Living with Wildlife

Wildlife Resource Management with Local Participation in Africa

Agnes Kiss, editor
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Wildlife Resource Management With Local Participation
in Africa

ABSTRACT

The decline in Africa’s wildlife heritage and the persistent poverty of its rural people are linked by a common denominator: rapid human population growth and the resulting misuse and degradation of the land. Expanding settlements, crops, and livestock in marginal areas are reducing agricultural productivity and displacing wildlife. This conflict between people and animals is one which the animals must lose, and a rich natural resource may be lost before its true value is realized.

Fortunately, conservationists and development planners are exploring a common solution: developing alternative land uses based on wildlife resources generating food and income for rural communities. This paper examines the experience, the potential, and the constraints of wildlife management programs which involve and benefit local people. It also explores the potential for wildlife management to stimulate independence and institutional capabilities in rural communities, and greater complexity and diversity in their economies.

The paper is divided into four main sections:

PART 1: PRINCIPLES AND ISSUES

This section examines the objectives of wildlife utilization and management schemes and explores the integration of conservation and economic development based on sustainable exploitation of wildlife resources. A small number of wildlife projects are based outside protected areas. These aim at conserving and developing wildlife resources to generate food and/or income in fragile marginal areas which are unable to sustain productive agriculture or livestock husbandry. Most projects, however, are centered on protected areas and seek to preserve them. But, where possible, they have incorporated economic exploitation of wildlife to meet costs and win the support of the local community. This "new" approach of community-based, integrated conservation/development projects shares many of the basic principles -- and many of the complexities and problems -- of the concept of Integrated Rural Development, popularized in the 1970s. It emphasizes understanding and working with local communities, involving them in project planning and implementation and, to the extent possible, relying on local institutions to implement components which involve public participation. However, incorporating wildlife resources as an economic asset in rural development raises new issues concerning the relationship between rural peoples and wildlife. The most important of these relate to ownership -- often poorly defined or claimed by the state -- and practical problems in controlling access to wildlife. The success of any community-based wildlife utilization plan will depend on ensuring that individuals derive benefits from conservation and sustainable management of the resource.
PART 2: PLANNING, PREPARATION AND IMPLEMENTATION OF WILDLIFE MANAGEMENT PROJECTS

This section defines the economic, policy, technical, sociological, institutional, and human resource development issues in community-based wildlife management and, based on past and present experience, suggests ways to address them.

Key economic issues include: (i) proper evaluation of the costs and long-term returns from wildlife management compared to alternative land uses; (ii) distribution of costs and benefits between national and local levels and among members of the local communities; (iii) concrete, short-term benefits or incentives to sustain community support for a project, even if the real environmental and economic benefits emerge over the long term (but maintaining a clear linkage between such incentives and the long-term conservation and management objectives); (iv) the likely need for substantial external funding, often over a long period, before a project can be expected to become financially self-sufficient, if ever; (v) opportunities for multiple use of wildlife resources (tourism, sport hunting, meat, etc.); and (vi) developing appropriate marketing structures and institutions to enable wildlife use to compete with land uses generally supported by well-established and often heavily subsidized infrastructure.

The central policy issues include: (i) defining the role of wildlife resources in national economic development, (ii) proprietorship of wildlife, and (iii) distribution of authority and revenues between local and national levels. Many other national policies -- land tenure, exchange rates, import controls, foreign investments, access to firearms, public sector employment, quarantine and veterinary regulations relating to marketing or export of wild meat, administration and regulation of tourism and population -- can influence the success or failure of wildlife-based enterprises and community programs. External donors play a significant part as well, especially in promoting the empowerment of local communities to manage indigenous natural resources and the willingness to support consumptive use of wildlife.

This paper does not try to provide detailed coverage of technical issues. It does, however, identify some technical aspects critical to the planning and implementation of wildlife management projects. These include: (i) assessment of existing wildlife populations and the factors which threaten or limit them; (ii) population dynamics of key species, particularly those targeted for consumptive use; (iii) monitoring and survey systems to track changes in populations and habitat conditions; (iv) market demand for various types of wildlife utilization; (v) harvesting, processing and marketing methods, and requirements for implementing them; and (vi) promotion, management, and regulation of sport hunting and tourism for maximum financial return and minimum environmental damage.

Sociological and socio-economic issues relate to two aspects: (i) integrated rural development and communal management of natural resources, and (ii) communities' attitudes and relationship to wildlife. Both require a thorough understanding of the community's history and current dynamics -- especially authority structures and patterns of resource use. It is essential to identify all groups with a legitimate claim to the resource and address their interests and needs. Often, these needs are religious and traditional, as well as economic. The greatest challenge is stopping individuals from over-exploiting commonly held resources for short-term, personal gain at the expense of long-term community stability.

There are institutional issues for each of the three phases of a program: (i) initiation, (ii) establishment and implementation, and (iii) self-sufficiency and continuity after external inputs cease. The initiation and establishment/implementation stages should lay the groundwork for sustainability. However, it may be argued that successful transition to the third phase has not yet happened in any African wildlife project. Institutions are needed to fulfill a wide range of functions including: (i) technical wildlife management, (ii) regulation and enforcement, (iii) administration of financial and other resources, (iv) allocation of responsibilities and benefits within the community, (v) promoting development of local enterprises, (vi) determining policy, and (vii) representation to higher levels of administration. It is important to create institutional capacity to fulfill these functions without building an inflated bureaucracy. It is best to adopt and strengthen traditional institutions and systems for wildlife management where they exist.
Training and education are essential elements in a wildlife program. Beyond technical training though, wildlife officials must be sensitized to the sociological aspects and be trained to communicate and work with local communities. Local people must learn about the present and potential value of wildlife and natural habitats and be trained in the technical, financial, organizational, and management skills needed to secure these benefits for themselves and their communities.

PART 3: CASE STUDIES

This section examines 17 projects in 12 African countries. These are divided into two categories: (i) projects whose initial objective was preserving particular endangered species or protected areas; and (ii) projects not centered on protected areas and which aim to develop wildlife resources to improve the living standard of rural communities. The projects also represent a variety of ecological and institutional environments, in some cases within a single country. Each case study analyzes the objectives of the project, the extent to which these objectives are being met, and the sociological, political, economic, and institutional factors which contribute to its success or failure. Particular emphasis is placed on the types and effectiveness of active community involvement.

PART 4: ECONOMIC ASSESSMENT OF WILDLIFE UTILIZATION AS A LAND USE OPTION IN THE SEMI-ARID RANGELAND OF SOUTHERN AFRICA

The success of community-based wildlife management programs ultimately depends on the overall economic value of the wildlife asset and its comparative advantage in relation to alternative land uses. In Africa, this has been most seriously explored in the semi-arid rangelands, and particularly in southern Africa where commercial wildlife use is replacing livestock husbandry over a significant area. An examination of trends and ecological and economic data from Zimbabwe shows that wildlife systems have significant advantages in this ecosystem, in both earning capacity and sustainability. This applies even in the face of market distortions which obscure the true economic costs and benefits of wildlife vs. livestock production. The most important constraint, as demonstrated by the example of Zimbabwe, which has alleviated it, is the status of wildlife as state property or as a de facto open-access resource. Other important factors include: (i) failure to take account of environmental degradation and investment of "environmental capital;" (ii) direct and indirect subsidies to the livestock sector; (iii) quarantine and veterinary policies which constrain production, local sale and export of wild meat; (iv) consumer preference for domestic meat; and (v) lack of research, training, and infrastructure to support wildlife development. Correction of these distortions could greatly increase wildlife use throughout the semi-arid rangelands of Africa.
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LIVING WITH WILDLIFE:
WILDLIFE RESOURCE MANAGEMENT WITH LOCAL PARTICIPATION

Preface

Local participation in wildlife management is crucial for linking environment with development. The goal of this bond is to save a unique portion of the world's biological diversity and halt the degradation of fragile lands, such as tropical forests and dryland areas, while mobilizing a valuable national resource to alleviate rural poverty and contribute to rural development in its broadest sense--strengthening human resources, institutional capacity, and rural economies.

Africa's wildlife is both unique and spectacular. It is the last place on earth where vast herds of animals still roam the open rangelands. It is also the home of the greatest diversity of primates, our closest biological relatives. The many private and publicly funded international organizations supporting conservation programs in Africa demonstrate the value the world puts on preserving this wildlife. African governments and people also value wildlife -- this is evident by the extensive network of national parks and protected areas and by the important role of wildlife in traditional African cultures. However, African countries are under pressure to strengthen troubled economies and support growing populations on a limited land base. If wildlife is to survive, its high general value must be translated into concrete benefits which induce policy makers, and in particular the rural people of Africa, to allocate the land needed to preserve it. Wildlife conservation, which once amounted to setting areas aside and excluding people from them by force, has become a complex activity concerned as much with politics, economics, sociology, and institutional capacity as with biology and ecology.

This study examines the practical implications of involving local communities in the management and conservation of wildlife resources. It is based on a workshop which brought together the directors of community-oriented wildlife projects in twelve African countries, field managers with direct experience in confronting problems and finding solutions, and international experts. The projects represent a range of ecological, social, and cultural settings, but all share the goal of ensuring that neighboring communities would be interested and able to help preserve their wildlife resources. Despite the diversity of projects, many common points emerge: the importance of a thorough understanding of the perspectives and needs of communities and of individuals within the communities, of strengthening local institutional capacity, of communication and education, of favorable political and economic policies, and of a long-term commitment on the part of governments and organizations offering technical and financial support. These are key elements of the "enabling environment" which must be created for community-based wildlife management initiatives to succeed.

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Africa Region
ACRONYMS

AC  Advisory Committee (Ghana)
ADC  African District Council (Kenya)
ADMADE  Administrative Design for Game Management Areas (Zambia)
AFEW  African Foundation for Endangered Wildlife (International)
AWF  African Wildlife Foundation (International)
AWHDA  African Wildlife Husbandry Development Association (Canada)
CAMPFIRE  Communal Areas Management Program for Indigenous Resources (Zimbabwe)
CAR  Central African Republic
CAWM  College of African Wildlife Management (Tanzania)
CCC  Community Conservation Committee (Kenya)
CCO  Community Conservation Officer (PA:NP program, AWF)
CDU  Community Development Unit (Zambia)
CITES  Convention on International Trade in Endangered Species (International)
DEC  District Executive Committee (Kenya)
DDC  District Development Committee (Kenya)
DNPWLM  Department of National Parks and Wildlife Management (Zimbabwe)
DNPWS  Department of National Parks and Wildlife Services (Zambia)
DPLUPU  District Land Use Planning Units (Botswana)
DWC  District Wildlife Committee (Zimbabwe)
DNWP  Department of Wildlife and National Parks (Botswana)
EEC  European Economic Community
FAO  (United Nations) Food and Agriculture Organization
GMA  Game Management Area (Zambia)
ICBP  International Council for Bird Preservation
IRD  integrated rural development
IUCN  International Union for Conservation of Nature and Natural Resources
KWS  Kenya Wildlife Services
LDP  Lupande Development Project (Zambia)
LIRDP  Luangwa Integrated Resource Development Project (Zambia)
MET  Ministry of Environment and Tourism (Burkina Faso)
MGP  Mountain Gorilla Project (Rwanda)
MPAESF  Ministry of Animal Production (Livestock and Fish) and Waters and Forests (Madagascar)
MZVRDP  Mid-Zambezi Rural Development Project (Zimbabwe)
NORAD  Norwegian Agency for Development Assistance
NPWS  National Parks and Wildlife Services (Zambia)
ORTPN  Office of Tourism and National Parks (Rwanda)
PA:NP  Protected Areas: Neighbors as Partners program (AWF)
PFO  Project Field Officer (PA:NP Program, Kenya and Tanzania)
PMU  Project Management Unit
PNV  Volcanoes National Park (Rwanda)
QENP  Queen Elizabeth National Park (Uganda)
RC  Resistance Committee (Uganda)
RMS  Ruewnzori Mountaineering Services (Uganda)
RSPB  Royal Society for the Protection of Birds (United Kingdom)
SADCC  Southern African Development Coordination Conference
SAFAFI  Agricultural development branch of the Lutheran Church (Madagascar)
SPN  Nature Protection Service (Within MPAEF—Madagascar)
SSBP-G  Save the Seashore Birds Project (Ghana)
TANAPA  Tanzanian National Parks
TCCP  Tsavo Community Conservation Project (Kenya)
UNEP  United Nations Environment Program
UNESCO  U.N. Education, Scientific and Cultural Organization
UNDP  United Nations Development Program
UNP  Uganda National Parks
USAID  United States Agency for International Development
VIDCO  Village Development Committee (Zimbabwe)
VVNP Virunga Volcanoes National Park (Zaire)
WADCO Ward Development Committee (Zimbabwe)
WCMD Wildlife Conservation and Management Department (Kenya)
WCRF Wildlife Conservation Revolving Fund (Zambia)
WEP Wildlife Extension Project (Kenya)
WINDFALL Wildlife Industries New Development for All (Zimbabwe)
WMA Wetlands Management Unit (Zambia, Botswana)
WWF World Wide Fund for Nature (International)
WWF-US World Wildlife Fund (United States)
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INTRODUCTION

Africa's wildlife is disappearing. According to current estimates, of an original 20,797,441 square miles of wildlife habitat on the continent of Africa, 65 percent has now been lost through logging and conversion to agriculture or other uses (WRI, 1989). While habitat loss is the greatest overall threat, hunting is decimating some species. The ivory trade has cut the number of elephants in Africa from about 10 million 500 years ago to 700,000 today and continues to destroy at a rate of more than 10 percent each year (IUCN, 1989). Because of the value placed on rhinoceros horn, the population of black rhinoceros has slipped from an estimated 60,000 to fewer than 4,000 over the past twenty years (Bioscience, Vol. 40(3), March 1990). Similar data are not available for most species, but it is well known that many previously abundant species are now either completely or locally extinct or gravely endangered (e.g. Asibey, 1968, described the decline of elephant, hippo, lion, buffalo, hartebeest, roan antelope, kob and bongo in Ghana).

This loss of the continent's unique wildlife heritage has caused alarm within and outside Africa. Of equal concern are the continuing deterioration of the environment, particularly in arid/semi-arid and moist forest regions, and the persistent poverty of rural communities. These three problems are clearly inter-related. The natural areas which support wildlife populations often make an important contribution to rural populations, such as providing fresh water, moderating seasonal flooding, and buffering the effects of droughts or other ecological stress. As rural communities (and often logging operations) expand further and further into wilderness areas, these values are lost along with the wildlife resources, which are often significant in local nutrition, economies, and cultures. The trade-off is increasingly poor.

For the most part, the remaining wilderness areas are marginal lands unsuitable for intensive use because of low and sporadic rainfall, steep slopes, or shallow and infertile soils. In many cases they can support cultivation or heavy grazing by domestic livestock for only a few years before erosion or desertification sets in, leaving an exhausted land that is soon abandoned.

Conservationists and development specialists say the solutions to these problems are also linked -- conservation and management of wildlife can improve the livelihood of rural communities without contributing to environmental degradation. In many areas currently facing extractive logging or conversion to agricultural use, development of wildlife resources may represent a more productive and sustainable land use. In the past, this option has generally not been pursued, with local communities or development planners failing to recognize the real value of wildlife and wildland habitats. Lately, however, attempts have been made to identify and use wildlife assets. Sometimes, wildlife is seen as a key to generating support for sustaining intact ecosystems in protected areas. In other cases, it is a productive resource for economic development.

This paper draws upon the experience of projects throughout Africa to answers practical questions facing these initiatives: Where and when does it make sense to initiate a community-based wildlife project? What are reasonable and attainable

*/In this paper, "wildlife" refers to animal species only.
objectives? What information is needed to design such projects? What are the key steps to take and components to include? What levels and types of investments are needed? What are the essential economic and policy elements for an enabling environment? What is the meaning of local participation, and how can it be achieved? Can projects become self-sustaining over the long-term? Can community-based wildlife management be implemented on a scale sufficient to achieve conservation or development objectives?

Part I summarizes the objectives and principles on which community-based wildlife management programs are based. It also reviews some of the practical issues which arise in trying to follow these principles and realize these objectives.

Part 2 focuses on operational aspects of project design and implementation, such as the importance of a favorable economic and policy environment, the types of information (biological, economic, and sociological) needed for project planning and design, the institutional framework needed for implementation, and the importance of training and education components.

