

PRINCIPLES IN PRACTICE

Staff observations of conservation projects in Africa

AUTHORS Yaa Ntiamoah-Baidu
Souleymane Zéba
Deo-Gratias Mboje Gamassa
Léonie Bonnéhin

OTHER CONTRIBUTORS *BIOME Project Advisors*

Mohammed Khalil
Steven Njuguna

BIOME Project Participants

Karl Aribeb	William Oduro
Dolline Busolo	Rivo Rabarisoa
Langford Chitsike	Jeannette Rajesy
Abdoulaye Diallo	Oliva Rakotobe
Julien Feizouré	Jocelyn Rakotomalala
John Ntim Gyakari	Passing Sawadogo
Casimir Koulohi	Joseph Serugo
Adama Nana	Moses Turyaho
Urbain Ngatoua	Susan Wasike
Moriba Nomoko	Njabulo Zondo



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BIOME participants, advisors, and staff with government officials at the 1995 workshop in Ouagadougou, Burkina Faso.

Acronyms

AMCFE	Association Malienne Pour la Conservation de la Faune et de l'Environnement/Malian Association for the Conservation of Fauna and the Environment
ANGAP	Association Nationale pour la Gestion des Aires Protégées/National Association for the Management of Protected Areas, Madagascar
ART	Africa Resources Trust
AWF	African Wildlife Foundation
BAA	Biodiversity Analysis for Africa (BSP project)
BIOME	Biodiversity Monitoring and Evaluation (BSP project)
BSP	Biodiversity Support Program
CACA	Caprivi Arts and Cultural Association
CAMPFIRE	Communal Areas Management Programme for Indigenous Resources
CAR	Central African Republic
CASS	Centre for Applied Social Sciences (University of Zimbabwe)
CGG	Community Game Guards
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
DMT	Division de la Médecine Traditionnelle/Division of Traditional Medicine, Mali
DNPWLM	Department of National Parks and Wildlife Management, Zimbabwe
EZE	Evangelische Zentralstelle Für Entwicklungshilfe/Protestant Association for Cooperation in Development
FAO	Food and Agriculture Organization of the United Nations
FFI	Fauna and Flora International
GACON	Ghana Association for the Conservation of Nature
GEF	Global Environment Facility
GNP	Gross National Product
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit/German Technical Cooperation Agency
IRDNC	Integrated Rural Development and Natural Resource Conservation
IUCN	World Conservation Union
KENGO	Kenyan Energy and Environment Organization
LIFE	Living in a Finite Environment

LMNP	Lake Mbuoro National Park
M&E	Monitoring and Evaluation
MET	Ministry of Environment and Tourism, Zimbabwe
MLGRUD	Ministry of Local Government, Rural and Urban Development, Zimbabwe
MPICDP	Masoala Peninsula Integrated Conservation and Development Project
NATURAMA	Fondation des Amis de la Nature/Foundation for the Friends of Nature
NEAP	National Environmental Action Plan
NGO	Nongovernmental Organization
OPNBB	Opération du Parc National de la Boucle de Baoulé/Boucle de Baoulé National Park Operation
PACPNT	Projet Autonome de Conservation du Parc National du Tai/Tai National Park Conservation Project
PGRN	Projet de Gestion de Ressources Naturelles/Natural Resource Development Project
PNKT	Parc National de Kaboré Tambi/Kaboré Tambi National Park
SIDA	Swedish International Development Authority
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
WCS	Wildlife Conservation Society
WWF	World Wide Fund for Nature
WWF-US	World Wildlife Fund-United States
ZIMTRUST	Zimbabwe Trust



INTRODUCTION

Introduction

About This Book

A quick look at *Books in Print* under the heading “biodiversity conservation” will turn up at least a score of books that discuss the importance of conserving biodiversity and offer suggestions as to how biodiversity can be conserved. So why did we believe that it was important to write another book on biodiversity conservation? The majority of books that are available have not been written by project staff who have learned through trial and error which strategies and approaches work and which do not. Rather, they have often been written by academics who may have little practical field experience in reconciling the competing demands of biodiversity conservation and community development.

Conserving biodiversity while promoting human prosperity is a challenge that is being addressed every day by managers of conservation and development projects. Yet, the search for practical strategies that are likely to be effective in conserving biodiversity while meeting human needs has often overlooked and undervalued the skills, know-how, and experience of these talented and capable individuals. Most academic texts tend to be either too theoretical or proscriptive and seldom explicitly address the challenges that project staff face every day. In contrast, this book is the product of a participatory project, known as Biodiversity Monitoring and Evaluation (BIOME), that was developed and undertaken by staff members of 11 conservation and development projects in Africa and Madagascar.

WHAT THIS BOOK OFFERS

The Biodiversity Support Program (BSP), implementor and facilitator of the BIOME project, believes that no one is better able to identify, describe, and communicate the most effective strategies for biodiversity conservation than the project managers themselves. They are the ones who must find practical solutions to the challenges of conserving biodiversity while addressing human needs. The information and lessons learned presented in this book come from the personal observations of project staff during site-visit exchanges. These intersite

visits were designed to allow project staff to analyze how a set of principles of conservation, thought to be critical for effective biodiversity conservation, were incorporated into the 11 BIOME projects, and to highlight effective conservation techniques being used today in these projects.

This book describes the problems and opportunities project managers face, what they are doing to address these problems and opportunities, and what can be learned from their experiences. Specifically, this book offers

▀ Techniques and activities that project managers have found effective and observations on how and why these approaches vary across projects, and

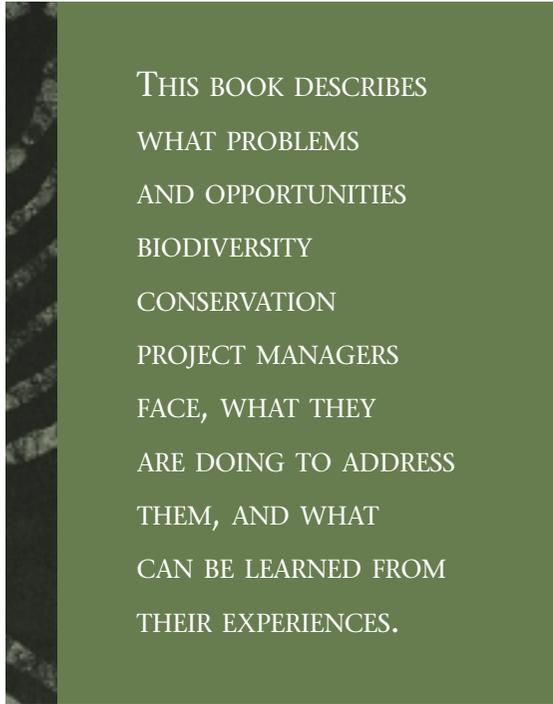
▀ Observations on the role of a set of key principles that the BIOME participants believe underpin effective approaches to conservation of biodiversity within projects across Africa and Madagascar.

The book encourages project managers to reexamine their projects using the insights of other project managers who have struggled with, and, at times, overcome similar challenges.

THE BIOME PROCESS

In 1994, more than 80 biodiversity conservation projects in sub-Saharan Africa were surveyed to determine their interest in participating in an exchange of lessons learned. Thirty-eight projects responded. In February 1995, 26 project managers from 11 projects in Africa and Madagascar were selected to participate in the BIOME project. All participants came together in a workshop held in Ouagadougou, Burkina Faso, in May 1995. The first aim of the workshop was to identify a set of principles that project staff believed would be central to promoting the success of a project, if incorporated into its design and implementation. Participants then decided how to implement the other aim of the project—observing and documenting how the principles were being applied in the field. It was decided that each of the project staff would visit one other project site for two weeks to exchange information and to observe, firsthand, different approaches to meeting conservation challenges. Each project manager would document how the principles were being implemented in the other project. Site-visit exchanges were conducted from September 1995 to August 1996. Finally, participants selected who would be responsible for compiling and summarizing the observations made during the site visits.

Once all site-visit reports were completed and circulated for comments among the BIOME participants, a team of seven participants met for an eight-day



THIS BOOK DESCRIBES
WHAT PROBLEMS
AND OPPORTUNITIES
BIODIVERSITY
CONSERVATION
PROJECT MANAGERS
FACE, WHAT THEY
ARE DOING TO ADDRESS
THEM, AND WHAT
CAN BE LEARNED FROM
THEIR EXPERIENCES.

meeting to finalize the framework within which the observations from the site visits would be summarized and presented. The four primary writers—Yaa Ntiamoa-Baidu, Souleymane Zéba, Deo-Gratias Mboje Gamassa, and Léonie Bonnénhin—prepared preliminary drafts of their contributions, which were reviewed and revised by all participants and by other conservation practitioners. The primary writers then met in Abidjan, Côte d’Ivoire, to finalize their work. At the final workshop in Victoria Falls, Zimbabwe, final participant comments on the text were solicited. An evaluation of the BIOME project was also conducted at the final workshop and documented in a separate report. This book is the product of all BIOME participants.

About the BIOME Projects

The 11 BIOME projects were selected to provide a balanced cross-section of projects representative of the range of biophysical features; cultural, political, institutional, and economic contexts; and conservation approaches found throughout sub-Saharan Africa and Madagascar. To select the BIOME projects, questionnaires were sent to 80 biodiversity conservation projects. Only projects that had been implemented for longer than one year were considered, and the project had to be able to safely host visiting project managers. Thirty-eight projects completed and returned the questionnaires. Out of these, 11 projects were selected for participation in BIOME. (*See BIOME Projects Overview on the next page.*)

The **LIFE**, **CAMPFIRE**, **AMCFE**, and **NATURAMA** projects are all located in arid areas with low, often sporadic rainfall. The **DZANGA-SANGHA**, **VIE ET FORÊT**, and **MASOALA** projects are located in dense tropical rain forest. The **MADAGASCAR WETLANDS** project is located in wetlands surrounded by dry deciduous forest. The **GACON** project is situated in a degraded, moist semi-deciduous forest zone. **KENGO** is operating in two areas: the semi-arid Kitui area, and the wetter areas of the Mount Elgon watershed and the Lake Victoria basin. The **LAKE MBURO** project is located in an area characterized by dry acacia woodland with open grassy areas and wetlands.

Culturally, all of the projects (with the exception of **GACON** and **MADAGASCAR WETLANDS**) are operating in heterogeneous communities and have to work with two or more ethnic groups. The multiplicity of ethnic groups in project areas often constitutes a management challenge that must be addressed. For example, the **LIFE** project in the East Caprivi region of Namibia works with three main ethnic groups: the Mafwe, who are the dominant group; the Mayeyi, who broke off from the Mafwe; and the Subiya. The refusal of the Mafwe to accept the Mayeyi as an independent group and the hostility created

BIOME Projects Overview

Project Name	Coordinating Organization	Participating Staff	Project/Site Visited
Communal Areas Management Programme for Indigenous Resources (CAMPFIRE)—Zimbabwe	ART and ZIMTRUST	Langford Chitsike Njabulo Zondo	DZANGA-SANGHA
Participation of Local Communities in the Conservation of Kaboré Tambi National Park (NATURAMA)—Burkina Faso	NATURAMA	Adama Nana Passing Sawadogo	MADAGASCAR WETLANDS
Dzanga-Sangha Integrated Conservation and Development (DZANGA-SANGHA)—Central African Republic	WWF-US	Julien Feizouré Urbain Ngatoua	MASOALA
Indigenous Vegetable and Fruit Tree Development (KENGO)—Kenya	KENGO	Dolline Busolo Susan Wasike	AMCFE
Masoala Peninsula Integrated Conservation and Development (MASOALA)—Madagascar	CARE, WCS, and The Peregrine Fund	Oliva Rakotobe Jocelyn Rakotomalala	VIE ET FORÊT
Lake Mburo National Park Community Conservation (LAKE MBURO)—Uganda	AWF	Mark Infield Joseph Serugo Moses Turyaho	LIFE
Living in a Finite Environment (LIFE)—Namibia	WWF-US	Karl Aribeb	LAKE MBURO
Madagascar Fish Eagle and Wetlands Conservation (MADAGASCAR WETLANDS)—Madagascar	The Peregrine Fund	Rivo Rabarisoa Jeannette Rajesy	GACON
Research on Multiple-use Plant Species in the Boucle du Baoulé Biosphere Reserve (AMCFE)—Mali	AMCFE	Abdoulaye Diallo Moriba Nomoko	KENGO
Sacred Grove and Biodiversity Conservation (GACON)—Ghana	GACON	John Ntim Gyakari William Oduro	CAMPFIRE
Conservation and Sustainable Development around Taï National Park (VIE ET FORÊT)—Côte d'Ivoire	Association Vie et Forêt/ Life and Forest	Léonie Bonnénin Casimir Koulohi	CAMPFIRE

NOTE: The map on page 11 shows the approximate location of each of these projects in Africa. The descriptions on pages 69-91 give more detailed information on each of the projects.

by this situation was so intense that if a project officer went into the communities and was seen to have called on the chief of one of the groups first, the other group would refuse to receive her. Ethnic divisions and rivalries can make project implementation difficult and can be a source of serious conflict among project participants, unless project managers are sensitive to these issues.

The political context within which the BIOME projects operate also varies enormously, both between countries and between regions within countries. All of the countries involved, however, are operating under the legacy of colonial administration. Some areas are characterized by strong, highly respected traditional governance systems, such as the Khuta system of the East Caprivi people in the **LIFE** project

and the Ashanti chieftancy system in the **GACON** project area. These differences are reflected in people's attitudes and perceptions in terms of what is expected from the central administration and the degree of self-reliance with regard to natural resource management. The cultural and political structures also influence land tenure systems. Thus, whereas projects operating within the West African subregion operate under systems where land is owned by chiefs, clans/tribes, families, and individuals, the central, eastern, and southern African projects are characterized by state, communal, and commercial land-ownership systems.

Institutionally, the 11 projects fall into two categories: large projects initiated and funded by outside donors (e.g., **DZANGA-SANGHA** and **LIFE**), and small projects initiated by local groups that have either benefited from outside funding or still depend on external financial support for their activities (e.g., **GACON**, **NATURAMA**, and **KENGO**). All of the projects are implemented by nongovernmental organizations (NGOs), either a single local NGO or a consortium of European/American NGOs working with a local NGO, or as a government/NGO partnership.

Economically, all of the projects are dealing with rural communities with relatively low material standards of living and few opportunities for generating cash income. Even in areas where people can be considered well-off in terms of overall assets (e.g., pastoral groups whose wealth is often in the form of land or livestock assets), people live in materially poor conditions. The majority of the rural people in the BIOME project areas depends substantially upon the direct use of natural resources for their livelihood.

The dominant approach to conservation within the BIOME projects is wildlands protection (**DZANGA-SANGHA**, **LAKE MBURO**, **MADAGASCAR WETLANDS**, **MASOALA**, **NATURAMA**, **AMCFE**, and **VIE ET FORÊT**). This means setting aside and managing areas that contain relatively intact populations of wild plants and animals where resource use by humans is primarily non-consumptive. **GACON** is concerned with the conservation of nondomesticated plants and animals in traditionally but not legally protected areas; **CAMPFIRE** and **LIFE** both focus on the husbanding of wild animals in communal lands surrounding protected areas; and **KENGO** is interested in conserving domesticated vegetables and fruit trees. While focusing on *in situ* conservation of medicinal plants in the Boucle du Baoulé Biosphere Reserve, **AMCFE** is also considering the potential use of *ex situ* conservation of plant resources.

The BIOME projects were intentionally selected to cover a broad spectrum of climate, vegetation, cultural, and political systems from 10 countries across Africa and Madagascar. They can therefore provide a useful overview of how successfully the BIOME principles are being implemented in projects and can provide

Locations of BIOME Projects



CONSERVATION SCIENCE PROGRAM, WWF-US

- 1) Communal Areas Management Programme for Indigenous Resources (**CAMPFIRE**)—Zimbabwe
- 2) Participation of Local Communities in the Conservation of Kaboré Tambi National Park (**NATURAMA**)—Burkina Faso
- 3) Dzanga-Sangha Integrated Conservation and Development (**DZANGA-SANGHA**)—Central African Republic
- 4) Indigenous Vegetable and Fruit Tree Development Project (**KENGO**)—Kenya
4A) Bungoma 4B) Kitui
- 5) Masoala Peninsula Integrated Conservation and Development (**MASOALA**)—Madagascar
- 6) Lake Mburo National Park Community Conservation (**LAKE MBURO**)—Uganda
- 7) Living in a Finite Environment (**LIFE**)—Namibia
- 8) Madagascar Fish Eagle and Wetlands Conservation (**MADAGASCAR WETLANDS**)—Madagascar
- 9) Research on Multiple-use Plant Species in the Boucle du Baoulé Biosphere Reserve (**AMCFE**)—Mali
- 10) Sacred Grove and Biodiversity Conservation (**GACON**)—Ghana
- 11) Conservation and Sustainable Development around Taï National Park (**VIE ET FORÊT**)—Côte d'Ivoire

examples useful to project managers operating in diverse ecological, social, political, or economic conditions.

About Biodiversity Conservation in Africa

The 43 nations of sub-Saharan Africa and Madagascar (including all islands) encompass some 22 million km² of tropical savannas, woodlands, wetlands, and moist forests. These areas support an extraordinary variety and abundance of plants and animals. Moreover, the livelihoods of more than 520 million people are either directly or indirectly dependent on the productivity and diversity of these landscapes. As these natural resources continue to be essential commodities for people in these nations, how they are managed—from village-level decisions to state policies, from practices of conservation to those of extraction—will determine how much and in what conditions these natural resources will be available to future generations.

CONSERVATION CHALLENGES

An important aspect of the stability of an ecosystem is the maintenance of its biodiversity—the diversity of life. The challenges faced by those working toward the conservation of biological diversity in Africa are numerous. Many of these challenges are similar to those facing conservationists on other continents.

