers working in forestry and biodiversity projects. In FY 1993, 964 Volunteers

had taken environmental assignments; this number should increase to more than 1,100 by FY 1995.⁶ In addition to forestry and biodiversity, the Peace Corps conducts programs in environmental awareness and education, solid waste management, park and wildlife management, and NGO capacity building.

The Peace Corps promotes sustainable natural resource management practices through Volunteers who work at the community level to introduce new practices and ideas. In collaboration with USAID, the Peace Corps conducted technical workshops on a wide variety of subjects related to sustainable natural resource management. In FY 1993 USAID supported 67 technical workshops in 54 countries for more than 2,000 Volunteers and their host country counterparts. Workshop topics included agroforestry, management of parks and wildlife, institutional development for nonprofit conservation

groups, and environmental education techniques. For example, a workshop offered in Hungary in May 1993 addressed improving Peace Corps environmental programming in Central and Eastern Europe. Fifty-one Volunteers and their counterparts attended from the Czech Republic, Hungary, Poland, Slovakia, Kazakhstan, and Russia.

In FY 1994 the Peace Corps started its newest environment program in Madagascar. Peace Corps Volunteers will be implementing integrated conservation and development programs in at least six protected areas by establishing sustainable income-generating activities linked to the protected areas. Volunteers will also work with local communities to set up management schemes for the protected areas. The 14 forestry and parks and wildlife Volunteers expect to begin their service in November 1994.

—David Neufeld, Datex
7/27/94

¹ This profile draws on two publications: U.S. Agency for International Development and U.S. Department of Agriculture, *The Forestry Support Program, Report to the U.S. Agency for International Development: 1993* (Washington, D.C.: USAID, 1993) and

_____, *Center for the Environment Portfolio Review* (Washington, D.C.: USAID, spring, 1994).

² U.S. Agency for International Development, *Improving Socioeconomic Impact Analysis of Agroforestry Projects* (Washington, D.C.: USAID, 1993).

³ Jo Ellen Force et al., Department of Forest Resources, University of Idaho, *Profiles of USA Natural Resource Schools*, prepared for U.S. Forest Service, International Forestry (Moscow, Idaho: USAID, January 1994).

⁴ Greg Booth, *Biological Diversity Monitoring Indicators* (Washington, D.C.: USAID, 1993).

⁵ S. Eggen-McIntosh, *Development of Forest Distribution Maps of Central America and Mexico from AVHRR Data* (Starkville, Miss.: USFS, 1993).

⁶ U.S. Peace Corps, *Annual Report: Global Environment Programs 1993* (Washington, D.C.: USPC, draft, 1994).

USAID



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



Global

936-5544

U.S.–Israel Cooperative Development Research Program II

USAID's three-year (FY 1993–1995), \$30 million *U.S.–Israel Cooperative Development Research* (CDRII) project continues efforts initiated in FY 1985. CDR II is a partnership catalyzed by USAID funds that encourages Israeli and developing country scientists to collaborate in solving development problems.

Highlights for FY 1993–94

- Funded Costa Rica's Centro Agronomico Tropical de Investigacion y Ensenanza to develop methods to preserve edible banana cultivars and other species representing valuable material for genetic improvement.
- Supported a Tel Aviv University study in Ecuador documenting highly popular indigenous plants with edible or medicinal properties. Established a seed bank and nursery to supply plants for distribution among potential growers.
- Financing a Ben Gurion University investigation of the potential use of some semi-domesticated and wild cucurbits and amaranths of tropical and subtropical Africa.