Part 3 consists of selected case studies which provide concrete examples of wildlife management projects currently underway in Africa. The analyses include straightforward discussions of their successes and failures, objectives achieved and objectives abandoned, problems surmounted and problems which remain.

Parts 2 and 3 are based on the discussions and presentations of a workshop held in Zimbabwe September 19–24, 1989. The participants, representing 12 African countries and several international organizations, presented case studies of the community-oriented wildlife development projects in which they are involved. Working groups then analyzed these case studies, drawing lessons from the economic, sociological, political, and institutional aspects of participatory wildlife development, as well as information, investment, training, and education needs.

This paper focuses on how to involve local communities in wildlife management once the decision is made to initiate a wildlife scheme in the area. In most cases, this decision is not based on the economic advantages or disadvantages of wildlife compared to alternative land uses, but because the underlying objective was preservation of a particular species or a protected natural area. In a few cases, the impetus for the project was based on a belief that wildlife was a better economic alternative -- without detailed analysis.

Although most wildlife management projects list achieving "self-sufficiency" as an important objective, none of the case studies yielded the data necessary to evaluate financial or economic viability. A few include a financial or cash-flow analysis over one or a few years, comparing cash expenditures with revenues generated by wildlife-related activities. However, these analyses missed the full range of economic benefits and costs (e.g. for general administrative or infrastructure support, or opportunity costs of forgoing alternative uses of the financial, environmental, and human resources invested). They also failed to span a sufficient time period to evaluate even financial sustainability. Projects are routinely cited as successful, or at least promising, if significant revenues are generated, almost regardless of costs. Increasingly, success is measured in terms of ecological objectives, such as reduced poaching or increased animal populations.

It is clear that some protected areas projects will depend on external resources indefinitely -- this must be accepted as a cost of conserving a portion of the world's biodiversity. However, the success of community-based wildlife programs overall will ultimately depend on the viability of wildlife utilization as an economic enterprise, specifically on a demonstration that it is more profitable and beneficial to landholders (whether individuals or communities) than alternative forms of land use.

As discussed in Part 4, the semi-arid rangelands of southern Africa may demonstrate such a case. It is no coincidence that all the case study projects not based on protected areas are in the savanna ecosystem. Most of the studies and initiatives in commercial wildlife utilization to date have focused on the savannas, with their vast herds of large, charismatic, and relatively accessible mammals. Wildlife
utilization is well established and growing as an economic activity on the rangelands of southern Africa, based primarily on safari hunting and tourism. It is also no coincidence that the most successful case study project, in terms of short-term financial returns and prospects for sustainability, appears to be the CAMPFIRE program in Zimbabwe. Wildlife utilization is already displacing cattle ranching on privately held lands over a significant part of the country. This is despite economic policies, infrastructure, and tradition that heavily favor livestock over wildlife. Part 4 discusses the reasons this is happening in Zimbabwe, Namibia, and South Africa, and not in other countries with similar ecological conditions and even richer wildlife resources, as well as the conditions under which communities may follow the lead of private landholders to capture the benefits of multi-faceted wildlife utilization.

The Zimbabwe workshop offered participants the opportunity to exchange views and experiences with fellow practitioners who have similar goals but face different ecological, social, and political realities in the field. One participant from southern Africa seemed to speak for all his colleagues from the semi-arid savanna when he remarked that the presentation on the Air-Tenere desert project of Niger gave him a whole new understanding of the term "marginal habitat." The hard-won, on-the-ground experience of this diverse and dedicated group of contributors ensured that the final product would serve as an operational guideline, focusing on practical problems and realistic solutions.
Part 1
Principles and Issues

A. Living with Wildlife

Throughout the world, and especially in Europe and North America, the word "wildlife" evokes images of elephants, zebras, giraffes, lions, gorillas, and other remarkable animals of the African savannas and forests. Familiarized through children's books and cartoon characters, these animals still retain the mystique of a wild and exotic world. Africa's endowment of flora and fauna is unique and diverse and contains many of the world's most spectacular species, including the world's greatest diversity of our nearest relatives, the primates (63 species, ranging from the mountain gorilla to the tiny, primitive mouse lemur). There is a strong international determination to preserve this natural heritage. This determination is expressed in the form of financial contributions to conservation organizations and political pressure on governments to establish additional protected areas or to enforce bans on trade in endangered species.

The wildlife heritage is also highly valued by African governments, which have taken important steps to protect it. The first game reserves were established in 1895 (in South Africa) and 1896 (Kenya), and the first nature reserve was gazetted in 1927 in Madagascar. These early reserves were established by the colonial governments, but the independent national governments which replaced them continued to maintain and extend the protected area network. There are now 426 protected areas in the Afrotropical region, covering about 88 million hectares, or 4.4 percent of the total land area (IUCN, 1987). Africa also contains 18 World Heritage Sites and 31 Biosphere Reserves, proposed by national governments and adopted by the international community.

Governments and conservation organizations have thus succeeded in bringing both regional and international attention to the issue, setting aside areas as wildlife refuges, and mobilizing resources from well-intentioned citizens in countries around the world. Ultimately, however it is the rural people of Africa who will determine the fate of African wildlife. Logic and evidence show that protected areas and laws can not protect the wild animals in the long term without the acquiescence of their human neighbors. However, local people often see wildlife very differently than do people who do not live in close proximity to them. While many international conservationists claim wildlife everywhere as a world heritage, and national governments generally regard it as a national resource, rural people have traditionally seen it as a gift of nature which is theirs to use and which often plays an important role in local cultures, diets and economies.

Over the past century, governments have pursued policies which alienate the wildlife from the people and frequently turn it from a valuable commodity into a threat and a nuisance. The establishment of national parks and reserves, which may attract tourists and foreign exchange for the government, exclude and have often directly displaced rural communities from land they have traditionally considered to be their own. Anti-poaching laws turn the centuries' old practice of subsistence hunting into a crime, and people are often even prevented from eliminating "problem" animals to protect their crops, their livestock and themselves.

In the simplest terms, rural people bear the significant costs of living with wildlife but have progressively been excluded from obtaining any benefit from them. The
negative attitude toward wildlife and conservationists which can grow from this situation is by no means limited to rural people in Africa. Over the years local communities have virtually eliminated large predators from the settled areas of Europe and North America, yet conflicts continue even today, for example in the dispute between conservationists and local residents in the western United States over the killing of protected mountain lions.

There will always be costs to living with wildlife, both direct costs such as the effects of marauding animals and the opportunity costs of limited access to land set aside as wildlife habitat which might otherwise generate income from agriculture, livestock, logging, etc. If rural communities are to tolerate and co-exist with wildlife they must derive sufficient benefit from it to compensate for these costs. In the past, the balance between benefits and costs was positive. Wildlife has traditionally played an important role in African diets, economies and cultures, and relatively low human population levels made it easier for people to coexist with and harvest wildlife without threatening its survival. Now the costs have grown, with a rapidly growing human population and the expansion of urbanization, agriculture, production forestry and livestock husbandry into the remaining wildlife habitat, but the benefits have greatly decreased. Local communities will only become allies in wildlife conservation if the balance is restored.

Restoring the balance will require creating an enabling environment for sustainable wildlife exploitation, through education, policy reform and investment. Education is needed to make people aware of the potential economic value of wildlife, and of the limitations of alternative land uses such as agriculture and intensive livestock husbandry in marginal habitats. On the policy side, rural communities must regain legal access to the value which wildlife represents, in the form of revenues from tourism and sport hunting or meat and other products. As in the past, when traditional beliefs and authorities regulated wildlife use, these benefits must be accompanied by the responsibility to manage the resource in a sustainable way. On the investment side, there is a great need for capital, technical assistance, research and training to overcome the obstacles which now stand in the way of development and implementation of wildlife management systems. Wildlife utilization has significant potential as an alternative land use, particularly for ecological habitats with low natural productivity, because it offers the possibility of earning high levels of income without unsustainably high herbivore population densities. At present, however, this potential is rarely realized because of a wide range of factors, including the influence and subsidization of competing commercial interests, greatly diminished populations, heavily armed poachers, already degraded habitats, and inadequate knowledge of technical, marketing and sociological aspects.

Rural African communities are typically poor, poorly educated and lacking in political influence. They have also frequently come to regard wildlife and protected areas as a source of trouble rather than a potential source of income. As a result, most initiatives for community participation in wildlife conservation or management begin as externally initiated and funded projects whose first objective is to generate support within the target communities. Their success in achieving that objective will depend on how well they match the real needs, motivations and capabilities of the people whose participation they seek.

B. Wildlife Management Projects

Objectives

Wildlife utilization and management schemes are thus generally initiated for three reasons:

1) to promote preservation of wildland areas or particular threatened or endangered species

2) to take advantage (for national benefit) of lucrative and growing international tourist and safari hunting markets

3) to generate food and/or income in fragile or marginal areas which cannot sustain productive agriculture or livestock husbandry.
In most cases there are also secondary objectives such as generating information on the condition and trends of the wildlife and natural habitats and to improve the state of the art of wildlife management, as well as to raise public awareness and interest in conservation.

For purposes of discussion and convenience, the case studies in Part 3 are divided into two categories, based on whether the initial impetus and primary focus for the program was the preservation of a particular protected area or endangered ecosystem or species, or whether it was the development of wildlife resources as a land use option. In fact, preservation of wildlife for scientific and aesthetic reasons, or for the commercial benefit of the nation at large, has been the base for the majority of wildlife management projects in Africa to date. The concept of wildlife management as a viable alternative or complementary land use in marginal areas has only recently begun to enter the mainstream of economic development thinking. The Zimbabwe CAMPFIRE program, Zambia LIRDP and the Burkina Faso Nazinga Wildlife Utilization Pilot Project (first conceived in 1975) represent important exceptions. The case of the Dande Communal Area program in Zimbabwe is particularly interesting, as a large project area was divided into two sub-regions based on environmental conditions and available natural resources. As a result, conventional agricultural development is being promoted in one area and wildlife management as the preferred option in the other. If these pioneering efforts succeed, more projects based on the concept of wildlife management as a land use option are likely to increase in the future as the long-term environmental impacts and constraints of conventional agricultural development become more clear and the potential economic value of wildlife becomes better understood.

In any case most projects now actually contain elements of both preservation and utilization. This is because the conservationists have come to recognize the legitimate rights of rural populations to utilize their local natural resources, and that any wildlife conservation scheme must have the cooperation and support of local communities to succeed in the long run. Therefore, projects must respond to the perceptions, interests and needs of these communities and must create positive economic incentives. This principle, which is one of the key tenets of the World Conservation Strategy (IUCN, 1980) and is increasingly reflected in the programs and projects of leading conservation organizations (eg., UNESCO Biosphere Reserves; Kenya/FAO UNDP Wildlife Management Project 1971-1977; WWF Wildlife and Human Needs Program, Wildlife Extension Project and Multispecies Project in Zimbabwe; AFEW Wildlife Extension Project in Kenya; AWF Neighbors as Partners Program). It is very important, however, to recognize and maintain the distinction between game reserves and buffer zones, in which economically sustainable exploitation of wildlife populations may be a legitimate objective, and national parks and nature reserves whose purpose is to preserve intact ecosystems as much as possible. Any level of offtake of wildlife for human consumption will be at the expense of consumption by some other element in the ecosystem and will therefore change the ecosystem to some extent and therefore cannot be permitted in a true nature reserve. An exception is generally made in the case of truly traditional hunter-gatherer tribes which, having occupied the area for centuries may be considered an integral part of the natural ecosystem. However, any change in the lifestyle of such tribes, including improved health care or introduction of new technology or practices removes them from this standing as it will inevitably lead them to begin appropriating a larger share of the ecosystem's resources.

Meanwhile, those interested in economic development are increasingly recognizing that wildlife resources represent an important economic asset which should be conserved and used, and this same message is emerging among local communities. In fact, in some cases there may even be an emerging problem of expecting too much from potential revenues and benefits from wildlife exploitation.

Thus, while there sometimes be differences between the motivations and initial objectives of the international and national agencies which support wildlife management projects and those of the local communities, the resulting projects represent a convergence of their interests. The first step is to clarify the interests of all parties
and try to find common ground. For example, in the case of the coastal wetlands of Ghana, international conservationists wanted to preserve an endangered shorebird (the Roseate tern) and were willing to contribute money to this end. Discussions with local people showed that they did not necessarily share this interest, but they were concerned over the progressive depletion of the fish and other coastal resources on which they depended. Interests of both sides were served by protecting the coastal lagoon habitat and establishing an effective system for regulating exploitation of its resources. Even better, it was possible to build the regulations upon traditional rules, with external funds going for equipment, training management and running costs of the project.

Ideally, through discussions and negotiations, common or complementary goals can be identified and agreed, perhaps with some compromise on both sides. Often a project originally aimed at conservation is broadened into a rural development program (e.g. the Dzanga-sangha Dense Forest Research Project in Zaire, or the Air Tenere National Park Project in Niger). However they are defined, it is critical that the objectives of any given project are clear from the beginning and understood and accepted by all parties. Where the primary objective of the government or a specific project is preservation of particular species or an ecosystem this should be made clear because it may ultimately limit the influence of local communities in decision making. They should not be misled into thinking that they have the option to decide against maintaining an area as a wildlife reserve if they do not.

Also ideally, wildlife management projects should be initiated and their objectives determined by the community itself. However, this has rarely been the case. Notable exceptions from the case studies are Beza Mahafaly in Madagascar, where the local community approached the government and WWF for assistance in protecting a sacred forest, and the Ghana coastal lagoons. The LIRDP in Zambia also included some degree of local initiation. There are, however, several cases in which a project was initiated by outsiders for the benefit of one community, but later other communities took the initiative to join the program. Examples include the CAMPFIRE program in Zimbabwe and the Nazinga Ranch in Burkina Faso.

Measuring success

Just as the objectives of a wildlife management project must be clearly established, so must the criteria for success. Where preservation of an ecosystem and its species is the primary objective, success may be measured by parameters such as increasing number and diversity of animals or by reduced rates of poaching and encroachment. Many projects do, in fact, cite such factors as indicators of success (e.g. case studies on the Dzanga-Sangha Reserve in the Central African Republic, or the LIRDP in Zambia). Where the basic objective is to mobilize wildlife assets to earn income or produce food and durable goods, net revenues and production levels are valuable indicators (e.g. the Nazinga Ranch in Burkin Faso, or the Dande Communal Area in the Zimbabwe CAMPFIRE program). However, they should not be confused with real economic analysis, which takes into account the full range of direct and indirect costs and benefits and compares them with those for alternative activities. In both cases, the sustainability of the conservation or production achievements are clearly a critical issue, but none of the case study projects (with the possible exception of the Masai Mara Reserve in Kenya) are old enough to evaluate this aspect.

All of the case study projects include involvement local communities in the management of wildlife resources as an important objective, but the criteria for success in achieving this objective are rarely established in advance. Instead, evaluations and progress reports generally focus on indirect measures such as implementation of activities aimed at increasing community involvement (community meetings, educational programs), establishment of appropriate local institutions (such as Wildlife Councils) and surveys of community attitudes toward wildlife, nearby protected areas or the project itself.

Finally, the question of scale is often overlooked in the evaluation of wildlife projects. The success of individual initiatives, however encouraging, must ultimately be considered in the context of the overall problem: the survival of wildlife
in Africa. In some cases, such as the Mountain Gorilla Project in Rwanda or the Beza Mahafaly and Andohahela Reserves in Madagascar, it may be argued that the individual projects are uniquely important because they protect a significant portion of the remaining population of particular endangered species. Overall, however, projects such as the ones discussed in Part 3 might best be regarded as a pilot projects testing the community-based approach to wildlife conservation and management. As pilot projects, they may be expected to have relatively high start-up costs because they are breaking new ground, however their real contribution to wildlife conservation will depend on whether they can serve as models for future, larger-scale efforts. In this sense a truly successful project would be one which is not only self-sustaining (after external support ceases) but self-replicating, in that other communities come forward wanting to participate in similar programs. It should also be easier for successive projects to get started and to be successful, based on lessons learned or changes made as a result of the earlier initiatives.

C. The Meaning of Local Participation

"Local participation," the focus of this paper, is difficult to define. Paul (1987) describes community participation as follows: "...whereby people act in groups to influence the direction and outcome of development programs that will affect them." Unfortunately, this definition leaves unanswered a number of questions which are of critical, practical importance in development of a community-based natural resource management program. These both include how to define a community and how to define participation.

What is meant by "community?"