These challenges include

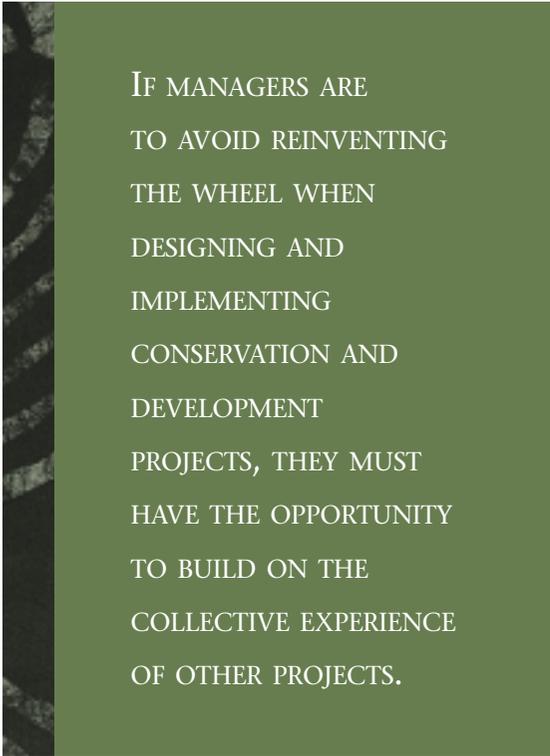
- 🌿 Poverty, hunger, and malnutrition
- 🌿 Rapid population growth (overall population densities may not be a problem, but the distribution and lack of appropriate resource management structures to ensure adequate provision for all sectors of the population give cause for concern)
- 🌿 Inadequate land suitable for farming and settlements (a substantial proportion of people in Africa and Madagascar have to live on marginal lands, which may be subject to seasonal inundation, drought, erosion, etc.)
- 🌿 Political instability and wars/conflicts (civil wars, inter-ethnic wars, *coups d'état*)
- 🌿 Shortsighted policies, especially those that encourage excessive exploitation and undervaluing of natural resources
- 🌿 Inappropriate agricultural technologies (often transferred from foreign countries)

- ▣ Lack of formal and nonformal education and low public awareness of biodiversity conservation issues
- ▣ Suspicion by local communities of government and conservation officers, and
- ▣ Barriers to the flow and exchange of project management tools and approaches among the staff of conservation and development projects in Africa.

Most rural societies evolved with a long tradition of resource conservation that enabled them to survive rather harsh conditions. In modern times, however, people are often compelled by economic and social pressures, compounded by the factors listed above, to exploit at unsustainable levels the natural resources that form the very basis of their survival.

National parks and other categories of protected areas have played a major role in modern systems of biodiversity conservation in Africa and Madagascar and are likely to be an important component of national biodiversity conservation strategies in the future. Historically, protected areas in Africa usually restricted or completely excluded access to and use of wild areas and wildlife by local communities who formerly depended on these areas for their livelihoods. This form of strict protectionism was largely influenced by colonialism, based on exploiting the natural wealth of African countries for the economic development of the colonizing country. The lessons from history show us that this “top-down” approach to natural resource conservation almost always heightens conflicts over resource use.

Only relatively recently have conservation projects recognized that conserving wild resources is not only a biological issue, but also a social, political, and economic one as well. As a result, it is only within the past few years that many conservation and development projects have adopted dual goals of conserving biodiversity and improving human welfare. Given how recent have been attempts to integrate conservation and development, and how considerable are the barriers to exchanging information among projects, it is not surprising how few project staff have had the chance to share their experiences and learn from other projects’ successes and failures. If managers are to avoid reinventing the wheel when designing and implementing conservation and development projects, they must have the opportunity to build on the collective experience of other projects. Providing opportunities for project staff to meet, share knowledge, and exchange approaches is an important step in making biodiversity conservation work. The BIOME project was designed to help promote the flow of information and experience among project staff that face comparable challenges.



IF MANAGERS ARE TO AVOID REINVENTING THE WHEEL WHEN DESIGNING AND IMPLEMENTING CONSERVATION AND DEVELOPMENT PROJECTS, THEY MUST HAVE THE OPPORTUNITY TO BUILD ON THE COLLECTIVE EXPERIENCE OF OTHER PROJECTS.

CONSERVATION PRINCIPLES

To a biodiversity conservation project planner or implementer, the BIOME principles are like the instruments in the cockpit of a plane. Without all the guidance provided by the instruments in the cockpit, the pilot may get off the ground but will find it difficult, if not impossible, to reach the correct destination or, worse, may crash en route. The project staff participating in BIOME believed that these principles offer similar critical guidance to planning and implementing biodiversity conservation projects.

Definitions and illustrations of the principles are based on the personal observations and perspectives of project staff involved in the BIOME project as well as on the groundbreaking book, *African Biodiversity: Foundation for the Future*. This book showcased, for the first time, Africans' views of what is most relevant to biodiversity conservation while meeting human needs (Biodiversity Support Program 1993).

Participation: Involving local* people in the management and conservation of biological diversity is essential if project activities are to be effective.

Policymaking: Including a representative cross-section of stakeholders in policymaking is important if local people are to support conservation initiatives.

Indigenous Knowledge: Incorporating local knowledge into project activities can reduce the risks associated with relying on outside technology and with adopting alternative resource use techniques and practices.

Values: Incorporating local values into projects helps ensure that conservation initiatives are compatible with local concerns and builds respect and trust between local communities and project managers.

Community Needs: Efforts to involve local people in the conservation of biological diversity will not succeed in the long term unless local people believe those efforts contribute to their welfare.

Education: Education, training, and awareness raising are the doorways to effective stakeholder participation and empowerment in biodiversity conservation and management.

* In this document, the term *local* refers to individuals, families, and communities living within the geographic area in which the project has conservation and development activities.

Monitoring and Evaluation (M&E): Including communities in M&E programs facilitates consensus-building, enhances the willingness of stakeholders to implement decisions, and improves the effectiveness of the conservation program.

Sustainability: Conservation of natural resources over the long term will not succeed unless resource users have the social, technical, political, and economic capacity to regulate access to and disposition of these resources.

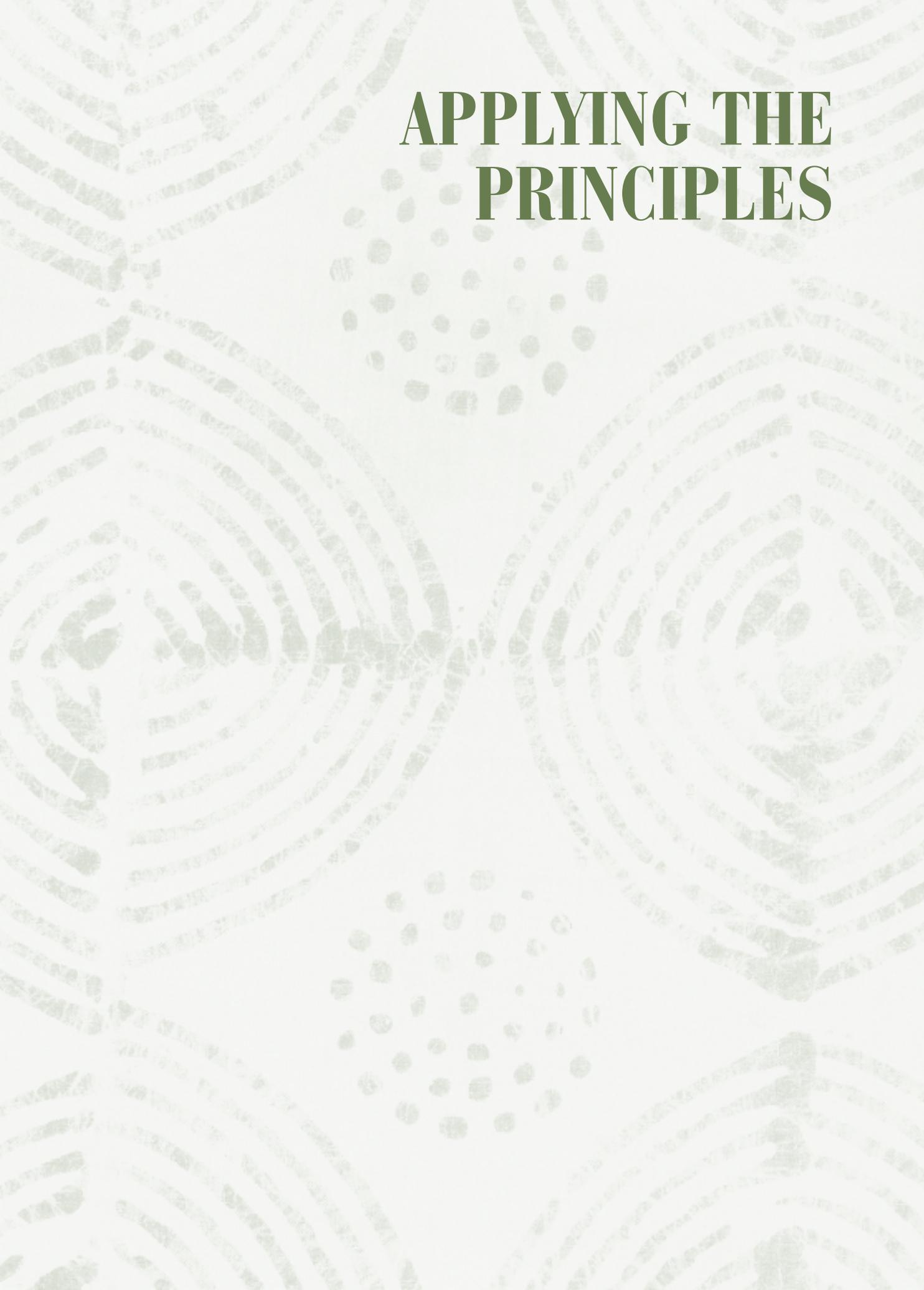
These principles are not independent and empirically defined relationships between variables or phenomena. Rather, they are themes or critical issues, and, like the instruments in the plane's cockpit, they are interrelated and interdependent. They are thus difficult to rank in relative importance and are better viewed more like a web of relations that together guide the performance of a project. For example, we might argue that only through effective community participation can indigenous knowledge, people's needs, and local values be understood. Only when we combine this understanding with information on land tenure systems is it possible to understand conflicts between modern and traditional law (legal status), develop effective education approaches and strategies for M&E, and, as a result, implement effective biodiversity conservation systems that are sustainable and that meet people's needs.

The project staff participating in BIOME believe that the principles constitute an important viewpoint from which to plan a sound project or to diagnose and correct an ongoing project. Observing how these principles are incorporated into BIOME projects has helped BIOME participants reappraise their own projects and is a mechanism for encouraging other project managers from biodiversity conservation and other types of projects to recognize, appreciate, and institutionalize the BIOME principles in the design and implementation of their projects. By popularizing the use of this set of guiding principles, the BIOME project hopes to promote effective biodiversity conservation throughout Africa and Madagascar.

The following sections present project staff observations of how each principle was implemented in BIOME projects. These examples are used to highlight the types of activities that reflect the rationale for and approach to incorporating a principle into project planning and implementation. They do not constitute a complete and exhaustive account of how the principles were applied in each BIOME project.



TO A BIODIVERSITY
CONSERVATION
PROJECT PLANNER OR
IMPLEMENTER, THE
BIOME PRINCIPLES
ARE LIKE THE
INSTRUMENTS
IN THE COCKPIT
OF A PLANE.



APPLYING THE PRINCIPLES

Participation

Involving local people in the management and conservation of biological diversity is essential if project activities are to be effective.

Today's biodiversity conservation initiatives recognize and accept local community participation as an essential ingredient for project success, but this is a recent phenomenon. For most of this century, the management of protected areas was essentially a policing task, and local people were seen as a management problem

(McNeely 1993). Most conservationists now question past efforts that separated people from nature. Conservationists increasingly support the view that people have always shaped and interacted with nature and recognize the wisdom in involving local people in biodiversity conservation projects.

Participation is an important step in identifying the values and needs of the different stakeholders, especially those usually excluded from decision making, such as village communities. It is also a major factor contributing to the success of

community-based natural resource management. While contributions by local stakeholders may differ from those of other stakeholders, all are equally valid and necessary for project success. Outside actors often provide the project with the necessary funds and sometimes with appropriate technical advice. Local communities contribute rights to land and local knowledge and are willing to take the risk to test new approaches, the success of which is not guaranteed. Participation helps to ensure that local people continue to choose how they live their lives and how they mold their future.



Increased community participation, such as this community discussing park management in Burkina Faso, leads to greater conservation project success.

Observations from the Field

LIFE's Community Based Natural Resource Management Project in Namibia's East Caprivi region provides an excellent example of the merits of involving local people in biodiversity conservation projects. Prior to the establishment of the project, there was much hostility from the people living in the area, resulting from the nondemocratic creation of two national parks and the subsequent treatment of poachers. Furthermore, villagers in the area saw wildlife as a source of trouble. They would often say, "Take your animals away; they give us too many problems."

As a result of a long process of negotiation with the communities, the project hired game guards who were members of the community, known as Community Game Guards (CGG), in an attempt to more effectively involve local people in the conservation of resources in their area. CGGs were appointed by the communities and were accountable to them through the traditional leaders. The Traditional Council (the Khuta) was responsible for taking disciplinary action against any CGG whose work and conduct was unsatisfactory. The community also selected an individual to collate the reports of the CGGs and to liaise between the community and the project managers.

The duties of the CGG were not to catch poachers but rather to stop poaching by weaving the concept of conservation into the community. The CGGs worked with the communities in all activities; for example, organizing them to control wild species, such as elephants, hippopotami, and predators, from destroying crops and livestock and mobilizing the communities to construct low-cost electric fences especially designed to keep elephants out. Each community had a number of CGGs, ranging from 5 to 48, depending on the wildlife resource potential and human densities in the area. The CGGs were required to present reports occasionally at a forum of the whole community. They acted as information sources in terms of what was happening in the community and in regard to the status of the wildlife resources.

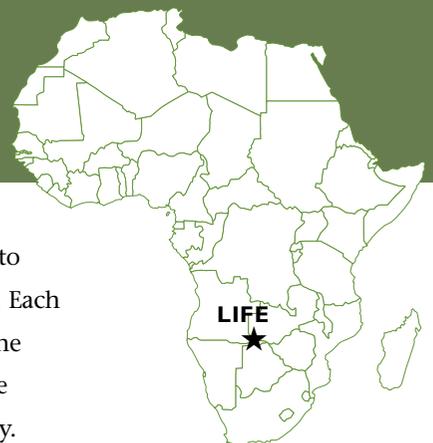
The approach used in the **LIFE** project and the system of CGGs created a sense of ownership for the wildlife resources in the area. The CGGs were more

The Living in a Finite Environment (LIFE)

project is located in East Caprivi, the strip of land in the extreme northeastern corner of Namibia. The project is coordinated by the World Wildlife Fund. LIFE's goals are to

- 🌿 improve the quality of life for rural Namibians through sustainable natural resource utilization
- 🌿 enhance sustainable development in East Caprivi based on sound natural resource management
- 🌿 improve the natural resource base and build the capacity of local communities to manage their natural resources in partnership with the government and
- 🌿 facilitate the return of direct social and economic benefits from natural resource management to local rural communities.

To learn more about the LIFE project, see page 82.



committed to managing the resources than the government game guards, and the villagers had more confidence in the CGGs, whom they viewed as their own people. This led to a considerable decrease in poaching incidents and an increase in wild animal populations.

The **LAKE MBURO** project offers another important lesson on the need to obtain the support and involvement of local people in biodiversity conservation projects. In 1983, Lake Mburo National Park (LMNP) was established by the Government of Uganda without consultation with the communities who lived in the area, and families were evicted without compensation. This naturally

resulted in hostility toward the park and its staff. When the government fell in 1986, the evicted families invaded the park, drove out the staff, and embarked on a slaughtering exercise aimed at clearing the park of all its wildlife so that the next government would find no reason to reestablish the park. Thousands of wild animals were wiped out in the process; the park became heavily settled by families who continued to extensively exploit resources in the area and stocked the park and surrounding areas with their livestock. When a new government came into power in 1987, it took much consultation before an agreement was reached to reestablish 60 percent of the original reserved area as national park. With this background, a major aim of the Lake Mburo National Park Community Conservation project was to develop good relations with the communities

surrounding the park. BIOME participants reported that this has been effectively done through initiating contacts with the 13 neighboring communities; mounting an environmental awareness campaign; forming community institutions, including local Conservation Committees, to facilitate community involvement in the park management; and sharing benefits and supporting community-initiated projects aimed at improving the quality of life for the people. As a result of these initiatives, the communities now see the park in a different light and are supportive of the management activities.

Lake Mburo National Park was established in Uganda in 1983 without consultation with local communities. The project is coordinated by the Ugandan Wildlife Authority and the African Wildlife Foundation, an international NGO. The project was established to help restore and maintain the wildlife and plants within the Park and to reduce conflicts between residents of the area and park management by involving local communities in the conservation and management of resources within and outside the park.

To learn more about the LAKE MBURO project, see page 80.



Types of Participation, with Examples from BIOME Projects

Type	Characteristics	BIOME Projects' Context and Activities
Passive Participation	People participate by being told what is going to happen or what has already happened. This tends to be a unilateral announcement and people's responses are not taken into account.	<ul style="list-style-type: none">  DZANGA-SANGHA: Declaration of the national park and zonation of the area  Pre-LIFE: Declaration of Mamili and Muduma Parks  Pre-LAKE MBURO: Declaration of the Lake Mbuoro National Park
Participation by Giving Information	People participate by answering questions designed by researchers and project managers. They do not have the opportunity to influence proceedings as the findings are neither shared nor checked for accuracy.	<ul style="list-style-type: none">  AMCFE: Involvement of local people in research on useful plants
Participation by Consultation	People participate by being consulted, and external agents listen to views. External agents define both problems and solutions, and may modify these in the light of people's responses. People do not share in decision making as their views may or may not be taken on board.	<ul style="list-style-type: none">  KENGO: Research to identify and document indigenous vegetable and fruit trees
Participation for Material Incentives	People participate by providing resources (e.g., labor in return for food or cash). Such people are not involved in the experimentation and have no stake in maintaining activities when incentives end.	<ul style="list-style-type: none">  MADAGASCAR WETLANDS: Use of local people as support staff in projects  DZANGA-SANGHA: Use of Ba'Aka people as forest guides
Functional Participation	People participate by forming groups to meet predetermined objectives related to the project. Their participation tends to occur at later stages of a project after major decisions have been made. They may become self-dependent but are initially dependent on external facilitators.	<ul style="list-style-type: none">  NATURAMA: Formation of village clubs to support management of the Kaboré Tambi National Park  VIE ET FORÊT: Formation of committees for development to manage village clinics  MADAGASCAR WETLANDS: Formation of village pharmacy management committees
Interactive Participation	People participate in joint analysis, which leads to action plans and the formation of new local groups or the strengthening of existing ones. Groups take control over local decisions; thus, people have a stake in maintaining structures or practices.	<ul style="list-style-type: none">  LIFE: Management of wildlife on communal lands  CAMPFIRE: Community natural resources management initiatives
Self-mobilization	People participate by taking initiatives independent of external institutions to change systems. They may or may not challenge existing inequitable distribution of wealth and power.	<ul style="list-style-type: none">  LIFE: Establishment of the Caprivi Arts and Culture Association  GACON: Establishment and protection of sacred groves

Conclusions

The importance of the participation of local communities in conservation projects is now widely accepted within conservation circles and particularly within the growing areas of integrated rural development and natural resource management projects, community-based biodiversity conservation initiatives, and parks and people projects. Still, participation is not a “one size fits all” principle. Instead, the level and form of participation vary with the stakeholders’ capacity to participate and the issues that need to be addressed by stakeholders to manage natural resources successfully. Types of participation by stakeholders range from passive participation, in which people are simply told what is going to happen or has happened already, to active participation, where people take responsibility for and actively contribute to project planning, design, and implementation.