Project at a Glance

Funding: Life-of-Project \$30,000,000
Biodiversity Percentage N/A

Project Duration: FY 1993–95

Implementors:
Various research grantees

USAID Project Officer:
John Daly/USAID/Office of Research

Project Implementation

CDR II funds small research grants through Israeli institutions such as Tel Aviv University, Ben Gurion University, Volcani Center, Bar-Ilan University, Hebrew University, and the Agricultural Research Organization, in cooperation with host country institutions including Ghana's Forest Research Center, Malawi's Makoka Agricultural Experiment Station, Thailand's Khon Kaen University and Field Crop Research Institute, the Philippines' Technology Research Center Foundation, the University of Peradeniya in Sri Lanka, and Guinea's Ministry of Agriculture. Overall, research is funded in aquaculture, arid

land agriculture, biomass conversion and fermentation processes, engineering, human health, plant pathology and pest control, veterinary sciences, and biodiversity conservation. In the area of biodiversity conservation the following studies have been funded.

Biodiversity Grants

Costa Rica. CDR is funding the Centro Agronomico Tropical de Investigacion y Ensenanza of Costa Rica to develop methods to preserve edible banana cultivars and other species representing valuable material for genetic improvement.

Ecuador. The Tel Aviv University is involved in a study that documents highly popular indigenous plants with edible or medicinal properties in Ecuador. This CDRII-supported project is also establishing a seed bank and nursery to supply plants for distribution among potential growers.

Kenya. The Ben Gurion University is investigating the potential use of some semidomesticated and wild cucurbits and amaranths of tropical and subtropical Africa.

—Brad Williams, Datex
8/24/94

USAID



U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT

Environment Project Profile



Global

936-5600

Innovative Scientific Research II

To strengthen the scientific research capacity in USAID host countries and provide support for innovative and collaborative scientific research relevant to developing countries, USAID initiated the \$49 million, five-year (FY 1990–94) *Innovative Scientific Research II* (ISR II) project. ISR II, however, was reduced in scope in FY 1993 and suspended in FY 1994. Previously funded grants will continue until their planned termination dates.

Highlights for FY 1993–94

- Supported a study in Uganda on tropical forest regeneration, the initial results of which indicate that removing fruit-eating animals from an ecosystem will result in localized extinction of some tree species.
- Funded a study of the diversity, conservation status, and possible sustainable economic uses of Bolivian palms. To date, the study has collected information on 56 Bolivian palms, mostly from the Amazon region.
- Early findings from a Dartmouth College project in west Kalimantan, Indonesia, show that native tree species in lowland and swamp forest have excellent potential for increased, sustainable exploitation by local communities.
- Supported research on the decline of the yellow-napped Amazon parrot in Guatemala that determined that significant numbers of parrot chicks are being poached and that strips of metal around trunks have no effect in deterring nonhuman predators.

Project at a Glance

Funding: Life-of-Project \$49,000,000
Biodiversity Percentage 17%

Project Duration: FY 1990–94

Implementors:
USAID/Office of Research
Various research grantees

USAID Project Officer:
John Daly/USAID/Office of Research

Project Implementation

ISR II, a continuation of the ISR I project initiated in 1981, was managed by the USAID Office of Research. ISR II grants were the core of the Program in Science and Technology Cooperation (PSTC). PSTC represented the cutting edge of USAID's development research by funding the risky initial phase of research that tests hypotheses aimed at solving development problems. If a hypothesis is proven and assessed as important, subsequent research and development can be taken over by other USAID programs or private enterprise.

The developmental problems explored by PSTC research can be placed in the four broad categories of environment, agriculture, health, and industry. PSTC awards research grants to U.S. and USAID host-country scientists worldwide in the areas of biotechnology and immunology, plant biotechnology, chemistry as applied to food needs, biomass conversion technology, biological control of selected vectors, engineering technology, and diversity of biological resources.¹

In environmental studies, PSTC-funded investigators are trying to understand the operation of complex ecosystems. In the tropics, ecosystems are more diverse and less understood than in the temperate zones. Through PSTC grants, scientists study tropical coastal ecosystems that suffer from pollution due to runoff and seaborne pollution. The program also concentrates on the preservation of a number of plant and animal species that are a treasure of untapped genetic resources for new medicines, commercial products, and other uses. An important element of this work is the domestication of wild species that can increase the wealth of developing countries.

Sample Projects

Examples of studies funded by ISR II through the PSTC grants that support tropical forest and biodiversity conservation are described below.