Several of the case studies in Part 4 show clearly that local arms of government may not really represent the communities they serve or act in what the community may regard as its best interest. Examples include the District Councils entrusted with the responsibility for distributing revenues from the Queen Elizabeth Park in Uganda in the 1960s and and the Amboseli Park in Kenya in the 1970s. Therefore, the emphasis is increasingly on involving traditional authorities and the "grass roots level," meaning the lowest unit of social organization, where individuals speak and decide for themselves. However, the difference between a group of people and a community is that in a community the individuals give up some of their individuality to behave as a single entity to accomplish common goals.

Every society is made up of many levels of social organization, each with its own system of authority and hierarchy, its elite and its disadvantaged or disinherited, its insiders and outsiders. In any group some individuals inevitably derive authority to speak, act and ultimately to make at least some decisions on behalf of the others. When this happens, the interests of this elite and the rest of the group may diverge and the decisions it makes may not be respected by the group at large unless the elite enjoys some measure of authority and capability of enforcement.

Thus, an outside agency promoting a "community participation" program may be faced with a dilemma: it needs to deal with an organized entity which has accepted procedures for making and implementing group decisions. Creating such an entity from scratch is rarely successful, yet by working with existing authorities it may not be reaching all of the target beneficiaries or all those whose cooperation is essential to the project. For example, in the Kanyurira Ward of the Dande Communal area (Zimbabwe case study), the Ward Committee decided not to include adult, single women among households to receive distribution of awards, although adult, single men were included. Furthermore, donors generally expect community decision making to be participatory, with some mechanism for individuals to select others to represent their interests. This approach may not work in a community which is unfamiliar with this concept of elected representation (e.g. Niger case study.)

Besides identifying appropriate local institutions and authorities with which to work, it can be difficult to establish the limits of the target community. This means determining both who must be included and who must be excluded from participation in the project and its benefits. One type of problem is again illustrated by the case study of the Dande Communal Area in Zimbabwe, where the District Council was designated to
be the local authority regulating wildlife use and distribution of benefits. The boundaries of the District include many areas which have little wildlife, and those communities who are in close proximity to wildlife and are directly affected by it contest the rights of people in those areas to share in the benefits.

Another problem is illustrated by the Queen Elizabeth Park in Uganda. When the Park was established in 1952, a few small fishing villages were permitted to remain within its borders, as un gazetted enclaves. These villages have since grown in both population and number, with adverse effects on the Park's environment. The government has occasionally sought to move some of these villages outside the Park borders but with limited success. This type of expansion of the original target population is virtually certain to occur in any project area, whether through natural reproduction of the original residents or by immigration of outsiders attracted by project benefits.

What is meant by "participation?"

In Paul's (1987) definition, the emphasis is on individuals participating in making decisions which will affect the individual and the group. In fact, participation may occur at any or all levels of project activity: design, implementation, management, or revenues and benefits. While an ideal scheme might aim for all of these levels, in reality this is difficult to achieve because each level of participation adds its own complexities. In addition, the level of participation desired depends to some extent on the real objectives of the program.

Participation in Benefits

Where wildlife conservation is the major objective, the emphasis has generally been to ensure that local communities participate in the benefits to be gained from the presence or utilization of wildlife in order to gain their support and compensate for their costs. The benefits may be in the form of increased incomes or improved nutrition or quality of life, but in order to serve as an effective incentive they must be tied, both in fact and in local perception, to the continued presence of the wildlife and its habitat.

Various case studies in Part 3 illustrate different approaches to enabling local communities to participate in project benefits. It is useful to distinguish between cases in which wildlife species are regarded as income-earning assets (based on tourism, safari hunting, meat, etc.) and those in which rural development activities are "artificially" linked to wildlife conservation. In the second case, the project benefits represent donations or payment from the funders to the local community to gain their support and cooperation and perhaps to help provide an alternative source of income. Sometimes, as in the case of the Zambia Wetlands project, this is a temporary step to maintain local support until anticipated direct benefits from the wildlife resource materialize. In other cases, such as the Beza Mahafaly Reserve in Madagascar, it is unlikely that wildlife resources will ever generate very significant revenues, but the project aims to help people increase agricultural production in the surrounding areas so that they do not need to encroach upon the Reserve itself.

When there are significant revenues to be derived from wildlife resources, the simplest approach is to divert a portion of the funds generated from wildlife-related activities, such as tourism or safari hunting, to the local community. This approach has had mixed results. Frequently the problem is that the revenues are intercepted by the bureaucracy and do not actually reach the affected community. Another problem, however, is that this approach does not necessarily involve any direct participation or involvement of local people in the wildlife utilization activities, making it potentially difficult for them to realize the connection between the wildlife and the benefits received (they may only regard it as money from the government). This connection must be continually reinforced.

One approach, adopted in the Maasai Mara Reserve in Kenya, is to ensure that all community development projects funded by revenues from the reserve are posted with signs to this effect. Programs are also increasingly being designed to generate income for local people from activities directly associated with the protected area or a surrounding buffer zone. This may include jobs as wardens, scouts, guides or maintenance workers (paid by the government or by the project), service jobs...
in the tourist industry, an expanded market for local produce or handicrafts, development of enterprises based on wildlife products, etc. This form of participation is more likely to win lasting support from the community, but requires a more complex project including components such as training, infrastructure building and credit schemes. Where the income is to come from consumptive uses of wildlife, it also requires stable wildlife populations with a substantial sustainable annual offtake.

So far, most of the wildlife projects not centered on protected areas have been private enterprises, such as game ranches set up on private land. Privately run, commercially-oriented wildlife schemes can also contribute to local incomes by providing employment or other supplementary activities such as collecting animals to sell to the enterprise (e.g. crocodile eggs for captive rearing). This type of enterprise does not necessarily create any sense of ownership among the local people, but it does have the advantage of being directly linked to preservation of the wildlife resource.

Participation in Planning and Design

With local participation in benefits now a generally accepted (though not always implemented) principle for wildlife and wildland conservation programs, the next target has been involving local communities in project planning and design. Although the initiative still generally comes from the outside, increasingly an effort is made to discuss a proposed project with representatives of the local community early in the planning stages in order to understand the ways in which they currently perceive and use these resources and their needs, traditions, constraints and expectations. These factors are not always evident. For example, the establishment of a new reservoir or park does not only affect people living within the confines of the proposed project site: a much larger number of people may be dependent on the area for seasonal grazing or for water sources in unusually dry years, or they may hunt animals which sometimes spill over the borders of a protected area into "expansion zones." The issue of water availability in the case study on Amboseli Park in Kenya provides a good example.

Thus, to increase local involvement, the community may be polled as to its overall attitude toward wildlife. Similarly, where a project proposes to provide support for local microdevelopment projects, the community may be asked to select the specific components, such as roads or dams or clinics, in which they are most interested. Prior consultation also helps to ensure that local expectations of the benefits to be attained are realistic.

Achieving local participation in project design is difficult and time consuming, particularly if the objective is to bring the discussion down to the "grass-roots" level rather than just the level of local political authorities such as District Councils. Several of the case studies (e.g. Rwanda, Burkina Faso) give an indication of the level of time and effort which may be needed. In Africa, where many communities have a tradition of consensus-building for decision making, it may involve a considerable commitment of time and resources at a very early stage (actually prior to any serious project planning). This can be hard for a development agency or central government to accommodate.

Participation in Implementation and Management

Local participation in project benefits and general design is an acceptable goal if the main objective of a program is wildlife conservation. However, as noted above, wildlife utilization is now increasingly proposed as an element of overall rural development which aims to increase local incomes, improve standards of living, strengthen local community structures and develop human resources and generally to empower local communities to manage their own natural resources with minimal external input or control. In this case the goal will be to achieve local participation in, and eventually total local responsibility for, implementation and management of the program. Implementation of a wildlife utilization scheme requires both organization and a combination of technical, business and managerial skills which are not likely to be found in the local community in the beginning. Therefore, many projects include a major training component to develop these skills. Experience shows that such projects must be expected to have a long first phase, during which it is managed.
largely by outsiders (whether expatriates or nationals or both), to be followed by a gradual phasing in of trained local people.

Some project components will be more suitable for direct community implementation and management than others. Much of the construction work on "microdevelopment projects" such as roads, schools, small dams, etc. can be carried out by community members (thus providing both local employment and a sense of ownership). Other activities, such as organizing anti-poaching patrols and providing tourist services can also be community-managed, although preliminary training will be needed. The more specialized aspects of wildlife management, such as counting populations, setting hunting quotas or marketing safaris are probably best left to professionals who may eventually be hired by the community or come in as partners in joint ventures.

The experience of the Nazinga Wildlife Utilization Pilot Project in Burkina Faso provides a good example of the complexities involved. This project was characterized by extensive discussions, negotiations and communication with local communities from the very beginning (and, in fact, even before, as the project was only started after villages in the Nazinga area agreed to it). There is a separate Direction for Public Relations which is responsible for holding meetings with individuals and villages to discuss the project's objectives and direction, and every progress report includes a detailed tally of the number of visits made and people met. During the ten years that the project has been in effect, the local people have certainly participated in the benefits (employment, meat and fish) and have thus been very supportive. Additional villages have asked to participate as well. However, the project activities (anti-poaching, habitat restoration, infrastructure development) have centered on the Nazinga Ranch itself and the project staff has made all management decisions.

During this first phase the Nazinga project has succeeded in demonstrating that wildlife populations can recover given protection and habitat rehabilitation, and that cropping of game meat can provide an economically sound and sustainable food source in that environment. Now, after four years of planning and ten years of implementation, it is proposed to move into a second phase whose objective is to expand activities beyond the boundaries of the ranch onto the territory of the surrounding villages, with each village assuming the responsibility to protect and manage the wildlife resources on its own land. It remains to be seen how successful this will be, particularly as the project management team has now been changed.

D. Wildlife and the Problem of Common Property Resource Management

The participatory approach to wildlife management which is the focus of this paper actually represents one facet of a larger movement which has been gaining considerable momentum in the field of economic development: that of enabling and empowering local communities to manage their indigenous natural resources on a sustainable basis for their own benefit and development. In many cases this represents a return to the pre-colonial situation, where traditional systems of authority and responsibility effectively regulated use of natural resources, before the colonial powers and then the newly established independent governments claimed control over them.

Community vs. Open Access Resources

Recently a great deal of attention has been focused on the problem of common property resource management in general, and in relation to natural resource management in Africa (eg., see National Research Council, 1986). An important distinction is made between community resources, where access and exploitation are controlled jointly rather than individually, and open access resources where they are not controlled at all. A persuasive case has been made that effective management of community resources for sustainable yield is not only possible, but has historically been fairly common, whereas open access resources are almost inevitably degraded or destroyed as individuals maximize exploitation for short-term gain.

The problem in Africa, as in much of the world, is that natural resources which were once community property are increasingly becoming open-access resources. Traditional local authorities are in many cases no longer able to regulate the
actions of their own people, or exclude outsiders from their territories. In addition, societies tend to develop effective social mechanisms for managing resources only when they are in short supply (such as, the Islamic laws on water use). Historically, human population densities were low enough that seemingly wasteful usage of renewable resources could be accommodated by the environment, so there was little need for regulation. The burgeoning human population and the shrinking resource base now make management essential, but even where overall community organization and authority remain strong there may be no accepted mechanisms for group regulation of key resources. Finally, regardless of community cohesion, current population pressures make it increasingly difficult for anyone directly dependent upon natural resources for survival, whether acting as an individual or a group, to defer present exploitation for the sake of future security.

The Nature of Wildlife Resources

These problems are further aggravated by several factors unique to wildlife resources. First, because they are mobile (with many species migrating over great distances), even effective control of a territory does not ensure control of access to the animals. Second, compared with agricultural or rangeland or forest resources, outsiders can exploit wildlife almost instantaneously, shooting or trapping an animal and leaving the area quickly before anyone can interfere. Finally, the rapid spread of firearms over the past few decades has made hunting very easy and efficient and has changed the balance of power in favor of heavily armed outsiders who can overwhelm the traditional occupants of an area. This applies both to commercial poachers and to military troops: wildlife disappear very rapidly in combat areas where soldiers are well-armed and left to support themselves "off the land."

Community-based natural resource management has been most studied and addressed in development projects dealing with use of forest and rangeland vegetation. The difficulties involved are clearly demonstrated by the experience to date in these sectors, which many would argue has not been very positive. For wildlife resources specifically, one of the greatest constraints on effective communal management may be a lack of proprietary rights to wildlife and therefore interest on the part of local communities. Part 4 of this paper and the case study from Zimbabwe show that granting proprietary rights is the essential first step to generating interest in wildlife management, whether for individuals or for communities. Similar programs in Namibia and South Africa tend to support this. However, many experts are skeptical about the applicability of these countries' experiences to other regions, and most governments have been reluctant to give up control of wildlife resources and the economic benefits accruing from them. As demonstrated by the case studies, however, they are increasingly displaying a willingness to share them to some extent with local communities.

Regardless of the approach taken, the success of any community-based wildlife utilization scheme will depend on: (1) reassuring target communities that the scheme will not result in reduction or loss of whatever level of control they now have over their resources, and (2) ensuring that individuals have adequate incentive to actively discourage interlopers and to forego opportunistic hunting. This underlines the importance of designing these schemes in close collaboration with the communities involved, understanding their real and perceived needs and ensuring that they see cooperation with the scheme as a better way to meet these needs than circumvent it.

E. Wildlife Management and Rural Development

Throughout this paper those familiar with the history of economic development thinking will find echoes of the principles, objectives and problems which defined the Rural Development (RD) approach. The objectives of RD were to improve rural standards of living and increase rural incomes by strengthening the entire productive system. A 1975 World Bank policy paper on rural development which served as an important reference point for this approach listed the following directives for successful rural development projects:
1) know the target rural communities well, particularly the root causes for their poverty, their motivations and the dynamics of their societies

2) address both the priority economic and social problems of rural communities together. Regarding economics this meant integrating development of needed services and infrastructure and seeking new sources of income for landless people. On the social side, it meant emphasizing basic health and education and seeking a balance between productive and welfare components;

3) involve the community in selection, design, construction and implementation of RD programs as an important element in fostering acceptance of change

4) rely to the extent possible on local institutions, such as farmers’ associations and cooperatives, which have obvious potential advantages for coping with administrative difficulties in reaching the rural poor

5) regard agriculture as the main engine of growth, since agricultural employment is currently the principal occupation for 75-85 percent of the rural population.

The first four points are themes that surface repeatedly in this paper as essential elements for successful community-based wildlife management projects. The same is true of two other cautions raised in the RD policy paper: the need to address the potential impacts of rapid human population growth, and the importance of land reform and land tenure for people whose subsistence depends for the most part on the extent to which they control land and output from that land. Despite the primary emphasis on agricultural development, the 1975 paper also noted that non-agricultural activities are important supplementary sources of income for rural households. However, the idea that wildlife utilization could represent one such non-agricultural activity, or that it might in some cases even supersede agriculture as the primary income earning activity, was not really envisioned at the time.

It may be particularly useful to examine one specific element within the broad context of RD programs. There is one specific element called, "Integrated Rural Development" (IRD) which has become a controversial concept, with strong supporters who say it remains the only realistic approach and detractors who say it has been a failure. This controversy is largely due to the fact that many IRD projects have in fact largely failed, being too complex and with too many components, and beyond the local management capacity of most African countries. In some cases, the integrating function of existing rural communities has also been replaced (unsuccessfully) by an artificial planning body meant to coordinate all these components. However, the initial concept was to integrate all the essential elements of rural development within the planning process, not necessarily to apply IRD to implementation of individual projects. The experience which we may take from numerous IRD project initiatives is that the complexity of a particular project must be matched with the actual management capacity of people and institutions who have the responsibility to manage it. However, an area development program must still be holistic in nature, addressing economic, social, infrastructural, institutional and environmental aspects if development is to be sustainable.

As demonstrated by the case studies and the conclusions of the working groups, the same basic elements of understanding and involving local communities and addressing a wide range of factors and potential constraints which were identified for IRD are also critical for community-based wildlife resource management projects. The major difference is the recognition of the need to include an understanding of the role of wildlife in local economies, perceptions and values and to build upon traditional systems for wildlife management. In fact, many so-called community wildlife management projects are in fact rural development projects which focus on wildlife utilization as a source of revenue, or projects which seek to provide rural development in exchange for a community’s cooperation in preserving wildlife (as noted above, most projects involve some of each).