The 11 BIOME projects demonstrate clearly how the meaning of participation varies across projects. (*See Types of Participation, with Examples from BIOME Projects on page 21.*) Often, communities who are affected by conservation projects are expected to change the way they use resources. Project staff in BIOME have learned that, if communities are expected to change their resource use patterns, in order for the community to remain in support of the project, it must be engaged in decision making regarding the design, implementation, and monitoring of the project. It is true that not all projects necessarily require the most involved level of participation of project communities to be successful.

Community-based natural resource management projects like **LIFE** and **LAKE MBURO** certainly require maximum support and involvement of community members; however, other projects, like **AMCFE**, which have little or no adverse impact on the livelihoods of subsistence communities, may only need the local people’s agreement and passive support. BIOME participants observed that the greater the change desired in resource users’ behavior, the greater the level of community participation required.

Observations from the BIOME projects suggest that, in the short term, attempting to reconcile as equitably as possible the various needs and priorities of all stakeholders by promoting effective participation is likely to be considerably more time-consuming and require considerably more compromise than “command and control” measures that are often unilaterally imposed by single stakeholders (e.g., the parks department). Though effective participation is likely to have substantial up-front costs associated with taking into consideration people’s needs and values, in the long term it is likely to result in more successful resource conservation projects.

Policymaking

Including a representative cross-section of stakeholders in policymaking is important if local people are to support conservation initiatives.

Policies are simply formal and informal frameworks for deciding how people should interact with one another and with the environment. In this sense, all conservation projects are bound to be guided by a set of policies that determine who has access to resources within a given area, and what uses of the resources within the area are permissible.

Whether a conservation policy is good or bad is relative and depends on one's viewpoint. For example, policies that place quotas on fishing are good for the conservation of fish but bad for the consumer, as the price is likely to rise. The same policy may be neutral for the fisherman, as he sells fewer fish but gets more money per fish.

Stakeholders are apt to differ in their views of natural resource conservation policies because each is likely to have different interests that span different time frames. Local individuals who rely upon the resources tend to look at policy from the perspective of "how does this affect me in the short term" (e.g., hunting restrictions). Nations look at how policies (e.g., resource exploitation subsidies) are likely to affect their citizens, as well as the domestic and international businesses that invest in their economies in the next 5 to 10 years (i.e., the average time between elections). International organizations often view policies from a global perspective over a time frame of 10-50 years (e.g., global climate change). When moving from local to global policymaking, the spatial and temporal scale of policies tends to get larger and longer. Individuals want policies that benefit them now, nations want policies that benefit them soon, and global institutions want policies that do not jeopardize the benefits that future generations can hope to receive.



Stakeholder consensus, developed through cooperation and compromise, forms a solid basis for natural resource management policymaking.

The challenge to achieving effective biodiversity conservation policy at each level is, therefore, to reconcile the scale and time-frame differences. The role of policymakers and policymaking at the local, national, and international level is to reconcile the trade-off between resource overexploitation for short-term economic gain and the irreplaceable loss of biodiversity.

In the best circumstances, natural resource management policymaking is based on consensus and compromise because, given the different needs and priorities of all stakeholders, only when the majority of the people that a policy affects are equally “happy” can a policy be said to be good. From the opposite perspective, a bad policy is one that fails to address the concerns, needs, and priorities of stakeholders who have the ability to prevent or subvert effective implementation of the policy.

Given present and projected demand for natural resources, policies to conserve biodiversity are likely to impose resource use restrictions that may impact adversely on the economies of some stakeholders in the short term. Conservation by its very nature imposes short-term costs for long-term benefits and often results in short-term sacrifices to meet long-term local, national, or international needs. Therefore, since it is often the local communities who rely most on natural resources and who suffer most from the implementation of restrictions on their use, local communities should be considered one of the most important stakeholders in natural resource management policymaking.

Land and resource tenure systems determine who has land and resource use rights and the level of security of these rights, both of which are key factors that influence whether natural resources are used at sustainable levels. Land tenure within Africa and Madagascar today is determined by both modern and customary laws. Traditional tenure systems were merged with or dramatically changed by colonial systems, which varied with the colonizer; in some cases, all land was made state land; in others, there was a mixture of state, private, and customary land. At the time of independence, some countries at least partially reinstated customary law while others did not.

Modern law is established by international conventions, national laws, and national or local regulations. Customary law is expressed through the traditional authority structure of the society (land chief or tingsoba in Burkina Faso, traditional chief in Ghana, chief of lakes Tompondrano in Madagascar), traditional land management practices, and resource use taboo systems (sacred groves, totem and tabooed species, closed seasons, and so on). Nontraditional (Christianity or Islam) and traditional religions, as well as progressive integration into the global market economy, increasingly influence land tenure systems, often replacing

the sacred value of land and traditional beliefs regarding acceptable uses of the land with other values and priorities.

Land tenure and resource security are often (although not always) indispensable for biodiversity conservation. Land tenure security does not require individual ownership of resources, but it does require that resource users have explicit rights to use resources within a defined area over a defined period, and, most importantly, to exclude others from illegally extracting resources.

Observations from the Field

In all 11 BIOME projects, new national policies and policy reforms have either directly or indirectly contributed to their success. In many cases, these new policies were designed and lobbied for by the projects who saw them as a necessary step to enhancing their capacity to conserve biodiversity. Projects like **CAMPFIRE** (Zimbabwe) and **LIFE** (Namibia) would not exist were it not for policy reforms that now permit shared ownership and co-management (local communities and central government) of wildlife and other natural resources. In Burkina Faso, new government policy emphasizing government partnership with NGOs and the private sector allowed **NATURAMA**, in collaboration with local communities, to assist with the management of the Kaboré Tambi National Park. The **GACON** project in Ghana benefited from the fact that traditional village chiefs represent both customary and state authority that together provide a policy framework for land management. Similarly, though the **KENGO** indigenous plants project in Kenya did not need specific policies regarding access and use of indigenous crops to plan and implement its activities, it could not have done so without government policies permitting the establishment of NGOs.

The **DZANGA-SANGHA** project realized that protected areas in Central African Republic (CAR) were too small to provide sufficient habitat for wide ranging species, such as elephant, buffalo, and bongo. Yet, asking the government to set aside huge areas of the forest as parks was untenable because most of the forest is inhabited by farmers and foragers, and logging provides an important source of



The Dzanga-Sangha project, located in southwestern Central African Republic, is engaged in the management of natural resources within a multi-use protected area, comprising the Dzanga-Ndoki National Parks and the Dzanga-Dende special forest reserve. The project, coordinated by World Wildlife Fund, aims to

- 🌿 conserve the forest's abundant and diverse plants and animals
- 🌿 develop the ecotourism potential of the area and
- 🌿 protect the socioeconomic rights of the indigenous Ba'Aka people, for whom the wildlife resource of the area is their source of livelihood.

To learn more about the DZANGA-SANGHA project, see page 74.



local and national revenue. CAR law at that time only allowed for national parks with no human occupation or resource use, so the project worked with the government to create a new type of protected area called a special forest reserve; it allowed for different uses of resources and types of residence within different zones. At the time of writing, **DZANGA-SANGHA** remained unique in CAR as the only multi-use protected area that included areas zoned for consumptive use (i.e., logging, safari hunting, agriculture, and subsistence foraging) and nonconsumptive use (i.e., tourism and research). Without the legal reforms that created the special forest reserves, the **DZANGA-SANGHA** project would be unable to attempt to balance conserving biodiversity and maintaining local livelihoods.

Executive branch legislation by the Ministry of Tourism in Namibia provides for collaborative wildlife management between the government and local communities and formally devolves authority and rights over wildlife to the local community. This legislation was promoted by the **LIFE** project and has placed community-based natural resource management as an official policy of the Namibian government. In so doing, this legislation strengthens the capacity of the **LIFE** project to conduct its conservation efforts. This policy also provides for the establishment of community-level wildlife conservancies, where wildlife can be managed by local communities and, through partnerships with private tourism and safari hunting enterprises, can be used to generate revenue.

In Burkina Faso, **NATURAMA** and communities around the Kaboré Tambi National Park would not have had legal authority to become directly involved in management of the park were it not for new national legislation developed by the Ministry of Environment and promoted and advocated by **NATURAMA**.

Fondation des amis de la nature

(NATURAMA), a national NGO in Burkina Faso, is working with local residents to conserve and restore the Kaboré Tambi National Park. The goals of the project are to  foster the regeneration of park resources by raising local community awareness  facilitate the transfer of authority and responsibility for park management to local communities  promote income-generating activities in the villages and the park and  develop a sustainable and participatory park management system.

To learn more about the NATURAMA project, see page 88.



Conclusions

Although situated in different countries and within varying socioeconomic, ecological, and political contexts, the 11 BIOME projects demonstrate that a few key policies have immediate and far-reaching impact on the success of biodiversity conservation and development projects in Africa. Policies that legalize NGO and local community participation in the management and use

(consumptive and nonconsumptive) of and authority over natural resources are central to the success of the majority of BIOME projects. Policies that facilitate private-sector involvement (decision making and direct resource ownership) in the use and management of wild plants and animals have also been important in establishing economic enterprises that provide either direct or indirect financial returns to local communities that manage their natural resources for sustainable production. Policies that authorize local communities to benefit financially from the revenue generated within protected areas have been very successful in raising community support for the protected areas. Policies that place the responsibility for resource monitoring on the communities that directly benefit from using the resources have also contributed to the success of the **LIFE** project in Namibia.

Using the 11 BIOME projects as examples, we are also able to examine how communities and project managers are involved in the policymaking process. Not surprisingly, given that African society is still largely organized around oral communication and discreet consensus building, the key strategy used by individuals at all levels of policy advocacy is informal contacts with decision makers. Yet, this no longer is the sole venue for policy advocacy. Communities and project staff are increasingly participants in official meetings and workshops, and the press and specialized lobbying groups are beginning to have a greater voice as freedom of the press and of speech become more common within the rapidly democratizing nations of Africa. Furthermore, more Africans are able to lodge legal complaints, file formal petitions against some laws, use NGO networks to advocate for policy reform in international fora, and address government directly. Projects are also increasingly involving policymakers in study tours designed to enhance their understanding of the complexities of local conservation and development actions and to provide concrete examples, in the field, where policy reforms have had profoundly positive impacts on local community welfare and the conservation of biodiversity.

Yet, though local communities are being encouraged to participate in determining how national parks and protected areas are to be managed, BIOME participants have observed that the policies to establish and retain protected areas are determined largely at the national or even international level. Furthermore, as discussed above, given present and projected demand for natural resources, all policies to conserve biodiversity inevitably result in the imposition of resource-use restrictions that are likely to adversely affect the economies of some stakeholders in the short term. Conservation, by its very nature, imposes short-term costs for long-term benefits, and results in local impacts to meet national or international needs. Understanding who suffers the impacts and characterizing what other stakeholders can do to minimize these impacts are important steps to effective biodiversity conservation policymaking.

Indigenous Knowledge

Incorporating local knowledge into project activities can reduce the risks associated with relying on outside technology and with adopting alternative resource use techniques and practices.

Indigenous knowledge can be defined as a set of perceptions, information, and behaviors that guide local community members' uses of land and natural resources. Indigenous knowledge is created and sustained by local community members as a means to meet their needs for food, shelter, health, spirituality, and

savings. Indigenous knowledge is usually adapted and specific to local ecological conditions and to community members' social and economic situations and cultural beliefs. This knowledge can be simple or complex. It is not static, but evolves in response to changing ecological, economic, and sociopolitical circumstances, based on the creativity and innovation of community members and as a result of the influence of other cultures and outside technologies. Indigenous knowledge reflects a set of resource use strategies that may be sustainable in certain contexts, but are not necessarily nor intrinsically so.



RICHARD CARROLL

The local population of a region is an important source of information for conservation projects.

Indigenous knowledge can help promote biodiversity conservation by characterizing resource uses that are appropriate for the particular local landscape. In fact, incorporating indigenous knowledge into conservation and development activities is believed to be an important mechanism for ensuring the most efficient and productive use of natural resources in the short term without jeopardizing

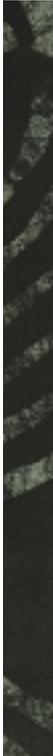
the long-term capacity of nature to continue producing these resources. Yet, indigenous knowledge is often neglected as a key source of policy-relevant information because it is often undervalued relative to Western scientific knowledge, both by nonlocal project managers and local communities themselves. Learning about and making use of local knowledge helps confirm the value and importance of such knowledge and facilitates its integration into resource management policies and practices.

Observations from the Field

The **AMCFE** and **GACON** projects were founded solely on the desire to support and foster indigenous knowledge systems that remain responsible for maintaining biodiversity within lived-in landscapes in regions of Mali and Ghana. The Peregrine Fund's **MADAGASCAR WETLANDS** project relied on indigenous knowledge and customary authority (Tompondrano) to determine when it was appropriate to open and close fishing seasons. In this way, local experience and concerns of the community were incorporated into an aquatic resource management system of the project as it attempted to balance local needs with biodiversity conservation.

In Kenya, the **KENGO** project could not have achieved its goal of conserving locally adapted varieties of vegetables and tree crops were it not for the rural women's knowledge of the most appropriate techniques for their cultivation and irrigation. The tree crop nurseries that were established by the project relied on indigenous techniques to determine the optimum growth conditions for the seedlings.

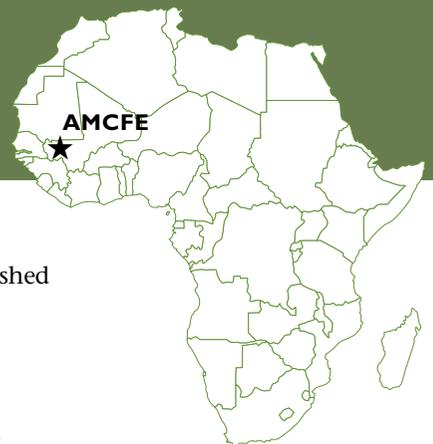
The ecotourism, public health, and research components of the **DZANGA-SANGHA** project in CAR could not have existed without the indigenous knowledge of the Ba'Aka people and villager populations. Ba'Aka men and women's knowledge of the forest allows them to guide visitors through a tropical forest that, to the uninitiated, appears green but barren; with the aid of Ba'Aka interpreters it is shown to be an extraordinarily diverse source of food, medicines, and building materials. Ba'Aka men and women know of a wild vine that, when shredded and applied as a paste, can kill the skin parasite *Tunga penetrans* that, in



The Association Malienne pour la conservation de la faune et de l'environnement (AMCFE) is coordinating a project on multiple-use plant species in the Boucle du Baoulé Biosphere Reserve. The goals of the project are to

- identify key medicinal species
- document indigenous knowledge regarding the use and ecology of these species
- conduct chemical analyses and treatment efficacy tests on specimens of medicinal plants and
- train village leaders and ensure the participation of villagers in the production, protection, and sustainable use of these medicinal plants.

To learn more about the AMCFE project, see page 70.



the simplest cases, causes painful lesions around the toes and, in the worst cases, results in severe deformities of the feet. With no comparable Western medicine, indigenous knowledge was critical to the success of one of the project's public health activities. Lastly, were it not for the forest knowledge of the Ba'Aka people and villagers who were employed as research assistants, it is unlikely that the Western researchers studying gorillas, viverids, elephants, and trees would have accomplished much within the short time usually allocated for such projects.

Similarly, the **LIFE** project in Namibia relied on women's knowledge about which parts of palm leaves could be harvested for baskets without negatively

affecting the regeneration of the mother plant.

The women also specified the frequency, season, and height for cutting thatch grass to optimize its productivity. The **NATURAMA** project at Kaboré Tambi National Park in Burkina Faso used traditional communication channels (stories told by griots), in combination with the knowledge of the villagers on the Nazinon River, to develop and implement a fishing management plan for the area.

Ghana Association for the Conservation of Nature (GACON)

coordinates the Sacred Grove and Biodiversity Conservation project in Ghana.

The project's goals are to  conserve biodiversity by protecting local reserves of remnant forests using participatory approaches and sensitization of grassroots communities  prevent illegal logging, intensive exploitation of wildlife, and bushfires in the groves and  strengthen the traditional laws and taboos governing the use of sacred groves.

To learn more about the GACON project, see page 76.



Conclusions

Though an aim of all these projects was to make effective use of and help in retaining indigenous knowledge, the observations of the BIOME participants show that the reasons for incorporating indigenous knowledge into

projects varied considerably. In the case of the **LIFE** (Namibia) and **KENGO** (Kenya) projects, the rural population within the project highlighted how their knowledge could be useful in the implementation of the development and conservation activities.

In the case of **GACON** (Ghana) and **AMCFE** (Mali), it was the outside initiators of the project who decided to use the knowledge

and authority of traditional chiefs and traditional healers to encourage conservation of natural resources. Sometimes project organizers only made use of the rural community knowledge because they could not afford to import costly Western techniques and technologies, or because local solutions had a comparative advantage (**CAMPFIRE**, **KENGO**, and **NATURAMA**).

Except for the **GACON** and **AMCFE** projects, for which this principle constitutes the project's *raison d'être*, no project carried out studies to learn about

indigenous knowledge so as to systematize the incorporation of such knowledge into projects to provide sociocultural, economic, and resource conservation benefits. Indigenous knowledge appeared to be incrementally incorporated into projects during the implementation phase. It was thus often a problem-solving rather than a planning tool.

Although indigenous knowledge was often well adjusted to the prevailing biological, economic, and social conditions, BIOME participants noted that local knowledge alone is unlikely to provide all the necessary solutions, given the rapidly changing economic, ecological, and social circumstances of recent decades. Some blending of indigenous and external knowledge is generally needed.

Rather than providing ready-made solutions that extension agents are asked to “sell” to farmers, BIOME projects such as **NATURAMA** and **KENGO** show how it is worth using an approach that is more valid when dealing with traditional societies and their production and conservation systems. First, one must understand the local ecological stability of traditional systems of resource management and the indigenous knowledge associated with them. Next, one should use external and local expertise to investigate why these traditional practices are no longer adequate and to identify areas where adjustments are needed. Lastly, it is important to work with local communities to develop potential innovations that solve the problems. Observation of BIOME projects has shown that biodiversity extension workers need to understand ecological concepts and to learn how to analyze problems rather than provide ready-made recipes. They also need to acquire communication skills and willingness to adapt to changing conditions. The latter was observed not to be easy, given African traditions of teaching based on memorizing and accepting unquestioningly what one is taught.