Tropical forest regeneration in Uganda. Little is known about the degree of interdependence between fruit-producing trees and frugivores (animals that eat fruit); however, it is known that many fruit-producing trees depend on animals to disperse seeds and many of the animals depend on the trees for food. ISR II funds research by the Peabody Museum of Harvard University on this interdependence to determine factors in tropical forest regeneration.

The study investigates the complex interaction of fruiting trees with the animals that ingest and disperse the seeds and the implications for forest regeneration in the absence of frugivores. Findings may make it possible to accelerate forest regeneration and to design management plans that minimize the negative impact of disturbances such as logging on frugivore populations. Initial findings indicate that removal of frugivores from the ecosystem would result in localized extinction of some tree species, possibly in cases where seedlings cannot survive under parent trees. Regeneration thus depends on frugivores for seed dispersal away from the parent trees.

Protecting wild Amazon parrots. The majority of neotropical parrots are in decline due to habitat destruction and the international pet trade. ISR II is funding a study by the University of California at Davis Department of Avian Science to determine factors that may limit reproductive success of the yellow-napped Amazon parrot in Guatemala.

The study further investigates methods of increasing the number of young birds surviving the nesting period by experimentally altering the environment.

The project is yielding important information on the biology of the yellow-napped Amazon parrot and serves as a model for other researchers. The study has determined that a significant number of yellow-napped Amazon chicks are being poached from nests by humans. Strips of metal around tree trunks, used to deter nonhuman predators, seem to have no effect on reproductive success. USAID further supports the project by assisting in an education program on parrot conservation at elementary schools and adult community meetings.

Diversity and sustainable use of Bolivian palms. Palms are among the most diverse plants in the American tropics and among the most important to humans, providing edible oil and fruits, fibers, construction materials, and medicines. Bolivia has a variety of land forms and climate factors creating conditions that favor high rates of diversity in palm species; however, information on the diversity of Bolivian palms is incomplete. PSCT funded the New York Botanical Garden in collaboration with the Herbario Nacional de Bolivia to study Bolivian palms.

Several palm species occur in Bolivia that are not utilized even though they are commercially exploited in neighboring countries. Limited knowledge of potential benefits prevents the exploitation of many palm species and may hinder palm species conservation as critical habitat is converted to other uses. The study examines the sustainable economic uses of indigenous palm species, determines palm diversity in Bolivia, and will assess the conservation status of palms. To date, the study has been able to extract information on 56 Bolivian palms, mostly from the Amazon region.

Cultivating native tree species in Indonesia. This project in west Kalimantan, implemented by Dartmouth College, aims to develop ecologically sound sustainable strategies for increasing economic returns and the value of products from selectively logged rain forest occurring on poor soils. The study examined tree plantings in a range of land use intensities, from heavily logged production forest to protected conservation areas. The findings will be applicable to management strategies in secondary forest, abandoned agricultural land, and uncut rain forest managed by local villagers. Preliminary findings indicate that native tree species in lowland and swamp forest

have excellent potential for increased, sustainable exploitation by local communities.

Other PSTC grants targeting biodiversity conservation. ISR II funds numerous other projects that have significant implications for or deliberately target biodiversity conservation. In Indonesia the Bogor Agricultural University in cooperation with the University of Florida is studying the propagation of important dipterocarp species for tropical rain forest regeneration. In Malawi, Pennsylvania State University and the University of New Hampshire are conducting a case study on methods to determine biodiversity in complex ecosystems, specifically the

fishes of Lake Malawi. The University of Lodz, Poland, and Ohio State University are studying methods of restoring damaged environments for two types of fishes in Poland and the United States. The New York Botanical Garden and the Ix Chel Tropical Research Center in Belize are conducting a study on how to enlist local people to identify and conserve plant biodiversity.

—Brad Williams, Datex
8/24/94

¹ U.S. Agency for International Development, *Cutting-Edge Research for Development: The A.I.D. Program in Science and Technology Cooperation* (Washington, D.C.: USAID, 1992), pp. 8–9.