Therefore, the lessons learned from the experience that governments and development assistance agencies have had with IRD are relevant to this discussion. This includes not only the importance of the elements listed above, but also the problems
that they raise (and thus the issues that must be addressed).

Thus:

- Gaining the necessary understanding of the target communities can be time-consuming and requires the involvement of specialists, preferably those with a long-standing association with the community.

- Similarly, involving community members (as opposed to local officials) in project planning and implementation may be very difficult and require a great deal of preliminary ground work to mobilize and organize the community to participate (this is likely to be less of a problem when there are good prospects for immediate, high returns as in the case of some of the communities clamoring to participate in the CAMPFIRE program in Zimbabwe).

- Trying to address all of the multiple factors which affect rural peoples' incomes and livelihood at the same time can lead to complex, cumbersome "christmas tree" projects which are beyond the capacity of even project managers, much less local institutions to implement. It can also lead to an inflated and highly costly bureaucracy which overwhelms the potential revenue-earning capacity of the project, ensuring a continuing need for external funding long beyond the anticipated end of the project.

- Control of access to and use of land is as critical to wildlife management as to agriculture, yet the proprietorship of wildlife areas is often poorly defined, particularly when animals move regularly between state-owned reserves and adjacent private or communal lands.

- The failure of policy makers to provide farmers with positive economic incentives for increasing agricultural production was another important problem limiting the success of IRD projects which focused on agriculture as the "engine of growth." The same types of disincentives and perverse policies are even more likely to threaten the development of wildlife-based enterprises.

- Finally, the original IRD projects have been criticized for promoting agricultural technology which often focused on using improved seeds and agrochemicals to raise yields, with insufficient attention to sustainability through conservation of soil and water, integrated pest management, etc. This philosophy is now changing, but a lack of the appropriate technology is often an important constraint to increasing agricultural production on a more sustainable basis. The lack of knowledge and technology is even more severe in the case of wildlife management, due to the very limited support for research and field experience in this area.
Part 2.

Planning, Preparation and Implementation of Wildlife Management Projects

A. Economic Issues

Wildlife utilization is an emerging land use option which is being seriously considered as a sustainable and economically viable activity for the development of some areas in Africa. The debate on the viability and sustainability of wildlife utilization will be the subject of a separate paper. This section only summarizes the main arguments in the discussion of wildlife as a source of economic benefit for rural communities. It also outlines the economic considerations for developing and analyzing a proposed community-based wildlife management program.

Proponents of wildlife management as a land use option base their arguments on several principles relating to the link between environmental protection and long-term economic stability:

1) Wildlife offer a variety of consumptive and non-consumptive uses which, taken together, can greatly increase the overall economic value of wildlife resources.

2) There are high-value uses of wildlife (i.e., tourism and safari hunting) which do not depend directly on total animal biomass. Therefore, profits can be increased without increasing pressure on the environment. These high-value outputs also help generate the interest necessary to overcome competition from established production processes. In the case of safari hunting, the high returns may be obtained with relatively little investment by the party which controls the desired resource (e.g. by contracting implementation to the private sector). Finally, there is the potential for multiple uses of the same wildlife population and, to some extent, for combining wildlife use with other activities;

3) Terms of trade seem to be moving against meat production (the main alternative activity in many wildlife areas) and in favor of tourism. This trend will probably continue because tourism is a luxury industry and therefore shows high income elasticity and the ability to gain benefits from growing disposable incomes in the industrialized countries.

4) Development of wildlife utilization, particularly tourism and safari hunting, can help strengthen and diversify a country's economy, reducing reliance on one or a few commodities as a source of foreign exchange.

5) Even with consumptive uses (production of meat and by-products), indigenous wildlife species and communities are better adapted to the environment than are introduced domestic species, such as cattle. Thus, they can use resources more efficiently, yielding greater and more sustainable benefits at lower cost since they are less likely to degrade the environment.

6) Because of their adaptations, wildlife can use areas too hostile for domestic livestock. In areas where both can survive, incorporation of wildlife utilization can provide significant benefit at little additional cost.

As noted in Part 1, wildlife management projects may be initiated for a number of reasons other than economic. This includes protection of biological diversity and natural habitats for aesthetic and scientific reasons. Nevertheless, the likely success of a project, and its sustainability, will depend in large part on its economic and financial factors,
particularly compared to other alternatives. Thus, although economic analysis of proposed wildlife management projects is essential, in practice it has generally been flawed because:

1) The anticipated returns from alternatives, such as crop agriculture or livestock (i.e. the opportunity costs of managing an area for wildlife), are often over-estimated, especially if one thinks in terms of economic rather than financial returns. The value of the "environmental investment" (that is the impact on the environment and the best use of its productive potential) is often not considered, and the costs of subsidies and other supports to alternative activities are often overlooked.

2) The full costs of wildlife management (e.g. damage to crops and livestock) are not always appreciated. Also, the full range of benefits derived from managing an area as wildlife habitat is usually not quantified or even recognized. The direct cash and protein derived from utilization of mammalian, fish, and bird species are more often taken into account. But invertebrates may be overlooked even though they often are an important element in local economies and nutrition. It is also important to examine the distribution of benefits within the community. For example, in many cases wild protein may make a considerable but largely unnoted contribution to the nutrition of children who collect and eat a wide variety of small animals. Furthermore, a natural habitat maintained to protect wildlife frequently provides many other important environmental services such as preserving the hydrological regime of a watershed.

3) The distinction between returns to the community and returns to individuals within the community is often lost, even though this may influence the acceptability and success of a program. Without active intervention, revenues from wildlife tend to accrue to a small number of well-situated people, not to the community at large. Furthermore, even if the community does benefit, those benefits may not seem significant to individual interests, particularly compared to individual costs.

4) Wildlife projects often have high initial costs, while generation of substantial revenues may be delayed (e.g. if it takes some years to build up local wildlife populations). This "frontloading of costs" can create serious operational problems even if the overall rate of return is positive. Pressure to generate revenues early can also compromise the interests of the local community.

Based on these considerations, there are certain economic elements and measures needed for success of any community-based wildlife management program:

1) First, determine the scope of the project: area covered, communities involved, resources conserved or used. For example, ensuring an adequate water supply or other aspects of habitat quality may be a critical component in a project aimed at developing and exploiting wildlife resources.

2) If local communities are to have any interest in incorporating wildlife into their economic activities, they must either own or control access to the land or the animals. This is complicated by wildlife often being a fugitive resource, likely to move between administrative areas. Mechanisms must then be developed to distribute accrued benefits not only within a community but among communities which share a wildlife resource. In projects which include consumptive use, one common approach is to allocate benefits from any given animal to the community which controls the area in which it was shot (even if it was in a different area immediately before). For non-consumptive use, social services, or locations of tourist facilities might be distributed equitably.

3) Long-term benefits such as environmental stability or development of a lucrative tourism industry are important for
Development planning. However, local populations must derive short-term benefits which, in their perception, more than compensate for the direct and opportunity costs of conserving wildlife in their area. In some cases, there may be immediate generation of substantial revenues (e.g. see Zimbabwe case study). In other cases, it may be necessary to provide "incentives" in the short term to get the project off the ground and gain time for the real long-term benefits. Otherwise, it may not be feasible for communities to allocate land for wildlife use. One important role of external investment in wildlife projects is to realize benefits more quickly. This may be why the great majority of wildlife management projects have begun with significant external input.

Commonly, project resources are used in two ways: (i) to promote local interest and acceptance by providing various benefits unrelated to wildlife management (e.g. schools, clinics, micro-irrigation systems) or (ii) to permit rapid development of infrastructure and other requirements to hasten the arrival of wildlife-related benefits. It is important, however, that all benefits (short- and long-term) are linked, in reality and in public perception, with the conservation and management of wildlife.

4) Development and access to marketing structures and institutions is a critical element of wildlife management programs. This is true particularly since the requirements are often different from those for other sectors (such as livestock and agriculture) for which marketing structures have already been established. Marketing infrastructure includes access to needed inputs (e.g. for processing trophies or supplying tourist hotels) and markets for wildlife products. It also includes access to consumer goods to promote local interest in participating in a cash economy, as in many cases wildlife utilization brings in cash while agriculture and livestock provide food and prestige.

5) Maximizing economic value from a wildlife system may accommodate multiple uses of wildlife, as well as other land uses which are complementary to wildlife management (for example, mixed livestock and wildlife ranches). With careful management, wildlife tourism can co-exist with safari hunting, and safari hunting can complement subsistence hunting. Similarly, a given area of land may support mixed livestock and wildlife ranches, and even some crop agriculture if crop protection measures are taken. Investment of time and labor, often an important constraint to development, may also be maximized by multiple uses. For example, the different components of a mixed system may place the greatest labor demands in the dry vs. wet season, during daytime vs. nighttime, or on women vs. men. Therefore, a realistic assessment of all potential sources of wildlife revenue is an essential first step (e.g. see Niger Air Tenere case study).

6) All of the potential sources of support and investment in wildlife management should be evaluated and tapped as appropriate. These include the private sector, governments, and international sources such as NGOs and bilateral and multilateral donors. At the same time, the government, project management or local community may decide to reject potential funding sources if they set unacceptable conditions.

The overall prospects for generation of revenues or other benefits from wildlife in any given area will be highly variable, depending on many ecological and economic factors. Experience from the case studies indicates that there is a tendency to optimistically underestimate the total amount and the period of time over which external resources will be required, before any degree of self-sufficiency is achieved. If habitat rehabilitation, infrastructure building or stocking of animals is required, a project will initially require significant inputs of external resources, and there may be a long time before wildlife revenues materialize. There will also be the need for a large investment in human resource development as trained people are needed to evaluate and
monitor wildlife stocks, to develop management plans and monitoring systems, and for community organization and mobilization. While the objective is to develop local human resources, it is very unlikely that the needed skills will be available locally at the beginning.

However, initial costs will be lower where good wildlife populations already exist and if major investment in infrastructure is not needed -- for example, a project focusing on safari hunting as a source of revenue. In addition, the costs for a wildlife project must be considered in relation to potential returns and also in comparison to alternatives: in the areas where important wildlife populations are found there are likely to be major costs involved in development of other activities as well, such as irrigation systems for cultivation in semi-arid rangelands or access roads for marketing inputs and products. Furthermore, wildlife management may co-exist with other activities, often with relatively little incremental cost. When conventional agricultural, forestry or livestock projects are initiated in preference to wildlife projects, it is generally not because potential internal rates of return have been compared, but because both project developers and the target communities are more familiar with them, and because they fail to appreciate the potential for high returns from wildlife.

Similarly, for projects aimed at conservation of protected areas, the costs associated with developing and implementing a community-based approach must be compared with the costs (both capital and recurrent) of the more "traditional" approach of externally enforced exclusion. It has become clear that the costs of effective enforcement are too much for the governments and external donors to bear, with the result that protected areas throughout the developing world are deteriorating. Leader-Williams and Alban (1988) estimated the annual cost of protecting rhinoceroses and elephant populations in Zambia effectively would be $230/km². In Zimbabwe, elephants and rhinoceroses are being protected by private landholders (and increasingly by communal landholders) at little or no direct cost to the government.

B. National Policy Issues

Local communities often see wildlife differently than do people not living in close proximity. Rural people have traditionally regarded wildlife as a resource which was theirs to exploit and which often plays an important role in local cultures, diets, and economies. This has been particularly important in areas which have poor potential for agricultural or industrial development but are endowed with substantial wildlife populations. By contrast, national policies since the colonial era have generally regarded wildlife as a national heritage, belonging equally to all citizens and to be exploited only under national auspices and for nation-wide benefit. Thus, in most African countries, policies and laws have developed which specifically exclude community participation in wildlife management by declaring all wildlife a national resource and prohibiting or restricting hunting.

Although in many cases these prohibitions or restrictions are poorly enforced, through failure of political will or resources, local hunters are nonetheless legally considered poachers and may suffer fines or imprisonment at any time. At the same time, wildlife often represent a direct threat to crops, livestock and even personal safety, all costs borne almost exclusively by the local people. Thus, a pattern of conflict is established between the national authorities responsible for wildlife management and the local communities, with wildlife itself at the center of the conflict as a source of damage and trouble with the law. Conflicts may be worst in the areas surrounding gazetted parks and reserves, as there people also see land and water which they need, and which they may feel is theirs by right, being alienated and set aside for wild animals and foreign tourists.

If a community-based wildlife utilization scheme is to be successful, it must counteract these negative factors and restore to the community a positive perception and relationship to wildlife. The first step is policy reform at the national level, recognizing the special rights of communities living in the proximity of natural resources such as wildlife to utilize and benefit from these resources and empowering them to do so (for example
through legislation allowing local communities to pass by-laws governing resource use). In effect, policy decisions must be made at the highest levels regarding key questions as "Who gets what?" and "Who decides who gets what?" Question such as these may in some cases have constitutional implications.

Special rights do not necessarily mean exclusive rights: wildlife may continue to be regarded as a national heritage and asset to be exploited for national benefit. The issue is one of balance and a distribution of benefits taking into account the distribution of costs as well as the distribution of available resources to fuel local development. It is also an issue of promoting self-help as a basic goal, and local responsibility to manage indigenous resources.

This type of policy reform has, in fact, begun to occur among African countries. Zimbabwe, Zambia and Madagascar now have explicit policies in support of incorporating community development in wildlife management and vice-versa, and others such as Ghana have recently enacted laws allocating local rights and responsibilities relating to wildlife resources. Ensuring that a given country has supportive policies, and the legislation needed to implement them, is an initial prerequisite to developing a community-based wildlife program.

In addition to a general policy which allows communities at least limited special rights and responsibilities for their indigenous wildlife, there are a number of specific policy areas which must be addressed in relation to any community-based wildlife management project:

1) The government must define the place of wildlife in its land use planning and its role in national economic development. For example, in Zimbabwe the policy of the Department of National Parks and Wildlife Management is that it is an agency concerned with "ecological land management." This recognizes wildlife as a form of productive land use. In many countries, all policy relating to wildlife focuses on its protection or on its control as a type of agricultural pest.

2) Control of wildlife resources is the basic prerequisite for any wildlife development project, and this generally means control of access to land the animals occupy. In virtually all of the private or communal wildlife management schemes established to date, people are only entitled to hunt or obtain fees for use of animals on their own land. This leads interested investors to fence the land (in fact in some cases, as in Namibia, rights to the resident wildlife obtain only after the land is fenced), or to make improvements such as salt licks, watering points or controlled burning regimes to attract the animals to their land.

It is important to note that the essential element is not so much land tenure as land administration. In fact, in sparse and marginal environments with low carrying capacity, subdividing communally held land for titling to individuals or village groups may have the undesirable effect of restricting movements of migratory wildlife and establishing unsustainably small grazing areas. In such cases it is better to leave the land undivided and to negotiate some means of partitioning benefits from combined land holdings. One example is the "Wildlife Utilization Fees" paid to group ranchers on the dispersal areas adjacent to the Amboseli National Park in Kenya as a form of rent for allowing wildlife to use their land.

3) Actual ownership or proprietorship of the wildlife must also be determined. This is often a difficult issue, as national governments tend to regard wildlife as the property of the State and most countries have laws specifically prohibiting private individuals from owning wild animals, particularly endangered or threatened species. However, just as in the case of land, it is use rights rather than actual ownership of the resource which is essential to making it valuable for an individual or community.

There are many options which may be adopted, depending on the...
government's overall policies regarding wildlife ownership. The key is ensuring that the terms are clearly delineated and are such as to yield concrete benefits and sufficient flexibility to encourage individuals or communities to invest in wildlife enterprises. For example, subsistence level hunting of particular species may be permitted to all members of the local community while the right to hunt other, more valuable species may be retain by the local government. A local community may be granted the right to exploit some or all species in their territory as they prefer, or they might be subject to quota restrictions set by national authorities. Communities may be regarded as stewards of a national resource occupying their land, receiving a share of profits as a combination rent and management fee, or they may be regarded as the owners of a productive asset generating income on which they must pay taxes to the national government.

4) In addition to the issue of revenue sharing between national and local levels, there are many economic policies which affect the potential success of wildlife-based enterprises. These are discussed in greater detail in Part 4 of this paper, but in summary they relate to the market conditions facing wildlife enterprises compared to alternatives such as livestock or crop agriculture. In most countries these alternative sectors are heavily subsidized, either directly or indirectly through provision of infrastructure and support services. This imbalance must be addressed if wildlife enterprises, whether individual or communal, are to be successful in the long run. Another important issue is exchange rate policies, as inflated exchange rates can discourage tourism.