Part of identifying what indigenous knowledge is important to incorporate into a project involves understanding the values of the people involved and what is and is not important to them. The following section explores this idea.

Values

Incorporating local values into projects helps ensure that conservation initiatives are compatible with local concerns and builds respect and trust between local communities and project managers.

The specific values, degree, and order of importance placed on biodiversity varies from region to region and from people to people. Inhabitants of growing urban areas may interact with wildlife only indirectly on television; for them, the closest contact with wild animals may be at zoos and in protected areas. City dwellers

may therefore value wildlife more in aesthetic, recreational, ecological, and perhaps intrinsic terms. Similarly, international conservation organizations and conservationists tend to emphasize the global value of biodiversity (ecological, scientific, educational, existence, and intrinsic values). For those, particularly in rural areas, who have to live with and tolerate wildlife, biodiversity is valued as food, fuel, building materials, medicines, source of livelihood, and, in some

cases, religious and cultural identity. Thus, while national governments may see biodiversity in terms of economic values related to consumptive uses, such as timber exploitation and wild animal trade, and nonconsumptive uses, such as tourism, rural inhabitants tend to be more concerned with the direct subsistence values of biodiversity.



CONNIE BRANSILVER

Sacred lakes represent local cultural values which can form the basis for strong biodiversity conservation incentives.

The diverse values placed on biodiversity by different people and stakeholders influence the decisions taken by states, institutions, and individuals as to how natural resources in a particular area are used. Given that different stakeholders are likely to emphasize different biodiversity values and advocate different uses of natural resources, the question then is: Whose values should determine biodiversity conservation action in Africa and Madagascar?

Funding agencies (mostly foreign organizations with developed country perspectives), by holding the purse strings, can often determine biodiversity conservation priorities in Africa and Madagascar and the activities to be implemented. These priorities usually emphasize global values of biodiversity, which, by and large, reflect Western conservationist values. Similarly, conservation agencies, particularly NGOs based in developed countries who are the recipients of donor funding, are more often concerned with scientific and intrinsic values of biodiversity; it is they who largely determine which project activities get priority. Where then do the values of the rural people who rely on wild resources for their livelihoods and who bear the cost of living with wildlife fit into the picture? In fact, are rural people's values considered at all in setting priorities for biodiversity conservation projects? Characterization of the goals and specific objectives of the 11 BIOME projects provides useful insights into the interplay of different values and interests in biodiversity conservation on the African scene.

Observations from the Field

For rural Namibians, the primary value of biodiversity is food security (bushmeat, wild fruits, water lilies), particularly in times of famine; materials for household construction and tools; and, as a source of cash income (sale of bushmeat, grass/thatch, crafts including baskets, mats, and carvings). The colonial government took away the ownership of natural resources from indigenous Namibians; tracts of land were set aside as protected areas without consultation with the people; and local hunters became "poachers" overnight. Thus, for rural people, wildlife became a symbol of oppression, and they had no incentive to protect the resource. The **LIFE** project recognized this



and sought to promote sustainable use of resources through return of ownership of and benefits from natural resources to the rural communities. As a result, these local communities' values of natural resources have been recognized again, and they are more supportive of the project's objectives and activities.

The **KENGO** project was based on the subsistence value (food resource) of biodiversity for local people. The **AMCFE** project on multiple-use plant species in Mali was based on local-use values of biodiversity. And the **NATURAMA** project in Kaboré Tambi National Park was based on local people's values and dependence on natural resources.

The **GACON** project illustrates how spiritual and cultural values of natural resources can provide strong incentives for some members of rural communities to protect these resources. In Ghana and other West African countries, patches of sacred forest and specific wild animal species supported by the forest are protected on the basis of strong traditional beliefs and cultural associations with wild species of plants and animals (Dorm-Adzobu, Ampadu-Agyei, and Veit 1991; Ntiamoa-Baidu 1995). The establishment of the groves was based on the belief by the people of Jachie and Keygase that the groves are the abodes of their ancestors.

The villagers who took part in this project had different levels of control over the groves and depended on them in different ways. In general, the **GACON** project showed that, while people in these villages generally valued the sacred groves, their actions toward grove conservation seemed to have more to do with their economic relationship to them. The **GACON** project activities centered on providing alternatives to using the sacred groves for fuelwood or clearing them for agriculture. Because this project considered people's economic needs along with their general cultural values, people were perhaps more interested in taking part in **GACON** activities than they would have been if the focus had been solely economic in nature.

Establishing the Dzanga-Ndoki National Park and **DZANGA-SANGHA** Dense Special Forest Reserve was based primarily on international values. However, permitting multiple resource uses within the reserve was an attempt to address the values of indigenous people by protecting Ba'Aka rights to hunt and gather forest resources. Similarly, though the **MADAGASCAR WETLANDS** project was established based on international values, local communities' traditional taboos against disturbing fish eagles provided a context for the project to incorporate local values and ensure local support for fish eagle conservation. Similarly, the **CAMPFIRE** project was based on both local values (livelihood and food security) and external values (recreational/touristic/scientific) of biodiversity.

Conclusions

Observations from the BIOME projects suggest that successful conservation of Africa's biodiversity requires the integration of the diverse values—local, national, and international—and the consideration of the interests of a wide range of stakeholders and actors. In some cases, the initiation of BIOME projects was based solely on maintaining and reinforcing local values (e.g., **AMCFE**, **GACON**, and **KENGO**). Other projects were initially based primarily on international values, but subsequently attempted to integrate local values (e.g., **LIFE**, **CAMPFIRE**, and **DZANGA-SANGHA**).

Understanding people's values should be a part of the sociological information gathering that happens before a project starts and continues during its implementation. As demonstrated by the **GACON** project, socioeconomic studies are necessary so that a project is not simply based upon the villagers' values in general but considers how different people in the villages can hold different values.

Projects established purely on external values must be prepared to invest considerable time and other resources on conservation education and information dissemination to obtain community support. It is also helpful, and in most cases not too difficult, to identify local values to which projects can be linked since this offers a more concrete reason for local communities to support projects.*

* In a non-BIOME example, the Ghana Save the Seashore Birds project was initiated out of concern for the threatened Roseate tern (*Sterna dougallii*) (i.e., international values). However, during the initial consultations with coastal communities, it was discovered that local fishermen value terns as indicators of shoaling fish. Project participants found that they could easily sell the conservation education message if they justified the need for tern conservation based on their value as indicators of where to find fish. The coastal people were interested in the practical value of the species, not its intrinsic value (Ntiamo-Baidu 1991).

Community Needs

Efforts to involve local people in the conservation of biological diversity will not succeed in the long term unless local people believe those efforts contribute to their welfare.

While such fundamental needs as food, shelter, health, and clothing are universal, the ways and means of satisfying them vary according to culture, historical context, and prevailing conditions. In industrialized nations, fundamental human needs are catered to mainly by market supplies and industrially produced



CONNIE BRANSILVER

Fundamental needs, such as food, must be satisfied for a conservation project to succeed.

goods (Pimbert and Pretty 1997). In rural Africa and Madagascar, wild plants and animals contribute significantly to food and livelihood security, and, in some cases, constitute the primary source of resources to fulfill basic human needs. Wild species provide food and dietary supplements, contribute to household income, provide medicines, constitute a major source of building materials and household tools, and provide

energy for cooking and food for livestock (Makombe 1993; Ntiamoa-Baidu 1997). Wild species may be food items of choice in good times, they may also be lifesaving reserves in times of food shortage (Falconer 1991; Hoskins 1991). In traditional societies, natural resource conservation was aimed at regulating resource use and ensuring that resources upon which people's livelihood depended were always available.

In the more developed world, basic needs for food, shelter, health, and clothing may be taken for granted. In rural Africa and Madagascar, obtaining even these basic needs is often a real struggle. Many people live in abject poverty. According to estimates of the Food and Agriculture Organization (FAO), the Gross National Product (GNP) per capita of Africa in 1990 was U.S. \$470, with 0 percent annual growth in the previous decade. This compares with the average for all developing nations of U.S. \$763 and annual growth of 1.8 percent, and U.S. \$13,362 and annual growth of 2.8 percent for developed nations (FAO 1995).

Natural resource conservation through protected area establishment in Africa and Madagascar was initially based on the concept of preservation without consideration for meeting rural people's needs. Local farmers, fishermen, and pastoralists were driven away from their ancestral lands when they were expropriated as protected areas, and they were denied access to resources upon which they had depended for their livelihood and food security. In most cases, without due regard for people's culture, hopes, or aspirations, no alternatives were provided, and the needs and rights of people were either not addressed at all or poorly met. This situation invariably resulted, at best, in apathy; more often, it resulted in antagonism toward conservation measures, sometimes resulting in serious confrontation between local people and protected area projects. In many cases, the lack of adequate provision for livelihood security of people living around protected areas invariably promoted local actions that undermined the objectives for managing the area, and, in some cases, threatened the long-term productivity of the natural resource base. Unfortunately, the retaliatory actions of the rural communities often caused further environmental degradation, increasing poverty and decreasing quality of life, the end result being more bitterness toward conservation actions and intensification of conflicts between rural people and protected area managers.

To balance the twin goals of conserving biodiversity and meeting people's needs, the use of natural resources must be sustainable. Observation of BIOME projects suggests that project managers and staff have several options available for achieving this:

- 🌿 Promoting the sustainable harvest of the resource
- 🌿 Promoting *ex situ* cultivation of the resource
- 🌿 Increasing the market value of a managed resource
- 🌿 Providing alternative resources or income, and
- 🌿 Providing directly for people's needs.

The BIOME projects illustrate examples of all of these options.

Observations from the Field

PROMOTING THE SUSTAINABLE HARVEST OF THE RESOURCE

It may be possible to promote the sustainable harvest of certain wild resources. These are typically resources that are either tolerant of intensive use or that are of high value.

Thatch-grass marketing is an excellent example of how the commercialization of wild resources can result in a steady source of revenue for local communities

with little risk of resource overexploitation. The decision to harvest and sell thatch grass by the **LIFE** project resulted from an understanding of thatch-grass ecology, knowledge of the harvesting methods of local communities, and a market survey to evaluate potential demand and expected economic rates of return from the sale of thatch grass. The ecology of thatch grass is such that annual harvesting is unlikely to diminish future growth capacity, particularly when much of the thatch grass is burned naturally at the end of the growing season. Harvesting of thatch grass does not remove a food source for wildlife as the old growth is too coarse for forage. Local women already had, from experience, developed techniques for harvesting thatch grass that prevent permanent damage to the plants. Nearby tourist lodges required a regular supply of grass to repair and replace the thatch on their buildings. Taken together, this is an almost perfect example of

sustainable commercial use of a wild resource, because the resource is tolerant of intensive exploitation; if not used, the resource is lost as a result of naturally occurring bush fires; appropriate harvesting methods are already known by the community; and a stable market for the product is close by.

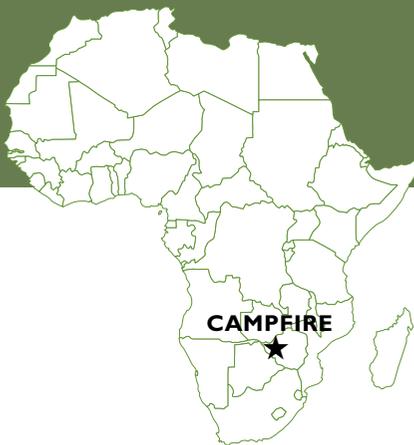
Safari hunting relies on the highly regulated exploitation of scarce and thus high-value (i.e., trophy quality) wildlife. Scarcity is either real, in that few of the animals exist, or virtual, in that governments only provide a very limited number of permits to shoot them. The **CAMPFIRE** program in Zimbabwe is an example of a project that generates income for local people through the

The CAMPFIRE Project is located in Zimbabwe and is coordinated by a consortium of eight governmental and nongovernmental organizations. CAMPFIRE's goals are to

- develop a program for the long-term management and sustainable use of natural resources in the Communal Areas
- place the custody of and responsibility for natural resources in the hands of resident communities
- ensure that communities benefit directly from the sustainable use of natural resources and
- establish the administrative and institutional structures necessary to make the program work.

CAMPFIRE generates revenues for local communities primarily through the sale of wildlife to safari hunters.

To learn more about the CAMPFIRE project, see page 72.



exploitation of high-value resources. In 1993, 12 districts with a total population of 400,000 earned U.S. \$1,516,693 in trophy fees and received another \$97,732 from tourism and culling, and from problem animals that had to be shot. The Hurungwe District's population of 31,000 received \$119,342 from **CAMPFIRE** activities in 1993, which increased to \$145,519 in 1995 (Butler 1995). Household income in communal areas has increased 15-25 percent as a result of benefits from **CAMPFIRE**.

Success resulting from this form of resource commercialization depends on the continued scarcity of the resource and a demand for safari hunting that does not change with the price. **CAMPFIRE** gains 92 percent of its revenue from safari hunting, of which 34 percent comes from elephant hunting alone. Should elephant hunting become legal and regulated in most or all of the remaining nations that support populations of elephants, a surge in supply and competition could drive the value of **CAMPFIRE**'s safari hunting revenues down considerably. **CAMPFIRE** is aware of this and is working on diversifying its revenue sources. Interestingly, as scarcity is the source of the value of trophy animals, a decline in real terms in their numbers would merely raise the price, and thus in the short term, returns to safari hunting, even with declining populations of animals, might not change. However, there is a risk that this situation could send mixed signals to local communities; ultimately, if wildlife populations are not conserved, revenues cannot be generated from safari hunting.

PROMOTING *EX SITU* CULTIVATION OF THE RESOURCE

If resources are scarce in the wild, encouraging the *ex situ* cultivation of these resources may provide for the needs of local people and may reduce pressure on the wild population.

In Kenya, for example, rural women are traditionally the main providers of food crops. Relatively recent introduction of income-generating agricultural activities has encouraged the cultivation of new crops and diminished the production of traditional foods. As local people switch from producing and consuming a traditionally wide range of indigenous food plants to a much narrower range of introduced food items, local diets and food security are often adversely affected. This is particularly true as indigenous foods once provided nutritional insurance during times of drought and famine, and introduced crops are often nutritionally inferior. To retain the nutritional and food security value of traditional crops, the **KENGO** project identified 42 species of indigenous fruit trees and vegetables and encouraged their cultivation. By doing so, the project not only met the nutritional needs of people but also promoted the maintenance of biodiversity in the landscape.

One of the aims of the **GACON** project was to minimize encroachment into the groves and degradation of the groves' resources, particularly by tree cutting for fuelwood. Promotion of tree planting on individual farms in agroforestry ventures and establishment of tree nurseries and fuelwood plantations therefore contributed to meeting the communities' need for fuelwood and, at the same time, helped to reduce pressure on the groves. To help meet the communities' dietary needs, snail and mushroom farms were established.

The Bambara, Sarakule, and Fulani people living around the Boucle du Baoulé Biosphere Reserve in Mali live in a harsh, semi-arid environment, with very limited agricultural opportunities. One way to cope with the harsh conditions is to maximize the use of natural resources, particularly plant resources. Local communities consume a whole range of wild plants. Fresh or dried leaves and flowers are used in sauces and as medicines. The major activities of the **AMCFE** project were an ethnobotanical survey aimed at identifying and documenting useful plant species, analyzing the medicinal value of plants, promoting both *in situ* and *ex situ* conservation of key medicinal plant species, such as *Vernonia korchyana*, and encouraging the rational use of these useful plant species. In this case, the sale of *V. korchyana* helped to meet the community's health needs directly and provided a much needed source of income.

INCREASING THE MARKET VALUE OF A MANAGED RESOURCE

Harvesting of reeds for thatch provided the main source of cash income for women in the East Caprivi area. The resource was, however, underused because of market limitations. The way around the problem was for **LIFE** project implementers to find new markets and sources of demand in cities where the women could sell the grass. This was, however, not without problems. The first year, buyers placed orders that were not purchased; thus, the women harvested a lot of grass that they were unable to sell, and the grass was left to rot. Such failures could have demoralized novice traders and had negative impacts on program viability. The risk of buyers defaulting on their orders was reduced by finding additional markets and thus increasing competition among buyers. There was also a need to improve the quality of the harvested grass, including arranging for spraying to prevent spread of foot and mouth disease. To ensure sustainability of the resource base, female Resource Monitors were trained to monitor the effect of harvesting on the growth and spread of the grass. The result was a considerable increase in village income. Before the project, women in villages within the project area were earning less than U.S. \$27 (exchange rate N \$1 = U.S. \$0.2741) from selling thatch grass in a season. In contrast, in 1994-1995, they earned U.S. \$130-260 and the whole Liazulu village earned U.S. \$16,500.

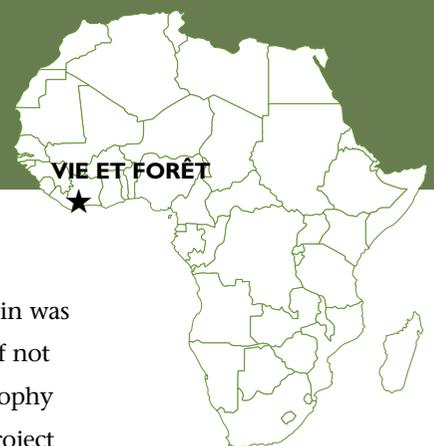
Craftwork is another major source of livelihood in the East Caprivi area. By supporting the Caprivi Arts and Cultural Association (CACA), the **LIFE** project succeeded in improving the quality of carvings, helped to make the association become more professional, and improved the earnings from carving. The Caprivi Arts and Cultural Center, which is run by CACA, is based in Katima Mulilo and serves as an umbrella organization for artists in the area. Before the artists were organized as a group, the crafts produced were mainly household implements that were sold in the villages and at the roadside. With funding and technical expertise from **LIFE**, it was possible to improve communication between staff and the artists through organization of the artists into village groups, to improve quality of their work through training workshops, and to establish a system of financial accountability and controls. The association was also able to put a system in place whereby artists could bring their crafts to the Center to facilitate sales and to generate higher prices. The association added 25 percent to the price recommended by the artist, which went to support the association's operating costs. Supplementary funding from the Swedish International Development Authority (SIDA) also enabled the association to construct a museum and a reception area where exhibits would be mounted on the culture and life of the Caprivi people. This facility, aimed primarily at tourists, was meant to generate income to enable the association to become self-sustaining. CACA was run wholly by local people and was independent of the government.

PROVIDING ALTERNATIVE RESOURCES OR INCOME

Unsustainable hunting was a major problem for the management of the Tai National Park in Côte d'Ivoire. In the **VIE ET FORÊT** project, people in the villages had said that getting sufficient protein was difficult. Men described the difficulty of finding game and women spoke of not being able to provide for their children. This project was run on the philosophy that the participating villagers had to take initiatives to help themselves. Project components that merely gave participants food, equipment, or any type of provision were argued to be unsustainable. In order to provide alternative protein sources for local communities and in an attempt to reduce hunting pressure on wildlife in the park, the **VIE ET FORÊT** project tried to introduce fish farming,

Vie et Forêt, a national NGO of Côte d'Ivoire, is coordinating a project to help conserve resources within the Tai National Park through the sustainable development of peripheral zones. The project's goals are to  promote awareness of the need for forest conservation among communities bordering the Tai National Park  train community members to become involved in biodiversity conservation  strengthen existing institutions that regulate resource use through the introduction of participative tools for sustainable management of resources in inhabited areas of the Tai Forest  increase domestic production of animal protein and  enhance research activities focused on biodiversity conservation and rural development.

To learn more about the VIE ET FORÊT project, see page 90.



snail farming, and farming of small rodents, such as the grasscutter (*Thryonomys swinderianus*). Fish-pond projects had been started by another development project in a nearby town. Snails are found in the wild in the forest and are sold in the markets. Cane rats are considered gourmet and are hard to catch. Women and men entrepreneurs in the villages voiced a desire to try domesticating these animals. The project officers gathered the information and most of the materials, and the villagers were expected to provide the labor and their expertise.

Although the projects were successful, they were not without difficulties. For example, data were needed on snail growth as part of the project. One woman was selected by the project to be paid for collecting these data. She was chosen because she was the most enthusiastic and attentive to her snails. All the other women temporarily quit the project as a result of this, claiming that it was unfair that one woman was being paid, and that she had not been chosen in a participatory way. Instead, it would have been better if all the participating women had gathered to decide among themselves who would collect the data.

Employment of local men and women as Community Game Guards and as Resource Monitors by the **LIFE** project provided direct income to workers and their families. In 1993, the management of Lianshulu Lodge in East Caprivi voluntarily introduced a levy of U.S. \$1.5 per visitor for every night that a visitor stayed at the lodge, to be returned to five neighboring communities of the Mudumu National Park (Lianshulu, Sauzuo, Lizauli, Sachona, and Lubuta). The idea was that, by preserving the natural resources of the park for tourists to come and enjoy, the communities deserve to benefit from the income generated by tourism. By April 1995, the more than U.S. \$7,000 that had accumulated in the bed-levy fund was distributed to the villages. It was up to the villagers to decide what to do with the money. While some villages chose to distribute it to households, others chose to fund community projects.

Many of the BIOME projects provided opportunities for small-scale village enterprises as a means of increasing people's livelihood sources. These enterprises may have contributed directly to biodiversity conservation (e.g., encouraging beekeeping provided people with a source of income and served as an incentive to protect the forest in which they have their hives); but more often, they were intended to compensate communities for modifying their use of protected natural resources. One such enterprise was the Lizauli Traditional Village in East Caprivi, Namibia, which was initiated by the management of Lianshulu Lodge and received support (financial, technical, training) from the **LIFE** project. For U.S. \$5, tourists could visit the village, experience the culture and traditions of the village people, and have the opportunity to purchase crafts from local artists. All entrance fees from tourist visits to the village went to the Lizauli

community. **AMCFE** supported small-scale production of dyed fabrics by women as a way to reduce the dependence of rural women on the sale of fuelwood as their main source of cash income.

PROVIDING DIRECTLY FOR PEOPLE'S NEEDS

Although the goal of their project is conservation of natural resources, several **BIOME** project staff have observed that this cannot be achieved unless the social and economic welfare of local communities is improved. Consequently, they have attempted to provide directly for the needs of the people.

For example, villagers living around the Taï National Park in Côte d'Ivoire (**VIE ET FORÊT**) believe strongly that a sick person cannot function effectively; therefore, for them, health care is a number-one requirement in any development and conservation process. **VIE ET FORÊT** helped the communities to construct village health huts used for delivery of babies, primary health care, and family planning clinics. **VIE ET FORÊT** provided technical assistance and some financial support, approved the design of the hut, and arranged supply of medicines to the clinics on a credit basis. The villagers provided labor for the construction and supplied locally available building materials. The result of this activity was improved community spirit, improved health for the villagers, and improved confidence of the villagers in **VIE ET FORÊT**, which facilitated implementation of the biodiversity conservation initiatives.

For the villagers living where the **MADAGASCAR WETLANDS** project is based, shortage of medicines was voiced as a major problem. The project established a community pharmacy as part of its activities to meet this pressing community need. This not only contributed to the health of the villagers, but also enhanced the villagers' support for the project. The **DZANGA-SANGHA** project established a village pharmacy in Bayanga that proved so successful that it continues today without the external assistance of the project. Similarly, many communities adjacent to the Lake Mbuo National Park have benefited from the **LAKE MBURO** project through support for various community-initiated projects, such as schools and clean water supply.

Conclusions

Clearly, the dependence of people on biological resources and the impact of wildlife on their livelihoods should be a key consideration when designing and implementing biodiversity conservation projects. Any conservation activities that are likely to impinge on the basic needs of local communities must find ways to minimize these impacts or provide compensation for lost revenues or resources. As a Sikumi man in Zimbabwe put it: “If we were enjoying full rights on wild animals, we would be able to better manage it. Animals bringing a source of income can be compared to a herd. An owner does not destroy his herd, but he increases its value according to his own strategy.”

Each of the 11 BIOME projects recognized the importance of this principle and incorporated meeting people’s needs into project activities. The extent to which project resources (funds and time) were committed to meeting people’s needs, as opposed to purely biodiversity conservation activities, and the way in which the issue was approached, however, varied among projects. Though all BIOME projects were advocates for a more integrated approach to biodiversity conservation that included development concerns, analysis of the projects associated with protected areas showed that they can be distributed along a continuum, depending on their relative initial investment in understanding the ecological or socioeconomic context of the area. For example, although an objective of the **DZANGA-SANGHA**

project was to balance wildlife protection with human needs, financial constraints resulted in an initial focus on antipoaching activities. Only later, when additional funding became available, was more emphasis placed upon the human needs side of the management equation. The **LIFE** project, on the other hand, started with intensive socioeconomic surveys and only later began biological inventories.

The reasons for this are complex and linked to the project context. In the case of **NATURAMA, LAKE MBURO, AMCFE, and VIE ET FORÊT**, the initial focus on human needs seems to have derived, in part, from the fact that established but unmanaged protected areas associated with these projects warranted

The Madagascar Fish Eagle and Wetlands Conservation

project is located along the western coast of Madagascar and encompasses three lakes and a forest reserve. The project is coordinated by The Peregrine Fund, an international NGO. The goals of the project are to  conserve and monitor Madagascar Fish Eagle populations in the region  identify appropriate tools and methods for monitoring Fish Eagle population status and  strengthen national and local technical capacity to manage and monitor biological resources in the region.

To learn more about the **MADAGASCAR WETLANDS** project, see page 84.



conservation activities because of the perceived human impact on resources in the area. Thus, at the project outset, there was a focus on the human dimension of resource management. The **MADAGASCAR WETLANDS** and **MASOALA** projects in Madagascar were also historical forest reserves with evident human impacts, and still the initial focus of both projects was to develop local capacity to understand and monitor the ecology of the area. In general terms, who or what institutions initiated the project and the history of biodiversity conservation in the region appear to strongly influence the initial focus. The **LIFE** project focused on human needs, in part, because of the hostile relationship between local communities and the staff of the Mudumu and Mamili parks which were created 24 hours before Namibian independence and resulted in the forced eviction of local people.

Regardless of the causes, the consequence is largely the same. Projects that start with a focus on biology are more likely to be designed by highly skilled technicians who are often non-nationals, tend to rely heavily on resource protection, and risk alienating local communities whose participation is, at worst, limited to “rubber-stamping” the management plan. Projects that start with a focus on human needs are more likely to ensure the active support of local communities and are often more financially viable, but they risk unintended resource overexploitation as a result of implementing activities with insufficient understanding of the ecology of the region.

Economic incentives is the most important factor that all BIOME projects have focused on to improve the living conditions of local communities and conserve biodiversity. Developing and maintaining markets for safari hunting (**CAMPFIRE**), tourism (**DZANGA-SANGHA, NATURAMA, GACON, LAKE MBURO**), thatch grass (**LIFE**), alternatives to bushmeat (**VIE ET FORÊT**), medicinal plants (**AMCFE**), vegetables and fruits (**KENGO**), and other agricultural crops (**MASOALA**) were key to the success of BIOME projects’ attempts to improve community livelihoods. The majority of these activities focused on either the nonconsumptive use (tourism) or the cultivation of resources (snails, vegetables, or other agricultural crops). Only safari hunting, thatch-grass cutting, and collection of medicinal plants involved the sale of wild resources.

These market-based initiatives are not without problems, however. The criteria for sharing of revenues are always problematic. Communities that may have lost more land or that are closer to the park and therefore suffer more crop damage from wild animals may believe they deserve more, while others, left out because they happen to be farther from the park’s influence, believe they also deserve some of the benefits. In the Caprivi case, some communities that had lost land to the park saw the funds as a compensation for their land; others saw it as a

compensation for crops damaged. In both cases, people complained that the benefit was far too small in comparison with what they had lost.

Stakeholders' interest in and degree of dependency on community natural resources vary. A village community may comprise farmers, pastoralists, hunter/gatherers, and government employees, such as school teachers and other public servants. The degree of natural-resource dependency of hunter/gatherers, such as the San in Zimbabwe, is of a totally different magnitude than that of a farmer. Thus, when revenue from **CAMPFIRE** is distributed equitably to households as dividends, these may represent a significant but supplementary income for village farmers; for the San hunter, however, it may be the only source of income throughout the year and may not compensate for income losses caused by discontinuing hunting activities. Again, when revenues are used for community projects, such as building a school or health clinic, the quality of life is improved for the community as a whole. But a poor farmer, who has very little food during the dry season, may prefer the cash to buy food to feed his or her family.

It follows from these considerations that the distribution of such revenue requires intensive consultation to ensure that it achieves its purpose—that is, positive action and support for natural resource conservation rather than bitterness and antagonism. It is also important to maintain a balance between community welfare and individual household needs and to ensure that the interests of all stakeholders are considered in sharing of benefits from biodiversity conservation activities.

Such benefits, no doubt, encourage community support for projects, but the challenge is how to link such benefits with biodiversity conservation and how to ensure support of the communities for conserving biodiversity. In many cases, communities see revenue sharing as handouts and not as a reward for managing their natural resources. It should be possible to develop a system whereby these benefits can be traded for specific biodiversity conservation activities by the community. For example, in the case of the **VIE ET FORÊT** village clinics, could a system be developed whereby individuals pay for using and maintaining the facility by providing labor to Taï National Park's conservation activities?

Another problem is whether such funds actually contribute to community support for natural resource management and whether an increase in benefits results in the reduction of activities such as illegal hunting? For example, could poaching levels within the five Caprivi communities be measured and used to determine the proportion of conservation revenues a village gets?

Finally, harvesting of wild *V. kotchyana* within the Boucle du Baoulé Biosphere Reserve for sale as medicine in Mali allowed for both the analysis of its pharmacologically active components and the generation of income for local communities. The project did not, however, determine before promoting trade in this medicinal plant whether the density and productivity of the plant within the reserve was sufficient to tolerate intensified use associated with trade. Promoting trade in a wild resource without estimating the potential demand for or the productive capacity of the resource risks overexploitation to meet high demand or oversupply that would drive down the price. Conducting market surveys and baseline ecological surveys should be a necessary first step to promoting commercial use of a wild resource (Freese 1998). The project did acknowledge, however, that too much emphasis was being placed on one medicinal plant species and was promoting both *in situ* and *ex situ* conservation of valuable medicinal species.

Education

Education, training, and awareness raising are the doorways to effective stakeholder participation and empowerment in biodiversity conservation and management.

Education, training, and awareness raising are critical to bringing various stakeholder groups to the same level of understanding about project goals, objectives, and methods.

Education also helps ensure that all stakeholders are equally able to contribute to decisions about how resources are to be managed.

Participation reflects organized efforts to increase control over resources and regulative institutions by communities previously excluded from such control. Empowerment enables communities previously excluded from power to secure a fair share of the contested power. In simple terms, control over resources is achieved through exerting power in an institutionalized setting, and the capacity to exert power is facilitated by education, training, and building awareness.



CONNIE BRANSILVER

Formal education is one way to develop stakeholder understanding of biodiversity conservation issues.

Although the terms education, training, and awareness raising are often used interchangeably (they use many of the same processes and procedures to achieve their different purposes), they are not synonymous. Education gives the learner knowledge that he or she can use to take guided actions or to make decisions on matters of interest. Training is concerned with preparing people to perform specific functions within defined settings in which they work or play. Training improves their performance at particular tasks through the acquisition of

information and skills. Awareness is not an action or activity, but rather a consequence of education, training, observation, and experience. The ultimate goal of education, training, and awareness raising can be said to have been achieved when an individual knows about the existence of an issue and understands it sufficiently to take appropriate action (Byers 1996).

Observations from the Field

When asked about options for conservation of medicinal plants, villagers in Mali responded, “There is no problem because you cut the plants, and, when rain falls, they grow again; even when you burn them, they will always grow again.” In a study of the perceptions and values of wildlife and forests of village communities around forest protected areas in southwestern Ghana, it was found that four out of the six factors identified as key to the overexploitation and degradation of forest resources were related to ignorance (Ntiamao-Baidu 1995). Education (both formal and nonformal) was therefore considered central to raising people’s awareness of the issues, as well as equipping them with the skills required to address them. **NATURAMA**, **CAMPFIRE**, **DZANGA-SANGHA**, and other BIOME projects have developed educational materials, school curricula, and teacher-training tools to help promote environmental awareness at the local and national levels.

All of the BIOME projects incorporate training elements for both staff and key stakeholders and are using various methods to educate communities and to develop their capacity to manage natural resources. **KENGO** organized training seminars and mounted exhibitions on indigenous fruits and vegetables and recipes to sensitize and equip women in their project area with the technical expertise required to cultivate the fruits and vegetables. In Burkina Faso, **NATURAMA** organized training programs in fire fighting, apiculture, and soil conservation to enable village communities to contribute to the management of the Kaboré Tambi National Park and the resources it contains. The **MASOALA** project in Madagascar incorporated training of community members to impart skills and empower them in their role as respected and recognized partners in managing the protected area. In Côte d’Ivoire, **VIE ET FORÊT** provided training to community health workers and traditional midwives to enhance their effectiveness as social service providers. **GACON**, in Ghana, provided communities of more than 7,000 people with training in use and construction of efficiency-improved stoves, fire prevention techniques, fire break construction, and nursery practices.

In the East Caprivi area of Namibia, exploitation of water lilies and palm trees was unsustainable. People were compelled by hunger to start harvesting water

lilies before the plants had had time to seed, thus reducing the viability of the resource base. To address these problems, the **LIFE** project mounted an education campaign involving personal contacts and production of brochures and leaflets; it also drew upon people's indigenous knowledge of harvesting methods to sensitize them to the problem and encourage wise use of the resource. Similarly, women who use palms for basket making were trained in alternative methods of weaving to improve the quality of the finished products. These improved palm baskets were more suitable for urban taste, thus increasing the market value of each basket and reducing the need to mass-market baskets and overexploit the palms.

The **LIFE** project also used a "training of trainers" approach to improve the skills of carvers and the quality of their crafts. Working through the CACA, the project identified master craftsmen in villages, hired a consultant to train them in how to produce high-quality crafts, and sent the trained master craftsmen to villages where they organized training workshops for small groups of village craftsmen.

Another effective approach is the organization of study tours/visits by community members to another community where things are working better. This provides people with first-hand experience of what works and what does not, and it allows exchange of experiences among people with similar interests. This method was used by the **LIFE** project, where reciprocal visits were arranged between local people from the Kunene region, who had long been involved in community-based natural resource management projects, and those of the East Caprivi area, who were just starting. The key here is to recognize the limitations of communities in terms of appropriate skills for natural resource management and marketing, to identify key members of the community through participatory processes, to identify their training needs, and to provide for such needs.

In the **CAMPFIRE** project, education, and awareness raising were given a high priority from the beginning because the project was introducing a new approach to wildlife management to policymakers and the communities involved, and all stakeholders needed to have a common understanding of the project's goals and mission. As a result, the **CAMPFIRE** project provides useful examples of the range of education and training activities typical of BIOME projects. In **CAMPFIRE**, there are three main approaches. The Centre for Applied Social Sciences (CASS) disseminates the results of its socioeconomic research and conducts monitoring and evaluation of institutional activities to promote the adaptive management of the **CAMPFIRE** program. Africa Resources Trust (ART) undertakes international awareness raising and lobbying, advocating for the sustainable use of wildlife products. It also raises awareness

about the **CAMPFIRE** approach to sustainable wildlife management in Zimbabwe within the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and organizations related to the Biological Diversity Convention. Zimbabwe Trust (ZIMTRUST) trains communities to identify their development needs and design development projects that they will manage, and it provides assistance to communities and community institutions to enhance their capacity to manage common wildlife resources in the interest of sustainable development.

Conclusions

Education, training, and awareness raising are important aspects of all BIOME projects. Most, however, neither made an explicit distinction between education and training nor characterized exactly how these activities were expected to change the behavior of the learner. Observation of BIOME projects also revealed that education is still often viewed as a one-way process whereby “knowledgeable” managers impart “valuable information” to less knowledgeable community members. In this scenario, the learner is psychologically subjugated by the teacher, and the teacher seldom believes that the learner knows anything of value. For the most part, BIOME projects’ views of education focused on “science knowledge” and seldom on “time-and-place (indigenous) knowledge.” A focus on science knowledge and formal teacher-student modes of education denies the two-way flow of information that is critical to finding effective solutions to development and conservation challenges.

Observations from the BIOME projects allow us to draw several specific lessons learned.

🍃 Education, training, and awareness raising are critical to bringing different stakeholder groups to the same level of understanding about project goals, objectives, and methods.

🍃 Education programs are most effective when they are designed to address specific audiences. This is particularly important when a primary goal of education and training activities is to enhance the functional awareness of individuals and communities so that they can design and implement their own development activities based on sustainable wildlife management.

🍃 Given the range and complexity of education and training needs, projects should seek partners to help provide a reliable source of funding and technical expertise to run the education and training program.

🌿 Strong national and local government support provides opportunities for projects to collaborate with other institutions and organizations that can provide technical expertise and training facilities.