5) Public sector employment policies can also be important, particularly those which establish requirements for appointments to civil service posts. It is common to require a secondary school or even college degree for government jobs, even for game scouts or park guards. This can effectively exclude most people from local communities, due to typically low levels of education in rural areas. It may be necessary to change or get special dispensation from such policies in order to remove obstacles to local recruitment (e.g. see Zambia case study).

6) Because wildlife management remains a relatively new area with only limited local capability and limited allocation of resources by governments, many wildlife projects depend heavily on outside expertise and funding, particularly in the early stages. In fact, international NGOs have generally taken the lead in providing the personnel and funding needed to start them up. National policies which restrict the involvement of expatriates or put constraints on the participation of NGOs can thus have a serious impact on these projects.

7) For projects which involve consumptive use of wildlife, additional policy issues arise. The first, of course, is whether consumptive use of wildlife is permitted at all, or whether it is permitted for the species which the project proposes to exploit. Beyond this, there is the question of who has the right to hunt, or perhaps to own firearms. Are these rights freely open to all, or are they restricted to particular groups or subject to licensing? Similarly, particular methods of hunting may be prohibited, or restricted to certain groups or areas. For example, hunting with firearms may be prohibited but traditional methods permitted, or shooting may be limited to nighttime, to avoid spooking herds and distressing tourists; alternatively, nocturnal hunting with spotlights may be specifically prohibited to all but wildlife authorities. Each of these approaches may be appropriate in particular circumstances.

8) In addition to regulation of hunting per se, policies relating to sale and disposal of animal products are critical. These include veterinary and hygienic requirements for killing, inspecting, handling and shipment
(which can make processing and sale of wildlife meat very difficult or uneconomical); national or international restrictions on trade in wildlife products particularly relating to endangered species; export licensing policies, etc.

9) For projects which are restricted to non-consumptive use of wildlife the main policy issues relate to control of access to land (as discussed above) and administration of tourism services and revenues. How are fees for entry into wildlife areas, or use of related facilities, set and who is authorized to collect them? It is increasingly common to set different fees for expatriates, nationals and local residents, reflecting differences in willingness and ability to pay as well as a means of generating positive community relations. Are there policies or regulations governing the siting of tourist and recreational facilities? How difficult is it for external or national investors to obtain concessions for tourism facilities and services, and must these be negotiated with local communities as well as with national authorities?

10) Transportation policies affecting the ease of movement to and within the country are critical, as convenience in travel is an important consideration for tourists with limited time to spend. What priority is given to development of wildlife resources in relation to construction of roads, rail lines and airstrips?

11) Less tangible, but also very important is the collective national attitude toward outside visitors. A reputation for making tourists feel welcome and for making their visit smooth and pleasant is an enormous asset in this increasingly competitive area. One of the key steps may be a public education program stressing the economic importance and benefits of tourism and, for those in the frontline jobs such as immigration agents and service workers, in the niceties of tourist handling and management.

12) Finally, population policies must be recognized as one of the most critical of all for wildlife conservation and management, as it is competition for land with the rapidly growing human population which is the greatest threat to the integrity of wildlife areas.

Many of the richest remaining wildlife areas span national borders, with individual herds or animals (as well as local people) often moving regularly between countries. To conserve and utilize wildlife resources in these areas most effectively, governments must be prepared to cooperate -- for example by establishing parallel national parks on either side of a border and collaborating on surveying, enforcement, training, and tourism development activities.

While supportive policies of national governments are clearly critical for promoting wildlife management projects, the important role of external donors in this arena makes donors' policies a significant factor as well. First, like the national governments, the donors must have a policy of assisting local communities to help themselves and to assume responsibility for managing their indigenous natural resources according to their own priorities. Many wildlife projects are supported by international conservation organizations which have shifted in recent years away from "straight" conservation projects emphasizing enforcement of protected areas to programs which emphasize social and socio-economic aspects and seek to develop a partnership with local communities. Donors should also encourage and support regional programs in which neighboring countries cooperate in the management of wildlife resources.

Preservationist attitudes in donor countries can make it difficult to support projects involving consumptive use of wildlife, particularly those species which are of greatest commercial value and thus have high international visibility. While many of the major conservation organizations and donors now favor rational use of wildlife products to strengthen the economic rationale for preservation of the species and habitats, they often downplay this aspect of their projects because it is not acceptable to many of their grass-roots members and constituents. Another difficult point is policies which many donors have against supplying weapons. Providing guns may be an essential element of a project, whether to
arm anti-poaching forces or for use in culling wildlife populations. Nevertheless, the risk of diversion and misuse is so great that most donors are extremely reluctant to fund their purchase.

C. Technical Issues

A detailed discussion of the biological and ecological aspects of wildlife management is outside the scope of this paper. However, it is appropriate to indicate in general the types of information needed to evaluate the prospects for a community-based wildlife project and the types of technical issues which are likely to arise in planning and implementation.

Wildlife Populations and Population Dynamics

The current and historical densities of wildlife populations in the proposed project area determine the prospects for finding or building a resource base which can support a substantial level of off-take (or, for non-consumptive uses, attract tourists). In many of the case studies presented in Part 3 the project area was chosen specifically because existing wildlife populations were high (particularly relative to human populations) or because there was good reason to expect that protection, proper management and habitat rehabilitation could restore them to historically high levels (eg. Nazinga Ranch in Burkina Faso, Kafue Flats in Zambia, Air Tenere Park in Niger, Volcanoes National Park in Rwanda, etc.).

Thus, an initial faunal survey of existing wildlife populations (and comparison with any available data on historical populations) is an essential first step, normally accompanied by an ecological study to determine estimated carrying capacities and identify specific factors which may be constraining population sizes. Often the major limiting factor will clearly be over-hunting, but in other cases this may be less important than availability of water or types and densities of vegetation. An understanding of the basic ecological requirements of the animals is essential, among other things, to determine the scope of the project. Many species require a large dispersal area for occasional use during the dry season or droughts. This will have implications for the selection and size of the project area and the development of buffer zones.

Based on this ecological information, it may also be possible to increase the apparent carrying capacity for desired species, for example through watering points or a carefully planned burning regime which promotes the development of pastures and prevents encroachment of bushland. In any case it is important to know how much investment should go into anti-poaching efforts and how much into habitat management.

Actual management of wildlife populations, particularly with consumptive use, requires considerable knowledge of the population dynamics of the key species to determine sustainable off-take rates and desirable population structures (eg. age structure, numbers of males vs. females) for maximum efficiency. This type of information is available in the wildlife management literature for some of the most popular savanna game species, but for other species and ecosystems it may be more difficult. If a feasibility study shows the needed information is not available, project planning must include a preliminary study phase before any systematic harvesting could be contemplated. This will normally involve extensive field work, often including participation by expatriate specialists although more and more African countries are developing the trained personnel to take over this type of work. The studies must encompass both dry and rainy seasons and must take into account the long cycles of changing environmental conditions characteristic of many parts of Africa.

Together with the basic ecological and life-history knowledge, there is a need for a good field monitoring program to track the progress of populations in the field, to determine whether quotas that were set are appropriate and whether they are being respected. This means hiring and training scouts and providing them with transportation (sometimes including small planes) and equipment.
Tourist Carrying Capacity

If a project involves increasing tourism, the environmental carrying capacity for tourists is as important as that for the wildlife. Careful planning and siting of tourist facilities and roads is needed to maximize the number of tourists that can be accommodated without interfering with the wildlife and naturalistic setting which are the main attraction. The practice, as introduced in Kenya, of siting tourist accommodations on private or communal land immediately outside national parks is a good way to increase economic benefits to the local community. Other issues relating to environmental impact of tourism in general also arise, such as sewage and garbage disposal and the adequacy of available water supplies to meet tourists’ needs without depriving wildlife or local communities.

Harvesting and Meat Production

Culling wildlife for meat or skins introduces a suite of additional technical issues, from harvesting methods which minimize disturbance to the population and preserve the quality of the meat, to processing and packaging in compliance with various veterinary and health regulations, to product development and marketing. Meat production from wildlife is very different from livestock and under some circumstances can be quite costly. In general, field abattoirs are needed as animals usually cannot be driven on the hoof to central facilities, and the permissible time period between kill and processing may be quite short. The harvesting itself can be expensive, requiring vehicles, ammunition, marksmen and for some species spotlights for night shooting. Veterinary regulations may be quite strict, requiring a veterinarian on-site to inspect every carcass. This tends to be more of an issue in eastern and southern Africa, whereas in western Africa regulations are fewer and smoking is a common and accepted form of preserving game meat for market. A thorough study of existing and potential markets for wildlife meat and products is also very important. Again, good quantitative data are available for some areas of western and central Africa, where wild meat is preferred, but this is not the case in most of eastern and southern Africa so the work may have to be done as part of a feasibility study. Aggravating these costs is the fact that, in contrast to domestic livestock, there is rarely any pre-existing or subsidized infrastructure for production and marketing of wildlife meat.

D. Sociological Issues

Issues Raised

The sociological and socio-economic issues raised by community-based wildlife management projects may be divided into two groups: (1) those relating generally to integrated rural development and to communal management of natural resources (especially land), and (2) those specific to communities' attitudes and relationship to wildlife. For both sets of issues, it is essential to develop a thorough understanding of the community's history and current dynamics, particularly in relation to the authority structures which influence peoples' behavior and the patterns of resource use which form the basis for both conflicts and opportunities in wildlife management.

The aspect of rural development based on communal resource management has been discussed above (see Part 1, Sections B, C and D) and at length in other papers and books (e.g. National Resource Council, 1986; World Bank, 1975; Magrath, 1989, Poole, 1989). The key concerns are to define the target groups, to develop with them resource management plans which are based on their real needs and capabilities and to rely to the extent possible on existing, traditional institutions for implementation. There is a common set of problems which arise for any communally held resource which can be exploited for individual benefit. The classic examples are rangelands (where the range is communal but the livestock are privately owned), forests, and bodies of water (for fishing or irrigation).

Of these, water probably provides the closest parallel to wildlife resources. Just like migratory wildlife, the economic benefits of lakes or rivers may ultimately be shared by communities which are widely separated geographically, politically and
socially. For both wildlife and water, misuse or overexploitation by any one party may destroy the resource for all of the others, yet there is often no system for the different communities to negotiate and allocate the resource or protect it from one another. However in practical terms wildlife is most closely connected to the land resource, because controlling access to land is the key to controlling access to the wildlife on it.

There are also sociological factors which are unique to wildlife resources, particularly the important role which different species often play in local traditions and religions, and the impact of the external interest which wildlife generates. The central role of wildlife in many local cultures means that peoples' attitudes toward it are not based solely on economics, even though the role of wildlife in local economies is an important factor which is often overlooked or undervalued. Some communities depend heavily on wildlife as a source of meat and other products. Others (such as the Maasai) hunt only ritualistically or not at all. Wherever hunting is a part of the culture it represents an important source of community cohesion and hunters often enjoy high social status, which they may lose if hunting is effectively stopped by law or under a project. In many communities tabooed species, sacred sites, closed seasons and other controls represent an effective traditional system of wildlife conservation and management. Often the only difference between these traditional systems and modern wildlife management operations is the introduction of scientific principles and technologies for surveillance and monitoring and for defining optimum population structures (and a shift of authority from a village chief to professional wildlife officials).

The interest which hunters and conservationists have taken in wildlife throughout Africa has introduced a set of complications which can create conflicts between the local people and outsiders who set themselves up to protect the wildlife from them. This has been most pronounced in the policy, introduced by the colonial governments and pursued by many countries after independence, of alienating large areas of land from their traditional inhabitants to establish national parks and reserves. The long-standing hostility to wildlife or parks authorities can be a major constraint in developing the cooperative relationship on which community-based wildlife projects depend. The hostility can even extend to aggression against the wildlife itself, which the people come to see as a source of outside interference, loss of territory and trouble with the law.

Sociological Surveys

The first step in addressing the sociological issues involved is a sociological study to:

1) identify the communities and groups which use or come into regular contact with the wildlife populations with which a proposed project is concerned. This includes agriculturalists and herders who may lose crops and livestock to wildlife depredation. Particular attention should focus on the role of women, both in relation to the impact of wildlife on their activities and to their access to revenues, which may result from wildlife management activities.

2) determine the ways in which they use wildlife, and the roles (real and perceived) that it plays in their economies and cultures;

3) determine whether they use other resources associated with wildlife habitats (e.g. medicinal plants, honey) and whether they understand the value of environmental services (e.g. water regulation) that wildlands provide.

4) understand any traditional systems of wildlife management, even if these systems have broken down partially or completely in the modern era;

5) understand the history of the relationship of local communities to central and local governments, particularly wildlife and National Parks authorities;

6) identify the factors which are changing or likely to change the relationship between local communities and the wildlife (such as population growth or migration,
changing religious beliefs, development programs which will increase livestock herds, or movement toward a cash economy).

Examples from Case Studies

A review of the case studies in Part 3 shows the kinds and importance of information that such a study can provide. For example:

1) In Burkina Faso, the proposal for the Nazinga Ranch was based on the realization that the local community had lost its traditional access and control over the wildlife to heavily armed poachers from the outside. The promise of helping them to regain access to this valued resource was the key in generating local support for the project.

2) In Ghana, a complex system of beliefs, including tabooed species, sacred groves, sacred days and closed seasons once prevented over-exploitation of wildlife resources of the coastal lagoons. However, these traditional controls were rapidly breaking down in the face of introduction of Christianity, western education and other foreign influences as well as an increase in the human population, and the local community was concerned because species wildlife with important ritual roles were disappearing.

3) In Rwanda, surveys of the population living around the Volcanoes National Park showed that the vast majority of farmers believed that their children would not have enough land to meet their needs. They gave little weight to the aesthetic, scientific, or moral objectives which motivated external donors to protect the parks and its gorillas, and few had any sense of the economic potential of the wildlife or the role of the forest in maintaining their water supply. More than half wanted to convert the whole park to agriculture. Understanding these attitudes made it possible to design an educational program to address them.

4) In Madagascar, two major ethnic groups live in the vicinity of the Audohabela Reserve. The Tandroy are mainly pastoralists who have also recently taken up agriculture. They have strong taboos against killing many species of wildlife, but these are breaking down as a growing, nearby town provides a ready market for wildlife products. The Tanosy are agriculturalists, have few such taboos, and traditionally use many wildlife and forest products for food, fuel, and construction. The different traditions and economic activities of these two groups must be addressed in the project to preserve and manage the protected area and its surroundings.

5) In the area of the Dzanga-Sangha Reserve in the Central African Republic, the project design had to take into account both the Pygmies, who dwelt in the forest and relied heavily on wildlife and other wildland resources and the agriculturalist villagers who represented a different and much more powerful ethnic group. When the villagers began to team up with commercial poachers, in part due to widespread unemployment following the closing of a timber mill, they overwhelmed the traditional wildlife management systems of the Pygmies. Similarly, wildlife populations were being caught in the crossfire of a long-standing conflict between two tribes living on either side of the northern Serengeti in Tanzania.

6) In Kenya the successful transfer of management of the Maasai Mara Reserve to the local community, compared with the much rockier road experienced by a virtually identical initiative at Amboseli, was due in part to the fact that traditional systems of authority and responsibility had largely broken down among the Amboseli area Maasai due to outside influences.

7) In Tanzania, both the wildlife of the Serengeti National Park and the pastoralist lifestyle of the neighboring Maasai communities are threatened by pressures to convert the land to agriculture. Identifying this common
concern has been an important step in developing a constructive dialogue and working relationship among parks authorities, local government and the communities under the auspices of the AWF-supported "Protected Areas: Neighbors as Partners" community conservation program.

These sociological studies parallel the ecological ones which identify the factors which limit or reduce wildlife populations. Information is needed on the relative impacts of subsistence hunting, commercial hunting, resource competition, habitat alteration and natural predation, to determine what a wildlife project should address and what are its prospects for long-term success.

A publication entitled People, Parks and Wildlife: Guidelines for Public Participation in Wildlife Conservation (Case Studies in Kenya) (UNEP and the Kenya Wildlife Fund Trustees, 1988) explores in detail the sociological aspects of wildlife management and describes a methodology for understanding and mobilizing communities living adjacent to protected areas and negotiating with them to find common objectives and define strategies for integrated conservation and development. This methodology, called "Wildlife Extension" grew out of a program based in the Kajiado District of Kenya, which includes the Amboseli National Park (see Section F -- Training and Education).