🌿 Integrating indigenous (time-and-place) knowledge with scientific (including economic and political) knowledge is the key to finding effective solutions to development and conservation challenges. Acknowledging that local communities hold the key to understanding local environmental and socioeconomic conditions and constraints is as important as acknowledging that indigenous information is not sufficient to solve many twenty-first century problems.

Monitoring & Evaluation

Including communities in M&E programs facilitates consensus building, enhances the willingness of stakeholders to implement decisions, and improves the effectiveness of the conservation program.

Monitoring can be defined as “the periodic collection and evaluation of data relative to stated project goals, objectives, and activities.” (Margoluis and Salafsky 1998, 351) Establishing and implementing such a program in biodiversity conservation projects enables project managers or policymakers to assess the effectiveness and impacts of project interventions. Without an effective monitoring program, it is difficult to make any conclusive statements about outcomes of biodiversity conservation projects and virtually impossible to assess changes in the ecological character of ecosystems and trends in species populations.

People living in or around biodiversity conservation project sites are often those who are most affected by project activities; therefore, monitoring programs should be of inherent interest to local people. Community-based monitoring involves project communities in deciding what to monitor, in collecting and analyzing data, and in interpreting the results. Advantages in involving local communities in monitoring programs include creation of program ownership, cost effectiveness, and development of local skills and expertise. Monitoring programs that involve project communities facilitate consensus building, provide communities with valuable information about the changing state of natural resources, enhance the willingness of all stakeholders to implement the decisions resulting from the outcomes of the monitoring process, and improve the chances of the program being sustained.



Involving communities in monitoring and evaluation, as seen in this example of measuring thatch grass, makes them stewards of their natural resources.

Observations from the Field

The **LIFE** and **MASOALA** projects provide good examples of effective monitoring programs. The **LIFE** project in East Caprivi employed men from the project community to work as Community Game Guards to monitor wild animal populations and women to work as Resource Monitors of grass, water lilies, and palms. These natural resources were key sources of livelihood for the rural communities in the project area. The project had also commissioned the Social Sciences Division of the University of Namibia to undertake research on the changing socioeconomic status of four communities

within the project area. It was expected that the data obtained would provide a basis for longer-term monitoring of socioeconomic parameters of the communities in the project area. Although a comprehensive socioeconomic monitoring program was not in place at the time of the BIOME analysis, the project management team had a set of indicators which they believed could be used to evaluate the project's performance with regard to project impacts on communities. These indicators included the following:

- ▣ Numbers of people attending project-related meetings (measure of level of participation and interest),
- ▣ Initiatives by villagers in the project area to organize and run meetings (e.g., when the people take over the running of such meetings from project management), and

- ▣ Villagers in the project taking over the responsibility of managing wildlife resources.

The **MASOALA** project in Madagascar has a monitoring and evaluation (M&E) unit responsible for gathering, analyzing, and communicating both ecological and socioeconomic information to project staff, local communities, and project appraisers. The project identified the specific threats to natural resources in the targeted area, such as using rain forest trees destructively for firewood, construction, handicrafts, food, and dugout canoes. The main question being addressed was how the **MASOALA** project influenced the distribution and abundance of the species concerned (Kremen, Razafimahatratra, and Ratsisompatrarivo 1999). It was also recognized that local people use many of

The Masoala project, located on a peninsula in the northeastern part of Madagascar, is one of the few regions on the island where lowland tropical forest still remains. The project is coordinated by CARE, WCS, and The Peregrine Fund—three international NGOs. The project's goals are to

- ▣ conserve biodiversity and natural resources on the Masoala Peninsula
- ▣ identify human pressures on protected areas
- ▣ reduce illegal resource use and environmental degradation and
- ▣ promote sustainable socioeconomic development through land use planning, natural resource use and conservation, and ecotourism.

To learn more about the **MASOALA** project, see page 86.



these species for subsistence. Therefore, the way the species were used and the subsequent influences on the local economy were also monitored.

Monitoring programs in the **DZANGA-SANGHA** project focused primarily on systematically censusing wildlife, with particular emphasis on three species: gorilla, chimpanzee, and elephant. The program was expected to yield reliable long-term data on animal numbers to guide species conservation actions.

For The Peregrine Fund's **MADAGASCAR WETLANDS** project, research activities included ecological studies on the country's wetlands. These studies focused on the behavior, breeding habitat requirements, and population dynamics of the Madagascar Fish Eagle, which involved regular monitoring of the eagle's populations in the project area. Thus, over a long period, it is hoped that the data will enable assessment of trends in the populations of the Madagascar Fish Eagle.

A major component of the **KENGO** project involved research to identify and document indigenous fruit and vegetables and determine the present status of such species. However, these data were not initially intended to provide a basis for M&E.

Conclusions

B IOME participants observed that most conservation projects jumped into implementation with broadly and sometimes vaguely defined goals, without much planning or assessment of baseline information to facilitate project evaluation later in the project life cycle. In addition, most programs focused on the monitoring of one or a few parameters, mostly related to wild animal populations (e.g., **DZANGA-SANGHA** or **CAMPFIRE**), which has limited value for measuring impacts of the project as a whole. In contrast, few monitoring programs focused on the socioeconomic status of the people living with the wildlife.

An effective monitoring program does not have to be expensive and complex. It is possible to design simple, relatively inexpensive programs that focus on and address the relevant issues and deliver data required to guide management actions and policy decisions (Margoluis and Salafsky 1998). However, BIOME participants observed that, for project communities to want to invest time and effort in monitoring, it must be clear why the information is being collected and how it relates to the communities' own interests. What is being monitored must be carefully chosen so that these indicators of project success relay relevant information that can be used to provide insights into social and economic, as well as ecological, implications of project activities.

Another observation from the field is that, often, monitoring data from a particular component of a project may be left to accumulate over long periods without being analyzed. This situation should be avoided since, in terms of influencing project direction, not analyzing collected data is as useless as not collecting the data at all. Without analysis and interpretation of the data and reporting of the findings in a usable form, the value of monitoring in enabling review of management decisions and activities and revision of goals, strategies, and project focus is lost.

Sustainability

Conservation of natural resources over the long term will not succeed unless resource users have the social, technical, political, and economic capacity to regulate access to and disposition of these resources.

In discussing sustainability of biodiversity conservation projects, this document is concerned primarily with sustainability of the natural resources that projects are seeking to protect, as well as the ability to maintain activities initiated when such projects come to an end. This would imply financial, institutional, and political sustainability, all of which could be embodied in the single term, social sustainability. Social sustainability has been defined in several ways, including the following (Borrini-Feyerabend 1997):

- ▀ The maintenance or improvement of people's well-being over time, based on an equitable distribution of costs and benefits of production systems,
- ▀ The presence of resource management systems that allow for the regeneration or replenishment of the resource base over time, which will depend, in turn, on the resilience of a particular ecosystem, and
- ▀ The intergenerational compromise by which present resource users can guarantee future generations the right to a similar resource base and lifestyle.



When communities and natural resources interact in sustainable ways, the well-being of both people and environment is improved.

Observations from the Field

Most of the BIOME projects had as their ultimate aim the sustainability of natural resources. Approaches to attain this goal ranged from restricting access to wildlife resources in protected areas (e.g., **DZANGA-SANGHA** and **LAKE MBURO**); to encouraging wise use of the resource, including nonconsumptive uses (e.g., **CAMPFIRE** and **LIFE**); to providing alternative sources of livelihood to reduce pressures on natural resources (e.g., **VIE ET FORÊT**) and encouraging diversification and increased production of resources (e.g., **KENGO**).

The interlinkages between people and sustainability of natural resources have been emphasized by many authors. Conway and Barbier (1988) and Chambers (1988), for example, argue that the sustainability of the resource base makes little sense if it is separated from the human agents who manage the environment. This concept runs through many of the activities undertaken in BIOME projects; many of these projects are making conscious efforts to put structures in place to ensure that the activities initiated are sustained. The **DZANGA-SANGHA** project facilitated the establishment of the Committee for the Development of Bayanga with the aim of building an indigenous NGO, with representation of all interested local groups, that is able to influence decision making. In an area where community groups were not part of the culture and where there was little social cohesion (the bulk of the resident population were recent immigrants), this action was necessary and provided a strong entry point for community involvement and action in conservation. Several projects (**CAMPFIRE**, **LIFE**, and **NATURAMA**) initiated training programs and other activities aimed at building local capacity to enable communities to play an effective role in the management of their natural resources.

Perhaps one aspect of sustainability that all of the BIOME projects grappled with is financial sustainability. Most of the projects depended on external donor funding, and most donors are prepared to fund projects for specific periods, the duration of which tends to be much shorter than what project implementers consider adequate. A number of BIOME projects provide useful lessons on the effects that lack of financial sustainability can have on biodiversity conservation projects. The **LAKE MBURO** project was started in 1991 with three-year financial assistance from SIDA and a plan for a further three-year extension. The donors pulled out at about the time the project was due for extension. The reason was supposedly because of restructuring and new focus within SIDA. Between the time that SIDA pulled out and July 1995, when United States Agency for International Development (USAID) funds were secured, the project ran on a “shoe-string” budget for two years and then became virtually dormant.

The **AMCFE** project in Mali was a five-month research project whose ultimate goal was to conserve useful plant species. This goal was to be achieved through identification, documentation, scientific validation, and community mobilization for the production, management, and sustainable utilization of useful plants. Funding was provided by BSP for the five-month research phase, but no provision was made for the dissemination and use of the research findings to promote the community initiatives envisaged. Thus, the project ended when the funds ran out.

Conclusions

These examples provide a number of lessons.

🌿 **Donor agencies should be prepared to make longer-term funding commitments at appropriate levels.** African governments have limited capacity to fund biodiversity conservation in their countries as a result of financial resource limitations and the ever-increasing socioeconomic and other competing demands on national income. Thus, conservation of the continent's rich biodiversity cannot succeed and, in some cases, would be virtually impossible without external financial support. If biodiversity is a global asset, then the cost of its conservation must be borne by the global community and not by the biodiversity rich nations alone.

🌿 **Project implementers should explore more than one source of funding to meet project needs.** Funding agencies often prefer to support specific components of project activities for which they can take credit. Thus, if project activities are spread out among several agencies, even if one pulls out, some aspects of the project can continue. Eight of the BIOME projects raised funds from two or more sources, and three raised funds from only one source.

🌿 **Projects should mobilize local sources of funding.** It is true that raising funds for conservation in Africa is not as rewarding (in terms of the efforts one has to expend and the returns reaped) as it is in Europe and the United States. However, it is possible to raise some local funding, although this may be small, and it is up to conservation NGOs to develop ingenious and innovative ways of accessing the little funding that may be available. The story of one of the leaders of the Wildlife Clubs of Ghana (the junior wing of the Ghana Wildlife Society) provides an excellent example of the level of innovation required. As a sign of commitment, each Wildlife Club member is required to pay a token annual dues of c200, equivalent to about U.S. \$0.10. This leader, a schoolteacher in a remote village, said, "The children in my club are extremely enthusiastic but in the village they simply could not afford the c200 cash." At

one club meeting, he raised the issue of payment of dues, and they started discussing how to find the money. His first suggestion was that each child should bring some foodstuffs which could be sold to raise money. The children's response was that their parents would not allow that. Suddenly one child said, "We can bring brooms; we can just go to the bushes, cut some palm fronds, and make brooms." The next day, they brought plenty of brooms. The leader took them to the nearest town to sell. After three such trips, the children raised enough money not only to pay their dues but also to purchase a Club T-shirt for each member.

🌿 Project implementers should attempt to raise or generate revenue from the conservation activities themselves. This is an area that is better developed in eastern and southern African countries than in western and central Africa. However, the stories of Burkina Faso's Nazinga Game Ranch and Ghana's Kakum National Park demonstrate that, even in areas where wild animal populations are low, nonconsumptive uses of wildlife can generate some income. It should be pointed out, however, that in such cases, continuous, long-term external support is still needed before these projects can become self-sustaining.

Summary of Lessons Learned

Based on the observations of BIOME project managers, we can conclude that, although all BIOME principles appear important to biodiversity conservation, meeting people's needs and participation are the most important for Africa and Madagascar. Project staff observed that biodiversity conservation must coincide with resource uses that provide tangible benefits to local people. Interconnecting resource use with biodiversity conservation is considered critically important in Africa and Madagascar because rural people depend so much on natural resources for basic survival. In wealthy, industrialized nations, conservation often is viewed as putting something aside for future use. Past approaches to biodiversity conservation have required rural people to give up access to resources that they must, in fact, continue to use to survive. This has often resulted in local people being labeled as poachers, even though most are merely continuing their traditional relationship with nature. Observations from the BIOME projects have shown that biodiversity conservation cannot mean simply setting aside resources for future use; it must focus more on continuing and sustainable use of resources so that both present and future Africans can reap tangible benefits from nature.

Similarly, in all BIOME projects, participation of key stakeholders was viewed by project staff as central to the success of the project. Without stakeholder participation, projects would not comprehend people's needs and values; would overlook valuable indigenous knowledge critical to effective policy formulation and project design; and would be unable to effectively monitor, evaluate, and adaptively manage project activities.

Most interesting was project staff's observation that, without stakeholder participation, projects could not hope to meet their needs and that, without attempting to meet people's needs, projects could not expect people's participation. In fact, observations on the role of the BIOME principles in promoting effective biodiversity conservation show that it is not simply that each principle is important to consider in project design and implementation, but that they are interconnected and interdependent. For example, people are more likely to want to participate in projects if the projects take their values into consideration and seek to meet their needs. However, without participation, it is unlikely that project managers can gain sufficient understanding of the culture, perceptions, and attitudes of local people to be able to address their needs and values properly. Indigenous knowledge can only be effectively incorporated into project implementation if the custodians of the knowledge are involved in the project; thus, without participation, it is unlikely that valuable indigenous knowledge will be identified or incorporated into project implementation.

Again, the prevailing policy framework in a particular place, as well as the legal and land tenure systems, determine what can and cannot be done and who can do what. In many BIOME projects, project managers have had to advocate for policy revisions in order to create the enabling policy environment for projects to work. By combining indigenous knowledge with scientific knowledge and our understanding of local people's culture and values, we are able to design appropriate educational messages, information dissemination strategies, and training packages that will build the capacity of local communities to participate effectively as partners in biodiversity conservation and ensure sustainability of project activities. Monitoring and evaluation programs enable us to assess project performance with respect to defined goals and review implementation strategies, if necessary, to improve performance. This is best done with the involvement of all stakeholders, which is possible only if the stakeholders have been participating in the project at all stages.

Based on the observations of BIOME project staff, it can be seen that key practical lessons have resulted from applying the BIOME principles in biodiversity conservation projects.

Participation: The level, form, and timing of participation that project staff must facilitate varies depending on stakeholders' capacity to participate and the issues that need to be addressed by stakeholders to manage natural resources successfully. The greater the change desired in people's use of natural resources, the greater the investment project staff must make in people's participation.

Policymaking: An enabling policy environment is a key to successful biodiversity conservation, and project staff play a central role in helping governments to formulate and implement new enabling policies.

Indigenous Knowledge: Local knowledge often provides project staff with opportunities for developing effective approaches to conserving biodiversity. However, it is often necessary to merge indigenous knowledge with outside tools and approaches to address the challenges of natural resource management in the twenty-first century.

Values: Project staff who can identify convergent values across stakeholder groups find it easier to implement biodiversity conservation projects. To do this, project staff have to understand the values that underpin the establishment of their project and must actively invest in relating these values to those of other stakeholders.

Community Needs: Rural families cannot afford to set aside resources that are critical to their daily livelihoods. Placing custodianship of these resources and responsibility for their sustainable management in the hands of local communities is viewed as a key to meeting people's needs while conserving biodiversity. While acknowledging the importance of decentralizing decision making and project implementation, project staff note that most rural communities do not have the capacity to manage natural resources sustainably. Thus, in many cases, developing partnerships between local communities and external agencies would be a better option than total devolution of responsibility.

Education: Changing stakeholder behavior is a complex process that is influenced by their knowledge and by social and economic factors. To address the specific needs of various stakeholders, project staff tend to take a broad-based approach to education. By using a range of tools and forms of communication, project staff should target training and awareness raising at particular stakeholders.



IT IS NOT SIMPLY THAT EACH BIOME PRINCIPLE IS IMPORTANT TO CONSIDER IN PROJECT DESIGN AND IMPLEMENTATION, BUT THAT THE BIOME PRINCIPLES ARE INTERCONNECTED AND INTERDEPENDENT.

🍃 **Monitoring & Evaluation (M&E):** For project communities to want to invest their time and effort into monitoring, project staff need to make it very clear why the information is being collected and how it relates to their own interests. The approach that project staff adopt for M&E should match the capacity of project participants.

🍃 **Sustainability:** To build and maintain the institutional and technical capacity needed to sustainably manage natural resources, a stable source of financial support must be available. As few options exist for generating sufficient revenues from the sale of natural resources, long-term external financial support from national accounts and international donors is essential for effective conservation of biodiversity in Africa and Madagascar.

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About the Authors

YAA NTIAMOA-BAIDU

Yaa Ntiamao-Baidu holds a First-Class B.S. degree in Zoology from the University of Ghana and a Ph.D. from Edinburgh University, Scotland. She has worked as Deputy Head (Research) in the Ghana Wildlife Department; Professor and Head of the Zoology Department, University of Ghana; and Executive Director of the Ghana Wildlife Society, a conservation NGO that she established in 1992. She has been involved in BSP's Biodiversity Analysis for Africa Project as Senior Advisor since the project's inception. Dr. Ntiamao-Baidu has also played an active role in promoting biodiversity conservation initiatives internationally, working with the GEF; FAO; BirdLife International, where she served on the Council (1985-1998); and the Ramsar Convention, where she served as a member and subsequently Chair of the Convention's Scientific and Technical Review Panel (1993-1999). She has received a number of awards for her lifelong contribution to wildlife conservation in Africa and promotion of wildlife research and training, including the Medal of the Royal Society for the Protection of Birds, U.K. (1995); Officer of the Order of the Golden Ark, awarded by His Royal Highness Prince Bernhard of the Netherlands (1996); and, more recently, Member of Honour of BirdLife International. She has published widely on issues ranging from wildlife utilization and conservation to waterbird and wetland ecology. She is currently the Director of WWF International's Africa and Madagascar Programme.

SOULEYMANE ZÉBA

Souleymane Zéba, forest ecologist and advisor to BSP's BIOME project, currently serves as WWF-International's Representative for West Africa. Prior to joining WWF-International, Mr. Zéba served as President and CEO of the NATURAMA Foundation in Burkina Faso. For nine years, he was National Director of Forests and Wildlife within Burkina Faso's Ministries of Environment and Agriculture, where he also coordinated a land-use management program. He was technical coordinator for West Africa for the African Ministerial Conference on Environment. He participated in a policy reform study initiated by World Resources Institute, and he conducted research on community wildlife management experiences in West Africa under the auspices of the International Institute for Environment and Development.