E. Institutional Aspects

The institutional issues arising in community-based wildlife management may be divided into three groups: those which pertain to initiating a project, those relating to establishing and implementing the project, and those affecting the self-sufficiency and sustainability of wildlife utilization activities after the project ends. The requirements of these three stages are quite different, although the initiation and establishment must lay the necessary groundwork for long-term sustainability. However, even if considerable effort is devoted to laying this groundwork, the transfer of responsibility to local communities is difficult and arguably has not yet actually been accomplished in any of the case study projects.

Initiation

As noted earlier, most existing projects have begun with a desire to encourage local communities to respect and support protected areas or species. Therefore, most initiators have been wildlife ecologists or conservationists. Less frequently they have been people involved in providing social/economic development assistance, who saw wildlife as a promising resource that could contribute to the welfare of rural populations. In either case the original concept has generally come from outsiders (often expatriates), and their first task was to generate local interest. There are exceptions, such as the Beza Mahafaly Reserve in Madagascar, where the local community sought help to conserve a natural area, but even here it required outside conservation interests to make the project a reality.

In general one might predict that, at least for now, the initiative for establishing new wildlife projects will probably continue to come largely from outside local communities for several reasons: (i) rural people have been forcibly estranged from their wildlife for many years and are unlikely to consider wildlife utilization as an alternative to more familiar routes to development, such as agriculture or production forestry; (ii) there are important policy issues involved which rural people rarely have the political influence to address; and (iii) start-up costs may be high and revenue earning delayed, making external funding essential.

The policy and financial issues also make it very useful, if not essential, to have at least one expatriate or international organization committed to promoting the project from the beginning--they are more likely to have influence at high government levels and to be able to mobilize outside money than are nationals, however interested and committed the latter might be. Occasionally, however, there is someone within the country who is able to play this role. At the same time, a project initiator must have a long history of working in the area, or must collaborate very effectively with local individuals or NGOs who have such a history, in order to
motivate and gain the confidence of the local community. The case studies in Part 3 illustrate the importance of a dynamic individual or organization which can provide a bridge between the external world of money and power and the internal world of community acceptance (e.g. the Lungrens in Burkina Faso; Major Temple-Boreham in Kenya; Mr. Harry Chabwela in Zambia; ZIMTRUST in Zimbabwe. Unfortunately, such individuals are very rare. Hopefully, as the community-based conservation approach becomes better established and there are more recognized models to follow, more projects will be successful even in the absence of such a "godfather" figure.

Establishment and Implementation

After a project has been identified, its basic components agreed and initial support from the government and funding agencies obtained, there comes the establishment and implementation phase. Establishment as defined here means the project has been officially launched (usually through signing an accord which defines the roles and responsibilities of outside sponsors, the government, the project management and any other parties with an active role) but the necessary conditions for implementation are not yet in place. For example, various ecological and sociological surveys and negotiations may be needed before the boundaries of a protected area can be defined or micro-development projects and educational programs can be selected and designed. Considerable time and resources may be involved, as is illustrated by the case studies. There may also be policy, legal and institutional elements to put in place. There is no clear line between establishment and implementation, as implementation of some components such as road building and anti-poaching patrols may start up right away.

The continued involvement of dynamic individuals or organizations with both external influence and internal acceptance is an important factor in maintaining the viability of the project through what may be a long and perhaps frustrating establishment phase. This may, in fact, be a limiting factor for many potential projects as both individuals and the organizations they represent tend to operate on a rather short time frame, moving on to another project if there are no demonstrable results after 3-4 years. The failure of key staff (either expatriate or national) to remain in place long enough to "learn the ropes" and then make a real contribution to moving the project forward is a serious and recurrent problem.

The implementation phase generally focuses on technical and logistical issues, and its success is measured in terms of relatively short-term objectives such as increasing wildlife populations, completing civil works and starting up revenue-earning activities. The stated objectives often include achieving financial or even economic self-sufficiency, but in fact there is a tendency to interpret this loosely. A project may be cited as a success when it begins to generate revenues or other benefits, even if it is not clear that the cash flow is positive. The evaluation of overall economic costs and benefits is even less likely to be addressed systematically.

During establishment and implementation the project is generally executed by a project leader or management unit (PMU), although it may have input or even be directed by a steering committee or a group of committees. There are a number of problems which can arise with the PMU. For example:

1) in order to carry out its duties, the PMU is generally granted at least limited authority over the project area and its resources by the central government. This may be resented by local officials, particularly as the PMU will probably also manage money (for example from Park revenues) which they may feel they should control. This resentment can easily lead to conflict and a lack of cooperation;

2) the conservationists or wildlife ecologists who initiated the project often stay on to implement it even though they may not have all the technical, administrative, and managerial skills needed. This problem arises particularly in projects which are basically rural development projects with a wildlife focus. Wildlife specialists often tend to focus on wildlife issues, at the expense of socio-economic aspects and the role of
other resources and economic activities;

3) again, particularly in the more complex rural development projects, the PMU can expand into a huge bureaucracy which is both inefficient and so expensive that it consumes all of the revenues the project generates and even creates pressure to increase revenues by pushing exploitation beyond sustainable levels;

4) during the implementation phase responsibility for project management is usually meant to shift from expatriate advisors to nationals within the PMU. Many problems can arise in this transfer, particularly if there are differences in objectives and approaches of the funding agencies, represented by the expatriates, and the government to whom the nationals are responsible. The project can also be caught in the middle of conflicting claims and interests of different elements within the government. Here, as anywhere, success has many parents but failure is a lonely orphan: the more positive international attention a project has received the more likely that there will be struggles over its control and direction. The best solution is prevention, by thoroughly addressing the issues of project objectives and responsibilities during planning and making certain that all parties with valid interests in the project are represented on steering and advisory committees.

Increasingly wildlife management projects include educational, training, community organization and institution building components to lay the groundwork for the long-term objective of transferring responsibility and authority from the project team to local officials and the local community. However, there may be a conflict between increasing local participation and "getting the project off the ground." When this happens, the latter tends to be emphasized because there is no point in transferring responsibility for a failure. This is most likely to be a serious problem if too little attention was given to sociological issues during project identification and preparation. For example, the affected community may not really have been involved in the process and there may be important conflicts within or between groups which have not been resolved.

Even if project activities are going well and considerable attention has been given to preparing local authorities to take over, the transfer of authority can fail if it is too abrupt. Unfortunately, this often happens: the end of the PMU's responsibility coincides with the termination of all project inputs. Not only are the local counterparts left to carry on suddenly without external technical, financial and political resources, but project beneficiaries are often unaware of the situation and come to blame the inevitable problems on the incompetence or even dishonesty of the new managers. The solution is to prepare for the end of a project from the beginning, with a plan for phasing out external inputs while phasing in local responsibility.

Long-term Self-sufficiency and Sustainability

Despite the difficulties involved in transferring responsibility from a project management team to the local community, this is always the ultimate objective because no project lasts forever. Perhaps the single most important element for ensuring long-term survival of a wildlife management system is the development of an appropriate institutional framework which fulfills a range of essential functions and fosters cooperation among all of the interested parties. As discussed above, local communities with a history of wildlife utilization have traditional systems for management and control of access to wildlife, including an authority structure to enforce them. Building upon these traditional systems is often the best way to develop successful local institutions to meet modern needs. Furthermore, any program which ignores or tries to contravene traditional customs, authorities and attitudes is most likely to fail.

In situations where the principle threat to wildlife or its habitat comes from outside the community, whether in the form of heavily armed poachers or immigrant settlers, supporting and strengthening local authorities may not be sufficient because the
outsiders are not likely to respect them. However, additional control provided by the government or project entity should complement rather than displace the traditional systems.

In the modern era of wildlife management, local level institutions are needed to fulfill the following functions:

1) **Technical Wildlife Management**, such as monitoring environmental conditions and wildlife populations, determining sustainable offtake levels and setting quotas. The technical manager or management team or committee sets the rules for sustainable use of the resource. This is a highly skilled task which is likely to require external expertise, particularly in the beginning, but there must be local involvement both for building local capacity and in order that the local community can understand and influence management decisions.

2) **Regulation**. The regulatory/enforcement arm should represent some form of cohesive authority structure and should provide a bridge between traditional and modern authorities, both of which have an important role to play.

3) **Generation, Intake and Administration of Financial and Other Resources**. This includes both mobilizing donor and national resources (a task for which expatriates often have an advantage over nationals who tend to lack the helpful connections) and, in time, taking in revenue generated by wildlife-related activities. External donors generally have strict requirements for accountability for funds and may to some extent specify the type of administrative structure they will accept for this role. Clients and customers also need a credible, accessible and legally accountable entity with which to do business.

4) **Allocation of Responsibilities and Benefits within the Community**. This may include allocation of revenues accruing from fees or sales, allocation of hunting privileges or of jobs created by the project, etc. Again, accountability is the key, although in this case accountability to the community at large rather than to external donors.

5) **Promoting Development of Local Enterprises** to capture the maximum value added locally. Common examples include organizing tourism or hunting safaris, providing accommodations, preparing hunting trophies, and production of curios and souvenirs. Promotion may be in the form of training, technical assistance, credit, marketing, development of infrastructure, etc.

6) **Determination of Policy**, both at the beginning of a project and to make changes as the project progresses. Policy-making bodies should include participation from all levels, including national and local government and traditional community authority (if this is different than local government), as well as by any external donors involved.

7) **Representation to the Higher Levels of Administration** there must be an effective and well understood mechanism for each level to provide input to the decisions of the next level, for example for individuals to air their concerns before village authorities, villages to interact with district authorities and districts to the national government. Donors normally want to see direct participation of individual citizens at the base of this process, generally involving some form of election of representatives from among their body. However, this may not always be feasible or practical, particularly in communities where, for example, it is customary for a chief or a group of elders to make decisions on behalf of the community. It is important to recognize that in such cases the initial selection of the elder or group of elders often involves individual citizen participation with built-in checks and balances. Where the system is not corrupted it may thus be a more dependable way of ensuring representation of the interests of all sectors than trying to impose an
artificial "democratic" decision-making institution.

Local institutions to fulfill these functions must exist or be developed if the system is not to collapse as soon as external management and resources are withdrawn at the end of the project. Most projects tend to start with primarily expatriate staff in key positions, and replacing some or all of these with nationals hired by the project or the government is generally a positive next step. However, this should not be confused with the ultimate objective of truly involving local people and institutions. It is also important to balance the need for the institutional capacity to fulfill these critical functions with the need to avoid developing an inflated bureaucracy which represents too great a drain on project revenues. Again, relying to the greatest extent possible on existing institutions, by providing additional training, resources and authority to take on these tasks, can help to minimize this problem.

In allocating decision-making power and benefits to local communities it is important to determine which level of local administration best combines representation of the interests of affected communities with administrative capability and authority over a suitable area (e.g. an area large enough to support viable and exploitable wildlife populations). The appropriate administrative level will depend, among other things, on the degree of homogeneity of the community and on the manner in which those administrators are selected. The case studies from Kenya and Zimbabwe illustrate the problems which can arise when District Councils designated to negotiate agreements and administer revenues on behalf of the community are not truly representative of the groups who actually occupy wildlife areas. If a local institution is identified which is truly representative of the affected community and commands its collective respect, it is best to leave decisions on distribution of benefits among community members to that institution.

As national governments are often reluctant to devolve authority for wildlife management to local levels, and local institutions are often not prepared to undertake many of the critical functions in the beginning, projects may be designed to promote a gradual transfer of authority and responsibility from national toward local levels.

Examples from the Case Studies

One of the most valuable aspects of the case studies is the opportunity to compare different approaches taken to issues of local institutions. All of the cases were selected on the basis that they emphasized involvement of local communities in wildlife management. Consequently, institutions representing local communities play some role in all of the projects. However, some of the projects have placed particular emphasis on building effective local institutions and have explored different types of institutional structures, while others have paid relatively little attention to this aspect. For example, the case study of the Air-Tenere project in Niger identified the failure to develop local institutions as an important shortcoming of the project.

A brief overview of some of the other programs is useful:

1. Zimbabwe: Local institutions are a key element in the CAMPFIRE Program in Zimbabwe, as a community must demonstrate that it has organized itself to fulfill the critical management functions before it will be granted "appropriate authority" status by the Ministry. The case study of the Dande Communal Area in the Guruve District describes the institutional structure which has been developed, consisting of Wildlife Management Committees incorporated as subcommittees into the existing Village Development Committees (VIDCOs) and Ward Development Committees (WADCOs). This has had the benefit of providing legal standing for the Wildlife Management Committees while at the same time strengthening and elevating the position of the VIDCOs and WADCOs by giving them access to substantial funds (i.e. the wildlife revenues) for the first time.

Different communities take different approaches to carrying out the various institutional roles. For example, in the Omay Communal Land and the northern part of the Dande Communal Land, commercial hunting rights are leased to an external safari operator. In another part of
the Dande area the District Wildlife Committee has hired a project manager/professional hunter and is mounting its own safari operations in the communal area.

The example of the Dande Communal Land also serves to illustrate the importance of identifying the appropriate administrative level to represent the "local community." The Guruve District is quite heterogeneous: in the south there are relatively dense human populations, low wildlife populations and fairly high agricultural potential. By contrast, the northern section is characterized by lower human populations, poor soils, heavy tsetse infestations and more abundant wildlife. Serious disputes arose when the District Council claimed that, as the de facto "appropriate authority," it alone was responsible for management of wildlife resources throughout the District and for deciding on distribution of benefits. Representatives from the northern sub-region which is the Dande Communal Area disagreed, claiming that as they are unable to maintain cattle due to tsetse in the area, wildlife represents their only asset. Furthermore, they held that it is their communities which suffer most from wildlife depredations and that, in the past, wildlife revenues had been used primarily for the benefit of non-wildlife areas within the district.

To settle the dispute DNPWLM ruled that the District Council should administer wildlife resources through the District Wildlife Committee, which is made up of representatives of Wards which have opted to establish communal wildlife areas, and that households in the Dande Communal area should receive maximum benefits in proportion to the amount earned from wildlife activities in each ward. However, the finances remain in the hands of the District Council and it remains to be seen how effectively this resolution will be carried out.

2. Zambia: The Administrative Design for Game Management Areas (ADMADE) program is relatively narrow in scope (focused only on distribution and use of wildlife revenues). It is basically run by the Department of National Parks and Wildlife Service although local Wildlife Management Authorities are established to participate in making decisions, together with village chiefs and headmen, particularly regarding allocation of the communities' share of the proceeds. By contrast, the Luangwa Integrated Resource Development Project (LIRDP) is considerably more ambitious and provides a good example of careful planning of the institutional aspects from the highest national level (the President) down to the "grass-roots" level and reflects many of the points made above.

The LIRDP strives to integrate the central government (at very high levels needed to create a favorable policy environment), district governments and traditional local authorities, with the linkages and the respective roles made very explicit. It also forges a linkage between outside technical expertise and local political and traditional authorities, while allowing each to play the role to which it is best suited. While a high-level Steering Committee (headed by the President of the country) sets policies, it is the Executive Committee which has full responsibility for implementation. Most significantly, it serves as the Board for the project's revolving fund, thereby controlling the finances. The Executive Committee includes a Technical subcommittee, responsible for developing management plans for the wildlife based on technical parameters such as population sizes and sustainable offtake rates. It also has a Local Leaders' subcommittee, which represents both the current local political administration and traditional authorities. Quite significantly, these administrators and authorities have the power to control settlement patterns, which is critical to LIRDP's objective of serving as a land use planning agency.

At present, the Technical subcommittee sets the quotas for offtake of different species of wildlife, and the Local Leaders' subcommittee has the responsibility of allocating those quotas to various uses, such as safari hunting, local hunting, ceremonies and control of problem animals. The intention is that, within the Executive Committee, over time the responsibility for controlling revenues and making decisions on land and resource use should be progressively transferred to the Local Leaders' subcommittee. At the same time, from the other direction the communities are to be organized to better provide input from the grass roots level to this
subcommittee. This represents an explicit effort to build local institutions for true community participation.

While the institutional framework has thus been carefully planned, it is perhaps too early to tell how well it will function. A recent review mission was favorably impressed by the flexibility inherent in the system (particularly for allocation of wildlife quotas) and the important role of the Local Leaders' subcommittee which should help to safeguard the interests of the local community against pressures to increase project revenues by increasing quotas for safari hunting. At the same time, there is an indication that the project management bureaucracy may be growing too large and cumbersome and costly, and the autonomy of the project management is creating conflicts with the government's wildlife service.

3. Ghana: The Coastal Wetlands project represents an intermediate case in that taboos and other traditional regulations play an important role in determining the project's approach to the use of wildlife and other natural resources, and pre-existing local user groups (e.g. the Canoe Fishermen's Association) are represented on an advisory committee which has input to management decisions. However, there does not appear to be a specific program to develop local institutions or to increase the management role of local communities. This may change as the project becomes better established and resource management plans for the areas become finalized and accepted by all parties.

4. Burkina Faso: The Nazinga Ranch project actually began with six years of discussions among the project's Canadian initiators, the national government (Ministry of Environment and Tourism) and local villages. Through these discussions, village leaders and government were both persuaded that the project was in the national and local interest and ground rules were negotiated and agreed. Full authority over a designated area (the Nazinga Ranch itself) was given to a project management team, consisting of MET staff and expatriate staff representing the donor organization (AWHDA). This included the authority and responsibility to police the boundaries and to enforce the rules against hunting, fishing (in the early years) and grazing cattle on the Ranch.

Community members donated a considerable amount of free labor and also were hired for construction work and to serve on anti-poaching teams directed by the project management team. While regular discussions with villagers and village leaders continued, local people and institutions were not directly involved in the management of the project for the first few years. Later a Village Advisory Committee was created, and village representatives were given a place on the Management Committee.

Prior to 1987, the AWHDA representative served as the head of the project with a MET functionary serving as his national counterpart. In 1987/88 their positions were reversed, and the MET man became the head. After this the project was divided into two parallel components, with the AWHDA responsible for nominating the Ranch Director and the Head of Production Services (the Nazinga Ranch production operation) and the MET nominating the head of Public Relations and Protection Services (the Nazinga Ecology Center).

Thus, during the first phase of the project, all project activities were based on the ranch itself, and responsibility for all aspects of its management was shared between the expatriate and national government staff of the project with no direct role for village authorities or institutions. The proposal for a second phase of the project was to expand project activities (starting with anti-poaching control and safari hunting) beyond the boundaries of the ranch onto neighboring village territories. These activities would be managed at first by a Management Committee comprised of representatives from the ranch, the provincial branch of MET, and the villages. In the meantime, Village Hunting Committees would be organized to gradually take over responsibility for anti-poaching, designation of hunting guides, distribution of meat, and allocation of revenues for community development projects. However, as the externally-funded project has now ended, it is not clear to what extent this proposed second phase will be implemented.
F. Training and Education

Education involves the sensitization of people at all levels to the objectives and benefits of wildlife conservation and management and the importance of participation of local communities in this effort. Education of decision makers is needed so that they will establish supportive policies empowering local communities and facilitating the development of wildlife utilization enterprises. Education of the general public (urban and rural) aims to increase their awareness and appreciation of their wildlife heritage to create a national constituency. People living in or near wildlife areas must also be educated regarding the value of these resources to them and their role in depleting or maintaining them. Wildlife officials need education concerning the importance of building and maintaining cooperation with communities surrounding national parks and protected areas and the peoples' perceptions, traditions and values.

Identifying the appropriate people and institutions to carry out these educational activities is an important component in project design. These educators must themselves be educated regarding the beliefs and the particular issues and problems affecting the communities involved before they can engage in a constructive dialogue or develop suitable materials. For this reason, it is ideal to involve people or groups (e.g. church groups or other NGOs) which are either indigenous or have had a long association with the communities in question. This is, in fact, more important than technical knowledge on wildlife or conservation, which can be more easily developed through short-term training or provided by collaborating wildlife experts. Good examples include the important role of ZIMTRUST in the Zimbabwe CAMPFIRE program, Lutheran Missionaries in the Burkina Faso Nazinga Ranch, and Maasai staff in AWF "Neighbors as Partners" program in Kenya. Where wildlife management is proposed as an auxiliary activity within the context of agricultural development, agricultural extension services should be involved in the training, or a joint wildlife/agriculture extension unit established.

An effective education program must promote traditional attitudes and actions, cause changes in attitudes where needed and precipitate action. This is a difficult and challenging task which is too often overlooked as a project component or relegated to a minor activity to be handled, as time permits, by the project managers. In fact, it is an essential and specialized function requiring trained and dedicated staff. The case studies on Burkina Faso, Ghana and Rwanda give examples where specific positions or units have been set up for public relations and education, with very good results. Another program worth noting is the Wildlife Extension Project, funded by the African Fund for Endangered Wildlife, implemented in the Kajiado and Narok districts of Kenya (1984-86). The project was a follow-up to extension work begun under a Kenya Government/UNDP FAO Wildlife Management Project (1971-74) and the activities of a national level "Adult Educator" who served within the Kenyan Wildlife Department from 1979-83. The purpose of the project was to promote community education and organization in the area and to maintain contact between the wardens of Amboseli National Park and the Maasai group ranchers. The project also developed guidelines for public participation in wildlife conservation, in order to

The target groups for educational programs must be identified, the messages for each defined, and the appropriate institutions and mechanisms for reaching them identified (eg. schools, extension service, conservation clubs, media, etc.) Conservation or wildlife clubs are often overlooked as a forum but can in fact play a large role in engendering interest among school-age children and the general public (see, eg., case studies on Ghana and CAR). Wildlife authorities and managers are often overlooked in educational programs (as opposed to technical training) despite the fact that their attitude toward and interactions with the local communities are critical to the acceptance and success of a project. Another neglected target group is tourists, who may need educational materials to help them appreciate local resources and cultures. For example, tour guides in national parks will often drive vehicles off the roads in search of animals at the demand of their clients, who may not appreciate the damage this does to the habitat. (See also Niger case study.)
disseminate its wildlife extension methods (UNEP, 1988).

Training relates to developing the specialized and skilled human resources needed to implement all aspects of a program. Community-based wildlife management requires that local authorities and community members have skills in a wide variety of areas including: community relations, organization and leadership; business and financial management; economic analysis; public administration; land use planning; wildlife biology and management; poaching control; hunting; handling and processing and marketing of wildlife related products and services, etc. Skill in mobilizing external funding (eg. through writing proposals and reports or giving presentations) is also very helpful, and is in fact often one of the main contributions of expatriate project staff.

While formal training in wildlife management has been available in Africa for many years (for example at the College of African Wildlife Management in Tanzania and the Ecole pour la Formation de la Faune in Garoua, Cameroon), but the emphasis has always been on training administrators and wardens for national parks. Wildlife related training in Africa must be broadened to cover utilization as well as protection and to include socio-economics and communications skills and an appreciation of the role of local communities. A good start has been made with the addition of a new course on Man and Wildlife at the CAWM in Tanzania, which looks at many facets of man interaction with wildlife and emphasizes the importance of community participation in modern park management.

The ultimate objective of training components in community wildlife projects is to transfer authority and implementation to local hands, permitting the system to continue after external financial and human resources provided by the project are withdrawn. An important first step is often to replace expatriate managers and advisers with nationals. However, this objective may be seriously undermined by the failure of the national authorities to assign staff to a project long enough to let them learn the necessary technical or managerial skills and acquire experience. This is aggravated by the fact that field assignments, such as managing a wildlife project, are often poorly paid and regarded as a bad move in career development because advancement tends to come with assignments at headquarters. Trained personnel will therefore try to move out of a project unless they receive suitable financial incentives and are confident of a career path. On their side, donors must also be willing to make a long-term commitment, beginning with the long process of understanding and establishing an effective dialogue with local communities.

G. Summary Guidelines for Project Development

There can be no single model for design and implementation of community-oriented wildlife projects, due to the great diversity of ecological, social, economic and political conditions under which they may be initiated. However, the following guidelines may help to identify key information needed, project components and steps in implementation:

1. Defining clear objectives.

In the long term, the objective of community-oriented wildlife management is to assure the survival and welfare of local communities living in strategic wildlife areas and to guarantee the maintenance of the widest possible diversity of living organisms through sustainable interactions between people and wildlife. The immediate goal in most cases is to improve the socio-economic situation of the communities in wildlife areas, by introduction of biologically sustainable, consumptive and/or non-consumptive utilization of the wildlife resources that will at the same time guarantee perpetuation of the resource.

Costs and benefits of the project must be viewed first from the perspective of individual community members, then of the community as a whole, and finally of the country. Success and sustainability depend upon direct and visible flows of benefits to the people, and maximizing the proportion of benefits captured at individual and local community levels.

Within this framework, project development should:

(i) determine the specific objectives of the proposed project, which may emphasize the aspect of local
community welfare or the conservation of biodiversity, depending on the presence of endangered species or other priorities of the project's initiators. This will influence key elements and limits of the project, particularly regarding consumptive uses of wildlife and the degree of authority devolving to the local community regarding exploitation of wildlife or natural habitats;

(ii) determine the extent to which financial self-sufficiency is to be an objective, based on a realistic assessment of the potential revenues from all sources. Sustainable use of wildlife resources will rarely be able to provide the sole source of income for a community or support a multi-sectoral development program. It can help defray costs of maintaining protected areas (both directly through tourist revenues and indirectly by promoting cooperation among local people) and may provide greater overall returns than alternative uses of marginal lands.

(iii) determine the specific types or level of local participation proposed, i.e.: revenue sharing, paid employment or labor contributed for project activities, participation in decision making overall or for specific project components, participation in actual management of the project or the resource.

2. Defining the project area

The project site is initially selected based on wildlife populations, but the overall project area is influenced by geographic, social and political as well as ecological factors. It must be large enough to contain viable wildlife populations and the resources needed to support them, but small and cohesive enough to be manageable based on geographic, social and political boundaries. The project area should be defined through:

(i) inventories of plant and animal species and mapping the ranges of animals, including seasonal dispersal areas and migration routes;

(ii) mapping of topographical and other physical features and natural barriers that influence the movements and activities of animals and people;

(iii) sociological surveys to establish the boundaries of activities of the target community(s), particularly those relating to interactions with wildlife or other natural resources (e.g. hunting ranges, grazing areas)

Proposed project area boundaries based on ecological, geographic and social factors may transcend political boundaries. Trans-border projects introduce additional complications and problems, but many critical wildlife areas span countries, so it is becoming increasingly urgent for countries and international donors to encourage and support them.

3. Defining and understanding the target community

The following must be determined prior to detailed project development, in many cases through preliminary sociological surveys and studies:

Who will participate?

A project would ideally involve all people who are directly affected by the wildlife of the project area or have an effect on it, but it is rarely so simple. Poachers who come from a great distance cannot be considered part of the "local community." On the other hand, it may be practically or politically necessary to include all inhabitants of a social or political unit which includes a wildlife area, even those individuals who do not come into direct contact with the wildlife.

If two or more distinct communities lay claim to wildlife resources or the proposed project area, every effort should be made to develop a program agreeable to all parties through joint consultations and negotiations. If existing conflicts or hostilities prevent this, it may be necessary to develop separate but compatible programs involving the different groups or to limit project activities to the one which appears to have the most legitimate claim on historical or other grounds (e.g. policies to address the needs of indigenous peoples). This is likely
to be a politically sensitive decision as it will inevitably strengthen that group's position.

How will their participation be organized?

A target community must have sufficient cohesiveness and a recognized authority structure to make and implement group decisions. The project should work within the existing framework rather than attempting to impose a new structure, but it may be necessary to take steps to ensure that traditionally disadvantaged minorities and women are not excluded from consultations and project benefits.

Is the project consistent with their needs and goals?

Communities will only participate and cooperate with a proposed project if it is consistent with their perceptions and aspirations. Particularly important are their perceptions of wildlife (positive economic or cultural values vs. threats to self or property); any history of conflicts with government authorities or outsiders in relation to wildlife or protected areas; and their goals for maintaining or improving their standard of living. The objective is to seek common ground between project and community objectives, such as a mutual interest in rebuilding or preserving access to wildlife populations, or developing new sources of income.

4. Determining elements of the project

For conservation elements:

(i) identify species which have disappeared or are declining, based on comparison of current populations with historical information;

(ii) determine the impact of various human activities (hunting, logging, habitat conversion, competition for water or other resources) in reducing wildlife populations and current trends in these activities. Determine also the relative impact of the target community vs. outsiders.

(iii) develop possible scenarios for sustainable wildlife use, based on the size and reproductive potential of populations of valuable species and other factors such as accessibility of the area, infrastructure, political security, etc. For projects which aim to preserve intact ecosystems, consumptive utilization (if any) must generally be restricted to surrounding buffer zone areas.

(iv) identify practical requirements for successful implementation of proposed wildlife utilization scenarios, including infrastructure, market research and development, credit, etc. Note that protection from, or compensation for, wildlife damage to crops and livestock

For development elements:

(i) determine the economic base of the community, particularly the contribution of wildlife itself and of activities which depend on resources for which people compete with wildlife. Accurate information on informal or illegal hunting will be difficult to obtain but is critical;

(ii) identify land use practices (e.g. slash-and-burn cultivation) which lead to progressive encroachment on wildland areas;

(iii) identify potential development projects, technologies and practices which could provide income from sustainable wildlife use or stabilize land and resource use, and the inputs, infrastructure and other support needed to introduce them. Project interventions should assist community members, individually or collectively, to implement activities which they select.

(iv) discuss these possibilities with the community to determine the elements to be included in the project (see next section).

5. Ensuring participation and commitment by the local community(s).

(i) design and develop the project through in-depth consultation with the local communities.
The mechanism for accomplishing this will vary depending on the community's form of social organization and decision-making process, but it is important to ensure the legitimacy of any individuals or groups intended to represent the community.

Project initiators from outside the community should help identify possible scenarios, clarify options and requirements and help the community refine its goals and priorities into a concrete project proposal. It is harder and more time-consuming to stimulate people to initiate a plan than to respond to one presented to them. However, developing a detailed project proposal and then trying to "sell" it to the community is likely to result in a project which fails to address people's real needs and perceptions and raises unrealistic expectations as the project's supporters try to win community support by presenting proposals in the most favorable light. It will also likely be unsustainable due to a lack of real understanding and commitment on the part of the people.

(ii) be realistic about potential revenues and other benefits, paying particular attention to the question of benefits which would accrue to individuals vs. the community as a whole (individuals' support and cooperation with a project will often depend on realizing individual benefits).

(iii) agree upon and define clearly the proposed role and contribution of community members, national and local authorities and external donors. Externally-financed conservation projects too often fail to require a concrete contribution by governments and by community members, giving them no sense of ownership of the project.

(iv) include a strong component for public education/sensitization programs, using trained personnel, to build local support.

6. Ensuring national government support and commitment

(i) discuss with government officials national and regional goals for development of natural resources in general, and those of the proposed project area in particular. Promote awareness of the possibilities of wildlife management as an option.

(ii) examine the national policy environment relating to wildlife ownership (or control of access), revenue sharing between national and local authorities, decentralization of control over natural resources, regulation and taxation of wildlife revenues, consumptive use of wildlife and empowerment of local or traditional authorities, etc. Ensure that needed policy reforms are made prior to project implementation.

(iii) assure that national and local authorities support the objectives, immediate goals and proposed approach of the project. This will likely include provisions for sensitizing and training staff of wildlife authorities to improve interactions with local communities.

(iv) agree on the respective roles of project management staff, national- and provincial-level government officials, NGOs and community members for various stages of the project, with clear timetables or milestones for transfer of specific responsibilities and authority from one to another.

7. Establishing an institutional framework

(i) identify the institutional requirements for different stages (initiation, establishment and implementation of the project, continuation after end of project) and agree on an overall framework which assigns responsibilities and ensures regular and continued two-way communication among the government, project staff and the community;
(ii) build upon existing local institutions to the extent possible, strengthening or modifying them as needed to meet fulfill additional functions;

(iii) emphasize training components to build local skills in areas needed for long-term sustainability.

8. Providing financial and technical support

(i) Seek co-financiers and collaborators.

Most community wildlife projects will need a substantial input of grant funding, specialized technical assistance and the participation of interlocutors familiar with and accepted by the local community(s). As the World Bank is generally in a poor position to provide these, co-financing should be sought from bilateral donors and conservation organizations, and technical and logistical support should be sought from conservation and development NGOs and other institutions specializing in ecology and sociology/anthropology. A first step should be to discuss the proposed project with donors and any local and international NGOs implementing similar or related activities in the area.