DEO-GRATIAS MBOJE GAMASSA

Deo-Gratias Mboje Gamassa has more than 20 years of experience in biodiversity conservation and natural resource management accumulated through management, training, research, and consultancies. Mr. Gamassa is employed by the College of African Wildlife Management, Mweka, as Deputy Principal and Director of the Training Service Division. Currently, he is working in the Vice President's Office on a project seeking to streamline institutions involved in environment and natural resource conservation and management in Tanzania toward more effective management and better practices. During the past five years, he has collaborated with BSP on several projects, including the Analysis of Behaviors in Conservation and Development. He is in regular contact with such biodiversity conservation institutions as the GEF, where he is seeking funding for developing the Critical Wildlife Corridors Project. This project aims to maintain and restore wildlife corridors in order to reduce biodiversity loss, particularly the extinction of large mammal species in Northern Tanzania and adjacent wildlife populations in Kenya. Mr. Gamassa obtained his M.S. degree in Natural Resource Management from the Agricultural University of Norway at Aas.

LÉONIE BONNÉHIN

Léonie Bonnénhin has extensive expertise in community forestry and agroforestry, participatory sustainable development, and biodiversity conservation issues. Ms. Bonnénhin spent more than 10 years around the Taï National Park, working as a researcher in community forestry in the Wageningen Agricultural University program on Analysis and Design of Land-use Plans in the Taï Region, co-founded by The Tropenbos Foundation (Netherlands). She also worked in participatory sustainable development of the peripheral zone of the Park with local people and, in 1992, founded the NGO Vie et Forêt. Ms. Bonnénhin received her M.S. degrees in Geography, Forestry, and Tropical Botany at the Universities of Tours and Montpellier, France, and is about to submit her Ph.D. thesis on the Domestication of Some Indigenous Forest Tree Species by the Farmers around Taï National Park at the Wageningen Agricultural University, The Netherlands, under the supervision of Pr R.A.A.O. Oldeman. She currently works for the GTZ as a technical advisor for Taï National Park Conservation Project (PACPNT), San Pedro, Côte d'Ivoire.

The background features a repeating pattern of stylized green leaves and circular motifs. The leaves are arranged in a grid-like fashion, with each leaf having a central vein and several smaller veins branching out. The circular motifs are composed of concentric rings of small dots, creating a textured, almost woven appearance. The overall color palette is a range of green tones, from light to dark, set against a white background.

THE 11 BIOME PROJECTS

Research on Multiple-use Plant Species in the Boucle du Baoulé Biosphere Reserve—Mali

Context

ECOLOGICAL This project, established in 1994, focuses on the Baoulé National Park, located along the Baoulé River in southwestern Mali, between Kayes and Koulikoro. The park covers 350,000 ha and lies within the administrative zone of Kita. The park was classified as a biosphere reserve in 1982, due to its great richness

of flora and fauna in this transitional zone between Soudanian and Sahelian ecological regions. The vegetation is characterized by a *Butyrospermum parkii* and *Acacia senegal* wooded savanna. Many flora and fauna species are presently endangered. The rainy season extends from July to October, with total rainfall at 900 mm per year.



AMCFE

SOCIOCULTURAL/ECONOMIC Though Bambara agriculturalists comprise the majority, smaller numbers of Kakolo, Peulh, Malinké, and Mauré pastoralists and agropastoralists also occupy the region. Population growth, reduction in vegetation cover, and hunting practices have had an adverse impact on the area's biodiversity, which, in turn, threatens the existence of traditional medicines that remain more accessible to local communities than modern medicine. The most common crops planted

in the region are sorghum, millet, and peanuts. Sheep- and goat-rearing are the principal sources of household income.

POLITICAL Recent reforms have promoted participation rather than repression as the preferred means for ensuring the sustainable management of natural resources. Policies have focused primarily on preventing desertification and loss of biodiversity.

INSTITUTIONAL This project was initiated by the Malian Association for the Conservation of Wildlife and the Environment (AMCFE). The governmental Boucle du Baoulé National Park Operation (OPNBB) and the Natural Resources Management Project (PGRN) were also active in the region and formed village committees to

promote sustainable resource use. The project benefited from a scientific and technical partnership with the Ministry of Health, Division of Traditional Medicine (DMT), Institute of Training and Applied Research, and the Institute of Rural Economy.

Goals/Objectives

The goal of the project is to conserve and encourage sustainable use of medicinal plant species. Specific objectives include  identification of key medicinal species  documentation of indigenous knowledge on the use and ecology of these species  chemical analyses and treatment efficacy tests on specimens of medicinal plants and  training village leaders and ensuring the participation of villagers in the production, protection, and sustainable use of these medicinal plants.

Main Activities

-  Botanical prospecting
-  Ethnobotanical, sociocultural, and economic surveys
-  Laboratory analysis of medical substances
-  Identification of and experimentation with appropriate technologies for medicinal plants transformation
-  Awareness-raising and training of village activists
-  Training in sustainable harvest methods for medicinal plants and in combating bush fires
-  Provision of logistic support in the transportation and sale of medicinal plants to the DMT laboratory in Bamako

PROBLEMS/NEEDS

Overharvesting of plants for food and medicines, bush fires, and uncontrolled hunting for urban and international (Mauritanian) markets are the major reasons for which the project was initiated.



CAMPFIRE

Communal Areas Management Program for Indigenous Resources Project—Zimbabwe

Context

ECOLOGICAL CAMPFIRE is being implemented in communal lands adjacent to state-protected areas or private game ranches located in western Zimbabwe and along the nation's northern and southern frontiers. Communal lands are subject to low and sporadic rainfall, and the infertile soils are ill-suited to agriculture. The landscape is wooded or grass savanna and supports a diverse and abundant assemblage of plains game (elephant, buffalo, antelope, giraffe, etc.).



KATE NEWMAN

SOCIOCULTURAL/ECONOMIC The CAMPFIRE program is primarily associated with the Korehore Shona in the eastern Zambezi Valley and the Ndebele in Matabeleland in western Zimbabwe. These two groups dominate the cultural and political landscape of Zimbabwe. However, several other minority ethnic groups, such as the baTonga in the mid-Zambezi valley, the Venda south of the Limpopo, and the Shangaan east of Beitbridge, are important in the CAMPFIRE context because they inhabit marginal lands more suited to wildlife than agriculture. Rural economies are based on agropastoralism with extensive cattle, sheep, and goat husbandry, and marginal grain cultivation. Droughts, removal of food and agricultural commodity subsidies as a result of structural

adjustment programs, and high inflation have all contributed to the progressive impoverishment of families in the communal lands.

INSTITUTIONAL Programmatically, CAMPFIRE began in 1989 with a *de facto* granting of authority over wildlife to two local authorities: the Districts of Nyaminyami and Guruve. *De jure* gazettement of “appropriate authority” did not occur until 1990, when Parks had negotiated an understanding on CAMPFIRE with the local government. The CAMPFIRE Collaborative Group is a consortium of the eight governmental and nongovernmental organizations, both national and international, charged with implementing CAMPFIRE. These are Department of National Parks and Wildlife Management (DNPWLM), within the Ministry of Environment and Tourism

(MET); Ministry of Local Government, Rural, and Urban Development (MLGRUD); Campfire Association (CA) of wildlife producing communities; ACTION; Africa Resources Trust; Zimbabwe Trust; World Wide Fund For Nature (WWF), Multispecies Production Systems Project; and Centre for Applied Social Sciences (CASS), University of Zimbabwe. The Campfire Association is a national outgrowth of the districts involved in CAMPFIRE and brings together 26 districts (i.e., 112 cantons and 103,000 households) and associated Village, Ward, and District Natural Resources Committees.

Goals/Objectives

CAMPFIRE's goals are to  initiate a program for the long-term development, management, and sustainable use of natural resources in the Communal Areas  achieve management of resources by placing the custody and responsibility with the resident communities  allow communities to benefit directly from the exploitation of natural resources within the Communal Areas and  establish the administrative and institutional structures necessary to make the program work.

Main Activities

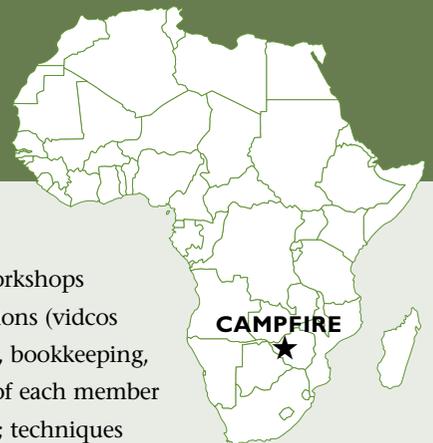
 Organization of trophy hunts, photo safaris, or tourism; reintroduction of animals into areas from which they have disappeared (animal cropping); collection, consolidation, and annual distribution of income generated by these activities; financing of socioeconomic infrastructure (schools, health centers, drilled wells, grain mills, electric fences, road construction); and job creation for hunting guides and forest wardens.

 To strengthen the local self-management capacities of communities, the members of the CAMPFIRE Collaborative Group regularly organize training workshops in the following areas: establishment and management of community institutions (vidcos and wadcos or village and canton development committees); basic accounting, bookkeeping, and cash planning and use; procedures of meetings; roles and responsibilities of each member of the institution; conflict resolution; internal laws and regulations; marketing; techniques for designing, monitoring, and evaluating projects; and environmental education and awareness raising.

 To ensure the sustainability of the program, activities that are more conservation-oriented are also conducted. These include census and monitoring of wildlife, determination of annual quotas for animal kills, and development of a rational land-use plan (creation of buffer zones with electric fences, cropping patterns, rotation of pastures, and field crops).

PROBLEMS/NEEDS

Since the turn of the twentieth century, the human population in Zimbabwe has increased from 500,000 to 10 million and is expected to reach 30 million by the year 2030. Consequently, farmers have been driven into marginal lands and now much of the 3.2 million ha presently under cultivation in Zimbabwe is considered unsuitable for the crops being grown or not suitable for cultivation at all. With increasing agricultural pressure on wildlands and with 80 percent of the country's surface area suitable only for cattle and wildlife production, there has been considerable interest in promoting the commercial consumptive use of wildlife as a source of revenue for local communities and as a tool for biodiversity conservation.



DZANGA-SANGHA

Dzanga-Sangha Integrated Conservation and Development— Central African Republic

Context

ECOLOGICAL The Dzanga-Sangha Project, initiated in 1981 in the Central African Republic (CAR), is part of an extensive rain forest conservation project that includes the Lobeke National Park in Cameroon and the Noubale Ndoki National Park in Congo. Dzanga-Sangha is composed of a Special Forest Reserve (3,159 km²) and a National Park (1,220 km²) that was gazetted in 1990. The area, one of the richest in the world in terms of biological diversity, comprises three main ecosystems:

wetlands, moist evergreen rain forest, and semi-deciduous forest. The area supports large numbers of faunal species of conservation interest, such as the forest elephant, bongo, lowland gorilla, chimpanzee, and several monkey species.

SOCIOCULTURAL/ECONOMIC The project area was traditionally occupied by hunter-gatherer societies, mainly Ba'Aka and Sangha-Sangha, the former constituting the largest ethnic group among the some 6,000 people living in the project area.

Traditionally, the Ba'Aka People had a special social relationship with farming Bantu clans in which the Ba'Akas provided bushmeat to the farmers in return for carbohydrate foods. The Bantus also defended the Ba'Aka, resulting in a relationship in which the Ba'Aka were literally owned by the Bantu farmers.

The Ba'Aka gained the right to citizenship and voted in 1989. The timber logging industry has led to an influx of job seekers and the development of the main township in the project area, Bayanga, with a population of 2,500 as of 1995. Timber logging and diamond mining constitute CAR's main sources of revenue, although safari hunting and nature tourism are also gaining prominence as economic activities in the project area. Wildlife plays an important socioeconomic role, contributing 30-40 percent of the annual meat consumption.

INSTITUTIONAL The project is managed through an agreement between the Government of CAR, working through two Ministries (Ministry of Environment &



RICHARD CARROLL

Tourism and Ministry of Forest, Hunting, Fishing, and Water), and World Wildlife Fund-US. Funding sources for the project include WWF, World Bank, GTZ, and the U.S. Fish and Wildlife Service.

Goals/Objectives

The ultimate goals of the project are to  protect the immense biodiversity of the Dzanga-Sangha forests  develop the potential of the area for ecotourism and  protect the socioeconomic rights of the indigenous Ba'Aka People, for whom the wildlife resource of the area is their source of livelihood. Specific objectives are  sound management and development of the Dzanga-Ndoki National Park and the Dzanga Dende Forest Special Reserve  preservation of the ecosystem  development and implementation of a participatory rural development program and  strengthening of local institutional capacity for natural resource management.

Main Activities

-  Legal establishment of the Dzanga-Sangha Dense Forest as a protected area and establishment of protective units to patrol and monitor wild animal movements and habitat condition
-  Zonation of the area and creation of a buffer zone to ensure sustainable land use and resource management
-  Promotion of agricultural ventures to reduce heavy dependence hunting
-  Promotion of ecotourism and safari hunting as sustainable land-use options with benefits to communities
-  Development of such social services as health facilities, hygiene education, and pre-school programs
-  Development of local institutional capacity and
-  Ecological and social research to generate data for better understanding of the Dzanga-Sangha ecosystem

PROBLEMS/NEEDS

The rich biological diversity of Dzanga-Sangha is threatened by habitat destruction resulting from logging operations, rising human population, and increasing over-exploitation of wildlife for bushmeat and live animal trade. These developments are also resulting in increased marginalization of indigenous people.



GACON

Sacred Grove and Biodiversity Conservation—Ghana

Context

ECOLOGICAL This project, initiated in 1988, focuses on two groves: Jachie Sacred Grove and Kegyase Sacred Grove. The villages of Jachie and Kegyase, located in the Ashanti region of Ghana, are situated 15 km southwest and 3 km south of the city of Kumasi, respectively. Both sacred groves lie within the moist semi-deciduous forest zone. Faunal records for Jachie include 27 mammal species, 79 birds, and 97 butterflies. Records for Kegyase include 11 mammal species, 49 birds, and 82 butterflies.



LEA BORKENHAGEN

SOCIOCULTURAL/ECONOMIC In Ashanti culture, each village is governed by a chief, who is assisted by elders and heads of the seven clans. A village chief owes allegiance to a paramount chief, who in turn is responsible directly or through other divisional chiefs to the Asantehene, the King, and ultimate authority of the Ashanti people. The chief is the custodian of the village lands, but each tract of land is owned by a particular family. The custodian of the sacred grove is usually a fetish priest/priestess who is also responsible for performing the rites and ceremonies associated with the grove; however, the chief has greatest control in decisions about how the sacred grove is used. Like most sacred groves, both Jachie and Kegyase had been governed by traditional beliefs and taboos and had no modern legal instru-

ments to enforce their protection. Presently, the communities in Jachie and Kegyase consist mainly of farmers, although historically hunting also has been an important occupation. Crops include maize, cassava, yams, oranges, cocoa, and oil palm, with cocoa and oil palm being the main cash crops. Other forms of occupation include tailoring, bakery, and trading. A significant number of the population, particularly the men, engage in public services and private-sector enterprises in Kumasi.

HISTORICAL Sacred groves are patches of forests preserved by rural communities within West Africa because of their religious, spiritual, historical, or cultural value. Their protection is enshrined in taboos based on strong traditional beliefs, and the responsibility of preserving them is vested in the entire community.

INSTITUTIONAL The project is implemented by GACON, which collaborates with other agencies, including the Forestry and Wildlife Departments. At Jachie, a project management committee and a women's group were established to facilitate implementation of project activities.

Goals/Objectives

The main goal of the project is to conserve biodiversity by protecting sacred groves, using participatory approaches and sensitizing grassroots communities. Specific objectives include

- 🌿 prevention of illegal logging, intensive exploitation of wildlife, and bush fires in the sacred groves and
- 🌿 strengthening of traditional laws and taboos governing sacred groves.

Main Activities

- 🌿 Community consultation
- 🌿 Community awareness and conservation education campaigns
- 🌿 Establishment of a management committee
- 🌿 Construction of firebreaks around sacred groves
- 🌿 Training of the Jachie women's group in re-forestation techniques
- 🌿 Establishment of a tree nursery and a tree planting project and
- 🌿 Faunal and floral inventory of the sacred groves

PROBLEMS/NEEDS

The area has experienced general environmental degradation and increasing pressure on natural resources, resulting in the disappearance of local plant and animal species.

Hunters have been compelled to hunt in sacred groves because of scarcity of wild animals in surrounding areas, and the groves were encroached upon as a result of erosion of the traditional beliefs governing them. Sacred groves were being sold for logging, being converted into agricultural land, and being used as sources of firewood.



KENGO

Indigenous Vegetable and Fruit Tree Development Project—Kenya

Context

ECOLOGICAL The project operates in two districts: Kitui (eastern part of Kenya) and Bungoma (western province). The Kitui area is semi-arid/arid with irregular annual rainfall not exceeding 750 mm, with an altitude range of 600-900 m. It includes Tsavo West National Park and supports wildlife populations outside the national protected area network. Bungoma is within the southern Mount Elgon watershed and Lake Victoria basin, with an altitude range of 1,200-4,000 m. Annual rainfall varies between 1,200 and 2,100 mm. The district, particularly the Mount Elgon ecosystem, is rich in biodiversity.

SOCIOCULTURAL/ECONOMIC The two districts have different sociocultural and economic characteristics. Kitui is dominated by agropastoralists and has a low standard of living with frequent food shortages. Environmental degradation, manifested by deforestation, soil erosion, and overgrazing, is common, but the rural communities are also involved in soil conservation practices, such as terracing and afforestation. Bungoma lies within the main grain-producing part of the country. Most of the people are agriculturists and have stable food security and a steady economy. Environmental degradation is not as much a concern as it is in Kitui.

HISTORICAL Colonial agricultural policies, emphasizing cash crops and introduction of exotic food crops (fruits, cereals, and vegetables), have displaced or marginalized indigenous foods, particularly vegetables and fruits.

POLITICAL After independence, no significant agricultural policies were introduced to encourage production and use of indigenous foods. Current trends in food production and declining local economies are encouraging the production and use of indigenous foods that are believed to be better adapted to local conditions and thus produce a more predictable food supply.



KATE NEWMAN

INSTITUTIONAL The Indigenous Vegetable and Fruit Tree Development Project owes its origin to the 1985 Women's Conference held in Nairobi, Kenya. This conference challenged women to take a proactive role in research and promotion of indigenous foods to increase food production and improve rural diets and household economies. KENGO took on this challenge and started the project in 1986. The project has received financial support from international organizations, notably from UNDP, GTZ, SIDA, EZE, and Ford Foundation. It also received collaborative support from national institutions.

Goals/Objectives

The goals of the project are to

- promote production and consumption of indigenous vegetables and fruits
- increase food production and improve rural diets and economy
- reintroduce and incorporate indigenous food plants into the cropping system
- improve food quality and income of rural communities and
- assess the conservation status of the indigenous food plants.

Main Activities

- Baseline data survey and research (identification, collection, and selection of indigenous plant seeds)
- Integration of indigenous food crops into small-holder farmers' cropping systems
- Dissemination of project results through literature, workshops, and agricultural shows

PROBLEMS/NEEDS

The country must increase its capacity to meet its food needs. Environmental degradation and concentrated attention by women (the main providers of traditional food crops) on income-generating activities and production of introduced food crops have led to decreased availability of indigenous fruit and vegetables, thereby affecting local diets and food security.



LAKE MBURO

Lake Mbuoro National Park Community Conservation— Uganda

Context

ECOLOGICAL Lake Mbuoro National Park (LMNP), established in 1983, covers 265 sq km² and is located within the west Rift Valley. The park is characterized by dry hilly acacia woodland, punctuated by open grassland valleys, swamps, and lakes. With an annual rainfall of 800 mm, it has a rich wildlife community, including the only population of roan antelope in the country and the endangered shoe-bill, saddle-billed storks, and papyrus-yellow warblers.



CONNIE BRANSILVER

SOCIOCULTURAL/ECONOMIC The communities in the project area are seminomadic pastoralists and agropastoralists, dominated by the Banyankole tribe. The majority of the people adjacent to the park are cultivators with a typical peasant economy.

HISTORICAL The LMNP was a controlled hunting area beginning in 1958 and was promoted to a game reserve in 1964. Established under colonial administration, it denied local communities access to resources in the protected area. The situation was exacerbated when it was gazetted into a national park in 1983 in the midst of political instability in the country. Local communities were not involved and were forcibly evicted from the park. During the armed resistance, local

communities occupied about 60 percent of the park.

POLITICAL The park was created after independence and had a strong colonial legacy, which was reflected in its bias toward wildlife conservation without local communities' participation. The political vacuum in Uganda from 1972 to 1986 was clearly deleterious to wildlife conservation.

INSTITUTIONAL The Lake Mbuoro National Park Community Conservation Project was started in 1989 by the Uganda National Parks (now called the Uganda Wildlife Authority). Its operations fall under the Chief Park Warden of LMNP. The project has received funding from SIDA and USAID.

Goals/Objectives

The goals of the project are to  restore and maintain the biodiversity conservation status in the LMNP  initiate and maintain dialogue with local communities through the establishment of a community conservation unit in the park  involve local communities in the conservation and management of the natural resources within and outside the park and  promote the park through publicity and environmental education programs.

Main Activities

-  Establishment and training of park staff as community conservation personnel
-  Sharing of park revenues and resources with local communities and supporting community-initiated development projects
-  Supporting the formation of community institutions appropriate for liaison with park management
-  Development of tourist facilities in the park
-  Production of educational and interpretative materials for publicity and environmental conservation programs

PROBLEMS/NEEDS

Biodiversity resources in the park are threatened by  heavy poaching and human settlement in the park, which have caused overgrazing and overuse of resources  lack of support from local communities and their political leadership for the park and  conflicts between park management and local communities as a result of local communities having been denied access to resources in the park.



LIFE

Living in a Finite Environment—Namibia

Context

ECOLOGICAL The LIFE project, started in 1990, is located in East Caprivi, the strip of land in the extreme northeastern corner of Namibia. The East Caprivi area receives 600-800 mm of rainfall per year (the highest in Namibia), although it is sporadic and unreliable. Major rivers are the Kwando and the Zambezi. The riverine wetlands and flood plains support large numbers of water birds, fish, and reptiles, as well as mammals of conservation interest, including the lechwe, sitatunga, zebra, and elephant. Vegetation consists of a mosaic of grassland, dry mopane woodland, and shrub.



MARK RENZI

SOCIOCULTURAL/ECONOMIC A unique, well-established, and highly respected traditional system of governance based on the Khuta (traditional council) exists among the East Caprivi people. The main ethnic groups are the Mafwe, Mayeyi (who broke off from the Mafwe in 1992, a move that is a source of contention between the two groups), and the Subiya. The population of East Caprivi is estimated at about 80,000. Each Khuta is headed by a chief, who is assisted by an Ingabela (deputy chief) and Indunas (village heads). The Khuta is the highest traditional administrative and judicial body. The rural communities consist mainly of farmers (cropping maize, millet, and sorghum), pastoralists, fishermen, and

craft workers. Cattle provides financial as well as food security during famine. Sale of firewood, thatch, and reeds also provides some income. Tourism contributes to the local economy through employment opportunities and trade in crafts.

HISTORICAL In 1986, Chief Mamili (Mafwe) was invited to the Conference on Parks and People, at which the Directors of the NGO Integrated Rural Development and Natural Resource Conservation (IRDNC) gave a presentation on their projects in the Kunene region. After the presentation, the chief invited them to start a similar project in his area.

INSTITUTIONAL LIFE is a USAID-funded project implemented by the IRDNC and managed by WWF-US. through a collaborative agreement between USAID and the Namibia Ministry of Environment and Tourism.

Goals/Objectives

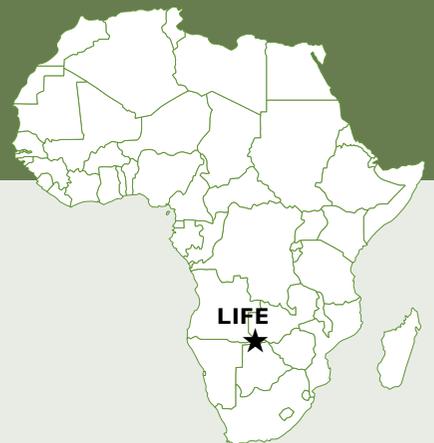
The goals of the project are to  improve the quality of life for rural Namibians through sustainable use of natural resources  enhance sustainable development in East Caprivi based on sound natural resource management  improve the natural resource base and build the capacity of local communities to manage their natural resources in partnership with the government and  facilitate the return of direct social and economic benefits from natural resource management to local rural communities.

Main Activities

-  Establishment of the Community Game Guard Program to mobilize grassroots support and involvement in natural resource management and to assist in wildlife research and monitoring
-  Establishment of Community Resource Monitors (female) to increase women's participation in decision-making regarding resource use and in monitoring and management of non-wildlife natural resources
-  Establishment of the Enterprises Development Program to promote income-generating activities

PROBLEMS/NEEDS

For years, colonial administration denied indigenous Namibians access to and benefit from wildlife resources. A major drought in the early 1980s exterminated large numbers of livestock, leaving rural people in great need of basic food, which resulted in heavy poaching. Coupled with this problem, in the East Caprivi area, apartheid rule created a false locally booming economy and rural people's total dependence on the government. After independence, there was a need to build the wildlife resource base, as well as to empower people and create a spirit of self-reliance.



MADAGASCAR WETLANDS

Madagascar Fish Eagle and Wetlands Conservation— Madagascar

Context

ECOLOGICAL This project, initiated in 1991, is located along the western coast of Madagascar in the Antsalova region. It focuses on three lakes (Soamalipo, Befotaka, and Ankerika) and the surrounding Tsimembo forest reserve, covering a total area of approximately 300,000 ha; in the wet season the area floods, making access difficult at this time of year. The forest has not been cleared by humans in living memory, and flora is very rich, with deciduous tree species, and a dense, difficult to traverse, groundstory. The fauna is well represented by endemic species, with 8 species of lemurs and 29 bird species. The region shelters 10 pairs of Madagascar Fish Eagles, which represent about 10 percent of the total population of this endemic species.

SOCIOCULTURAL/ECONOMIC The population belongs to the Sakalava ethnic group. Every year, under the direction of the Tompondrano (traditional leader of the management of the lakes), the rural communities organize a traditional rite to open the fishing season. However, traditional fadys or taboos that open and close the lakes to fishing are not observed by recent immigrants to the region. Agriculture is the major occupation of the population, although there is some rearing of domestic animals (by women and children), as well as fishing and hunting. Rice, maize, and sugar cane are the main crops. The project area is part of the Tsimembo forest, classified in 1967, which prohibits logging but maintains the use rights of communities.

INSTITUTIONAL The Peregrine Fund (U.S.), the project implementer, has succeeded in generating diverse funding support from nine U.S. donors, including BSP. The Peregrine Fund is a member of the Association Nationale pour la Gestion des Aires Protégées/National Association for the Management of Protected Areas (ANGAP), which is an institutional partner of the Department of Water and Forest.



SIMON THOMSETT, THE PEREGRINE FUND

Goals/Objectives

The goals of the project are to  conserve Madagascar Fish Eagle populations in the region  identify appropriate tools and methods for monitoring Fish Eagle population status and  strengthen national and local technical capacity to manage and monitor biological resources in the region.

Main Activities

-  Training of biologists and field staff
-  Raise awareness of local communities
-  Conduct research on Fish Eagle ecology and conservation techniques
-  Provision of investments for local community development (e.g., local pharmacy and road repair)

PROBLEMS/NEEDS

This project was established to help conserve the Madagascar Fish Eagle, one of the rarest and most endangered birds of prey in the world. Today, the three-lake complex is the only unexploited habitat where many species of animals that are endemic to Madagascar find refuge. This project is particularly important now because increased uncontrolled bush fires and deforestation (resulting from cutting trees for dugout canoes and fuelwood for fish smoking) are threatening the last available habitat for the Fish Eagle.



MASOALA

Masoala Peninsula Integrated Conservation and Development—Madagascar

Context

ECOLOGICAL The Masoala Peninsula is located in the northeastern part of Madagascar. The peninsula covers an area of 5,200 km² and is one of the few regions on the island where lowland tropical forest still remains. The area harbors unique endemic species of fauna and flora, undisturbed primary lowland forests, coastal forests, mangroves, lagoons, bays, and diverse marine resources. It is one of the biological treasures of the country. The area's high rainfall range is 1,500-3,000 mm per year.

SOCIOCULTURAL/ECONOMIC The peninsula has a population of more than 82,000, with 50 percent located in urban centers. Four social groups based on wealth ranking are identifiable: wealthy (owners of land and livestock), less wealthy (produce enough to sustain their livelihood), relatively poor (food insecurity), and poor (no land and no food security). Tavy, a form of forest clearing to acquire land and expand crop fields, is common on the Masoala Peninsula. Secondary forests or savoaka are considered the property of the individual who initially cleared the forest; thus, landless individuals would rather clear tavy than occupy a savoaka.

HISTORICAL In the 1980s, the Government of Madagascar decided to protect areas of exceptional environmental value and, in 1988, developed the National Environmental Action Plan (NEAP). The Masoala Peninsula Integrated Conservation and Development Project (MPICDP) is a product of this process.

POLITICAL Madagascar gained independence from France in 1960. Its political system has been influenced by the long period of colonial administration. In the Masoala Peninsula, decision-making processes are vested in the Fokonolona, a council of villager elders. The Fokontay, members of the Fokonolona, are elected by the people after being proposed by the government.



RICK WATSON/THE PEREGRINE FUND

INSTITUTIONAL The MPICDP was initiated in 1989 within the NEAP framework. The project was initiated by the government and implemented by CARE International, WCS, and The Peregrine Fund. It receives management and financial support from government departments, bilateral institutions, and NGOs.

Goals/Objectives

The goal of the project is to conserve biodiversity and natural resources through the development of a sustainable local economy based on forest and marine ecosystem resources. Specific objectives include  identification of pressures of human impacts on protected areas  reduction of illegal resource off-takes and environmental degradation and  promotion of sustainable socioeconomic development through land-use planning and natural resource use and conservation.

Main Activities

-  Demarcation and establishment of protected areas and buffer zones
-  Development of ecologically and economically sustainable activities, including improved cropping practices
-  Development and implementation of a management plan for marine resources
-  Development of an effective monitoring and evaluation (M&E) system for the impact of the project on biodiversity conservation and socioeconomic dynamics
-  Promotion of institutional development and capacity-building

PROBLEMS/NEEDS

The Masoala Peninsula is a prime area for such economic activities as farming, fishing, logging, hunting, harvesting of non-timber products, and livestock rearing. These activities, together with the traditional systems associated with ownership of primary forest, tend to deplete biodiversity resources.



NATURAMA

Participation of Local Communities in the Conservation of Kaboré Tambi National Park—Burkina Faso

Context

ECOLOGICAL The project was started in 1994 around the Parc National de Kaboré Tambi/Kaboré Tambi National Park (PNKT) in the southern region of Burkina Faso near Nazinga Game Ranch. The park is located in the Soudanian biogeographical zone, characterized by woody savanna and gallery forests along the Nazinon River, a tributary of the river Volta that flows into Ghana. The PNKT was created in 1976 and covers an area of 155,000 ha. Prior to 1985, the PNKT sheltered 32 species of

large mammals, a great number of avifauna, and numerous species of plants, as well as a great variety of fishes and reptiles. Recently, drought and over exploitation of resources have severely reduced the number of animal species present in the park and degraded the habitat for wildlife.

SOCIOCULTURAL/ECONOMIC Approximately 800,000 people, from four main ethnic groups (Mossi, Katséna, Bissa, and Peulhs), inhabit the surrounding areas of the park and live in poverty according to international standards. Agriculture, livestock, handicraft manufacturing, fishing, and hunting are the primary subsistence activities of the region.

INSTITUTIONAL The PNKT was managed directly by the national Department of Forestry from 1976 to 1996, although little management investment was evident during this period. In 1994, the national NGO, The Friends of Nature (NATURAMA); began working with the local residents around the park, with financial support from BSP (U.S.) and Fauna and Flora International (FFI) (U.K.). Since that time, NATURAMA has been instrumental in the formulation and implementation of new national policies that emphasize decentralization of natural resource management, involvement of the private sector, and participation of rural communities. In this new context, the state has handed over management authority for the park to NATURAMA for a period of 10 years (renewable). The project is now known as “The Decentralized Management of the PNKT Project.”



KATHY SATERSON

Goals/Objectives

The goal of the project is to facilitate the regeneration of PNKT resources through a participatory approach that can also improve local communities' living conditions. Specific objectives are

- 🍃 development of the park
- 🍃 local community awareness raising and capacity building to promote transfer of authority and responsibility for park management to local communities
- 🍃 promotion of income-generating activities in the villages and park and
- 🍃 development of a sustainable and participatory park management system.

Main Activities

- 🍃 Organization and promotion of village associations and the training of association leaders
- 🍃 Development of communication networks among the villages
- 🍃 Organization of NATURAMA clubs in schools
- 🍃 Development of village-based micro-enterprise projects (vegetable crops, livestock rearing, beekeeping, etc.)
- 🍃 Rehabilitation of park resources (water points, trails, species reintroductions, patrols, ecological research, tourist development plan)
- 🍃 Development of public relations with neighboring towns and administration partners

PROBLEMS/NEEDS

Habitat destruction and loss of park wildlife as a result of drought, as well as local community poverty, jeopardize the park's capacity to serve as a sustainable source of natural resources and tourism revenue for local communities and as an educational and recreational resource for inhabitants of the capital city (Ouagadougou) that lies 100 km from the park.



VIE ET FORÊT

Conservation and Sustainable Development around Taï National Park—Côte d'Ivoire

Context

ECOLOGICAL The Taï National Park is located in southwestern Côte d'Ivoire, along the border with Liberia, and covers an area of 330,000 ha. The Taï represents one of the last remnants of dense, moist forest in West Africa. It contains numerous endemic plants; harbors more than 230 bird species; and supports viable populations of forest elephant, chimpanzee, pygmy hippopotamus, arboreal primates, and duikers. The World Conservation Union (IUCN) considers the Taï one of the top 10 forests of conservation importance in Africa.

SOCIOCULTURAL/ECONOMIC Increased deforestation around the Taï over the past 20 years has resulted from local farmers clearing more forest to plant tree crops for market (primarily cacao, oil palm, and coffee) and immigrants from Liberia, Mali, Burkina Faso, and Côte d'Ivoire leasing land for cash crop production. Though farmers have land tenure and titles are registered at the land register, conflicts over land use, sale, or leasing have become more common, particularly between older and younger generations.

INSTITUTIONAL As a result of meetings held with local residents of the Taï region, the NGO Vie et Forêt (Life and Forest) was established in 1992 to conserve national parks and protected areas through the sustainable development of peripheral zones. Vie et Forêt targets women's groups because of their familiarity with working within community organizations, and perhaps more importantly, because of their honesty in managing funds. More recently, a GTZ-sponsored project, PACPNT, was established to reduce unauthorized uses of resources within the park, increase

local involvement in resource management decisions, and promote sustainable development in bordering communities. PACPNT was designed, in part, from the knowledge generated by Vie et Forêt; thus, it is not surprising that their goals and objectives overlap.



LEA BORKENHAGEN

Goals/Objectives

Specific objectives of Vie et Forêt are to  promote awareness of the need for forest conservation among communities bordering the Tai National Park  train community members to become involved in biodiversity conservation  strengthen existing institutions that regulate resource use through the introduction of participative tools for sustainable management of resources in inhabited areas of the Tai Forest  increase domestic production of animal protein and  enhance research activities focused on biodiversity conservation and rural development.

Main Activities

-  Awareness-raising about environmental conservation
-  Construction of health huts for primary health care, meetings, training sessions, and family planning
-  Agroforestry extension
-  Small-animal raising (fish farming, poultry-raising, and snail-raising)
-  Homegarden market crop production (e.g., onions)

PROBLEMS/NEEDS

An increase in human population density (from 1.6 people per km² to 15 people per km² since the 1960s), the importance of agricultural production as a source of revenue, lack of alternative off-farm sources of income, and poverty have all contributed to increased deforestation and overexploitation of forest resources within the Tai National Park.



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BSP Director of Communications: **Sheila Donoghue**

BIOME Project Manager: **Laurent Somé**

Director of BSP's Africa & Madagascar Program and BSP Executive Director:

Judy Oglethorpe

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Our communications activities are designed to share what we are learning about how best to achieve conservation while doing it. To accomplish this, we try to analyze both our successes and our failures. We hope our work will serve conservation practitioners as a catalyst for further discussion, learning, and action so that more biodiversity is conserved. Our communications programs include print publications, web sites, presentations, and workshops.

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Biodiversity Support Program
c/o World Wildlife Fund
1250 24th St., NW, Washington, DC 20037 USA
Phone: 202-861-8347 *Fax:* 202-861-8324
E-mail: BSP@wwfus.org *Web Site:* www.BSPonline.org