(ii) Establish at an early stage a discrete, flexible fund to support small-scale activities and initiatives. A local body should be designated to administer this fund in cooperation with project management staff. This might be established as a revolving fund in principle, but in many cases there will be a long delay before there is any payback into the fund.

(iii) Design the project with a phase-out of technical and financial support and a gradual transition to national or local management, rather than an abrupt termination and "handing over."

(iv) Establish a realistic time-frame and implementation schedule for project preparation, initiation and establishment, including sufficient time to carry out the ecological and social surveys and community-level consultations. Recognize that expenses are likely to be highest early in the project whereas revenues may be delayed (e.g. if wildlife populations or infrastructure must be built up).

9. Providing for mid-term and end-of-project evaluation

(i) Develop evaluation criteria for attainment of the specific goals of the project, such as improving community welfare, maintenance or restoration of wildlife populations, preservation of protected areas, generation of revenues, financial viability, development of specific enterprises, implementation of training and education programs, etc.;

(ii) Include mechanisms to collect statistically relevant data for this evaluation, and training to collect and analyze these data;

(iii) Establish a mechanism for on-going evaluation of performance on these criteria, to allow for mid-term corrections and modifications.
PART 3
Case Studies
I. Projects Centered on Protected Areas

MADAGASCAR:
Beza Mahafaly and Andohahela
by Sheila O'Conner */

Introduction

Madagascar is one of the seven major world centers of biodiversity, and has been called the number one conservation priority in the world. Its diversity of climates, soils and geographical features provides a variety of ecosystems from deserts to high-montane rain forests. Its early separation from other large land masses (ca. 140 million years ago) allowed an evolution of fauna and flora unlike that found anywhere else in the world.

Man first arrived in Madagascar about 1500–2000 years ago. The history of human settlement is poorly known, but it is believed that an initial wave from southeastern Asia was followed by a separate African settlement later. The social and cultural traditions of the descendants of these groups are very different, a fact which is reflected in their relation with and use of wildlife and other forest products. Prior to their extinction the island's fauna included large birds (such as the Elephant Bird, Aepyornis) and large lemurs. However, the island's wildlife are small (mostly less than 20 kg) and hard to locate, being primarily forest dwellers and often at fairly low densities. As a result the contribution of wild meat to local populations and economies is limited. Furthermore, the settlers who populated Madagascar were agriculturists and herders, not hunters and many species were specifically protected by taboos. Thus, the major human impact on wildlife has been through clearing of forests for agriculture, through a tradition of slash-and-burn cultivation locally called Tavy. An additional important impact in the south and west has been the expansion of cattle (currently over 10 million head on the island, possibly exceeding the human population) accompanied by widespread burning to create and renew pastures. Prior to the arrival of man the island was largely forested. Now, 80% is grassland and one third of the island is burned every year.

Wildlife offers little economic opportunity in Madagascar compared to other African and Asian countries. Exploitation of animals and forest plants is on a small scale and generally for home market. Species which do have a commercial value, such crocodiles, land tortoises, sea turtles and boid snakes) are protected due to their rarity (reducing, though by no means eliminating, commercial traffic). Wildlife tourism has considerable potential for expansion, due to the visibility of the island as a unique biological storehouse. At present wildlife tourism is

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largely a private affair, with tours organized by one national and a few private agencies. Entry fees for reserves and parks have only recently been introduced, with proceeds going to the central treasury. Last year there were some 28,000 visitors, and the number is growing (but by comparison, each year some 100,000 visitors come to Kenya’s Amboseli National Park alone).

Wild animals are classified as protected, game or vermin. The first category includes all lemurs and tortoises, a few bird species and the boid snakes. Game species can be hunted with licenses. Vermin, which include bats, certain birds and carnivores and wild boar, can be hunted at will. These classifications are sometimes incompatible with the Convention on International Trade in Endangered Species (CITES) which Madagascar ratified in 1973.

Legislative Framework

Madagascar’s wildlife legislation follows the 1933 London Convention and the 1968 African Convention for the Conservation of Nature and Natural Resources. It defines five categories of protected areas and covers restrictions on hunting, capture and trade in certain species. The five types of protected areas are:

Integral Nature Reserves: (set up originally in 1927 by the French colonial government) access is strictly forbidden except for scientists with permits.

Special Reserves: (set up by a series of decrees for specific purposes, such as species protection) access is allowed with permits but no exploitation and no traditional use of natural products is allowed.

National Parks: (set up during the 1950s) access is controlled although tourists are permitted to visit with authorizations. Neighboring villages have rights for exploitation of certain traditional products.

Classified Forests: (created by individual ministerial decrees) all exploitation is forbidden as they are intended as forest reserves for the future. Thus, protection is not permanent. Local people can use certain traditional products.

Reafforestation Areas and Restoration Zones: (set up by same procedure as Classified Forests) Land-use is regulated and measures introduced for stabilization and protection of watersheds and prevention of erosion.

There are also three private reserves owned by foreign residents. The Ministry of Animal Production (Livestock and Fish) and Waters and Forests (French acronym MPAEF) is charged with the responsibility for the country’s natural resources. Within MPAEF the Service for Protection of Nature has specific authority over soil conservation, forest domains and protection of flora, fauna and the environment. These responsibilities are executed from national, provincial (province), regional (circumscription) and local (cantonnement and triage) levels.

Initiation of the Beza Mahafaly and Andchahela Projects

The Beza Mahafaly project originated in 1977, following the establishment of a collaboration between the University of Antananarivo School of Agronomy and Yale and Washington Universities in the U.S. The objectives of this collaboration were to find an area in south-western Madagascar where a nature reserve could be set up for the direct protection of a small area of riverine and spiny bush forest and to provide a setting for university courses and research. The forest at Beza was selected because it was well preserved, thanks to the fact that it was considered sacred by the local communities which had been protecting it from the charcoalings which had destroyed most of the surrounding forest. Because local communities have the right to vote on these issues, the enthusiastic support of the population was an important factor. Other factors which favored the selection of Beza included the presence of a water source for the proposed research/training center, the interest of the WWF in supporting protection of the area, and the fact that the originator of the project and the chief guard of the reserve were blood brothers. The Beza project site is very small (600 ha), which has attracted criticism that it is not
replicable. On the other hand, the survival and success of the project to date is due in part to low costs over its first 10 years.

Andohahela, a large and already established government Reserve in southeastern Madagascar was incorporated into WWF's Program of Conservation in southern Madagascar in 1985, as an expansion of the Beza project. Andohahela is the third largest protected area in the country and includes rainforest, transitional forest and spiny bush forest ecosystems. It had received national and international attention during an International Conference on Conservation, Development and Biodiversity (held in Madagascar in 1985) as the island's richest center of biodiversity.

Although supposedly following the Beza "model," the Andohahela project was forced to take a different tack for several reasons: (1) the Reserve is 110 times larger than Beza, so that (2) the number of people affected as similarly greater, (3) it was established (in 1939) without the agreement of the local communities, and (4) the responsible government organization was MPAEF rather than the University of Antananarivo. Nevertheless, the project has been developed along the Beza theme, i.e. local community participation in buffer zones around the Reserve.

Beza Mahafaly

Physical and Cultural Setting

Beza Mahafaly is a riverine forest and spiny bush forest zone. One permanent river and one seasonal one supply the eight hamlets which cluster near the forest with water. The hamlets are part of a political unit called a firaisana whose head is elected by the presidents of the major villages (fokontany presidents) who are in turn elected by their villagers (the smallest hamlets are not represented at the firaisana). These three levels: villagers, fokontany presidents and the firaisana president decide on local policies including the setting up of a reserve and the acceptability of project activities. While all of the villages in the valley of the Beza Mahafaly Reserve are meant to benefit from the project, the one closest to the research/training base camp sometimes been favored in practice simply due to its proximity.

The Mahafaly people who live in this region have strong cultural taboos against killing many species of wildlife. Although the taboos have become less strict recently because of outside influences, these species are still not hunted by the local people. The Beza Mahafaly forest was traditionally used as a source of browse for livestock, fruits and medicinal plants, wood for fuel and construction and as a reservoir of wild boar. The principle causes for forest destruction in this area now are expansion of settled agriculture and increased collection of firewood.

Project Objectives

The project was initiated in 1977 with one over-riding objective and three specific goals. The objective, as stated by the former Director (M. Ravelojoana Gilbert of the School of Agronomy, University of Antananarivo), was: "to put into action 'dynamic conservation,'[that is]...to establish sustained relations and mutual exchange between those who would like to conserve and those who risked everything because of these activities." The three goals were: (1) creation of a nature reserve both as a practical conservation measure and as a field station for conservation-related research and training; (2) creation of a field training program for Malagasy students of conservation biology; and (3) training outside Madagascar of technical staff from the Forestry Department in the School of Agronomy, University of Antananarivo.

By 1985, goals (1) and (2) had been achieved and goal (3) partly achieved. A new five-year program was drawn up with new goals: (1) to maintain and expand the Beza Mahafaly Reserve and to work with the Nature Protection Service (SPN) and MPAEF to strengthen the Integral Nature Reserve of Andohahela (see below); (2) to provide further support for training and education in Madagascar and abroad for staff and students of Malagasy institutions involved in the project; (3) to continue the biological inventory and conservation and development related studies at Beza Mahafaly and to initiate similar efforts in Andohahela; and (4) to identify and
implements small-scale development activities in buffer zones around the two target reserves. The micro-development component aimed to relieve the pressure on resources within the reserves by providing alternatives outside, and to make the idea and practice of conservation more acceptable to local people through the provision of compensatory benefits.

Funding for the second phase was made available in 1987 from USAID.

Project Elements

The project has four major components: conservation, conservation-related development, training and education, and research.

The conservation component includes elements for direct protection of the forest. Guards were hired to survey the boundaries and the interior of the reserve. The reserve consists of two non-contiguous parcels; eventually the hope is to increase the reserve by including the land to connect the two. The smaller of the parcels (100 ha) is completely surrounded by barbed wire, which keeps out livestock. Both areas have perimeter swaths cut to mark the boundaries and descriptive (not threatening) signs were erected along these swaths. A live fence of *Opuntia* cactus has been planted along the main road which forms a boundary of the larger parcel. Paths have also been cut to facilitate surveillance and research.

Neither barbed wire nor armed guards will protect the reserve if the local people are driven by hardship to use that land. Therefore, the project includes development activities which aim to alleviate some of the difficulties of daily life. Micro-development projects which have received assistance from the project so far include:

- construction of a school
- rehabilitation of a 10 km irrigation canal
- partial rehabilitation of the principal road
- establishment of market gardens
- distribution of farming tools and seeds.

Agronomic assistance has been provided for the last two dry seasons and will continue for the life of the project. Future micro-development activities planned include:

- construction of four wells
- development of an agro-forestry program
- continued rehabilitation of the principal road
- start-up of tree nurseries
- employment of agricultural extension agents
- review of the regional "barefoot nurse" program
- study of the demands of cattle on the environment.

Implementation of the project has also provided local employment opportunities. In the past it has offered permanent employment for nine local people and temporary employment for 10. This practice will continue in the future.

Under the training and education component, the project runs two to four field courses every year for university students and for MPAEF personnel. Three students have received advanced degree training abroad: one in the U.S. studying forestry and plant ecology, one in France studying lemur biology, and one (the Chief of the Andohahela Reserve) at the Wildlife School in Garoua, Cameroon. The project has also supported final year theses of six students. These activities will continue and grow. The project also implemented local public awareness campaigns, using posters and organizing general discussions on market days. The nearby school also provides a forum for environmental education for students who visit the reserve for family days.

Research and biological inventories began in 1984, and a series of Malagasy and foreign investigators have taken advantage of the study site.

Project Implementation Structure

The Beza Mahafaly project is a collaborative effort run under the auspices of an inter-university agreement between the University of Antananarivo, Yale
University and Washington University. It receives funding from WWF and USAID. The reserve itself is the property of the Malagasy government and under the jurisdiction of the SPN within MPAEF. To facilitate the efficient running of the project a Steering Committee will be set up this year which will include the Director of the School of Agronomy and the Head of the Department of Water and Forests, both from the University of Antananarivo, a representative of one of the collaborating American Universities, a WWF representative and a SPN/MPAEF representative.

Overall project management is handled by a Malagasy project leader hired by the University of Antananarivo and WWF. A WWF expatriate technical advisor also provides input during site visits every two months. Two locally hired people are responsible for the running of the camp and for the protection of the reserve. An expatriate agronomist is on site for six months of the year, and other consultants, both national and foreign, are brought in to do evaluations. Some sub-projects, such as the building of the school are done by private contracts arranged by the project itself. Others are done through other Ministries, such as the rehabilitation of the canal which was carried out by private contract overseen by the Ministry of Agrarian Reform and Agriculture.

Extent of Local Participation

The people living adjacent to the Beza Mahafaly forest themselves proposed the area as a candidate to the university team seeking a conservation research site. Thus, this is one of the very few protected areas in Africa which was initiated in large part by local community.

Local participation in project activities has continued in various ways. All micro-development activities are selected based on demand by local people, who ask the project to help with certain specific needs such as irrigation. The plan is also for a cooperative of individual users to manage the water flow and distribution from the rehabilitated irrigation canal. However, they have generally not provided the actual labor to carry out these projects (in contrast, for example, to the Nazinga Ranch in Burkina Faso). Because local communities place much greater trust in members of their own group than in outsiders (even other Malagasy), only local people were hired as forest guards, camp leader, head forestry agent and the teacher for the school built under the project. The same will be true for extension agents, who will be recruited locally and sent to a training school, and, it is hoped, for the future Project Leader. Villagers also participate willingly in the research activities concerning use of medicinal plants and other forest products, and agronomic experiments for new crops and market gardens were based on local volunteers using their own fields.

Communication between the presidents of the firaisana and fokontany and project participants is stressed—they exchange information on project plans and progress on activities. Local participation is also solicited through market campaigns and through invitations to visit the reserve and share in the public awareness programs the project puts together.

Benefits and Costs to the Local Community

The rehabilitation of the irrigation canal will provide enough water to irrigate about 600 ha (recent estimates suggest somewhat less). The increased rice production for consumption and sale will directly benefit the local communities. However, the canal will not reach all parts of the project's area of influence.

The school built in Analafaly meets the educational needs of all eight communities in the vicinity. Wells will be dug to give better access for villagers who now have to walk long distances to water. Agronomic activities have concentrated in one village which is serving as an experimental pilot area. The volunteer participants have benefited directly from the sale of their produce, and the technological advances should benefit a much wider range of people. Some people are also supplementing their diets with the new vegetable crops introduced under the project's market gardens component.

The major cost to the local communities is limitation of access to
resources within the reserve; entry to the Special Reserve of Beza Mahafaly is technically forbidden, as is use of any of its resources.

Results of the Project to Date

Beza Mahafaly became the 23rd Special Government Reserve in Madagascar. Although it is small, the riverine forest parcel is completely protected and the larger parcel partially protected, and there appears to be an increase in numbers of two lemur species within the boundaries of the reserve. A solid infrastructure was established for training and research in the reserve and many Malagasy university students and forestry agents have received training there. However, further expansion of the training and education component is needed, and training sessions for forestry guards and other MPAEF personnel should become a regular part of the project program. At present, the field courses and training programs are too often subject to cancellation or changes because of the difficulty in scheduling availability of government employees.

The permanent and temporary employees have gained increased family income, and farming implements and seeds were provided for families in two villages. The market gardens have produced crops for several families, which they sold in the market and to project personnel. With repairs completed in the worst sections of the main road, access to the major regional market has improved. Sixty pupils attend the new school. A study of the agronomic situation and soil conditions in the Beza Mahafaly valley and an evaluation of the effect of the renovated irrigation canal were finished.

However, while the development aspects of the project are now coming to fruition, they took too long and local people became discouraged in the process. Timing problems have also created an imbalance between conservation elements and rural development activities. Promises were made at the beginning (12 years ago) without the necessary feasibility studies. This turned out to be an error in that unavoidable delays and alterations eroded the peoples' confidence. For example, the rehabilitation of the canal is now near completion, but the information about just whom it would benefit was too vague and some villagers now feel upset because it will not reach them. This was a failure in building public information and awareness. However, as the micro-development activities take shape local support for the project is regaining its former strength and has become a major point for discussion in local elections with proponents outnumbering opponents.

Overall one may conclude that the Beza Mahafaly project has been a success: its stated goals have been met and local enthusiasm for the project remains high. The goals were admittedly modest, but the fact that the project is Malagasy in origin and execution is in itself an important success. The future prospects are also positive: micro-development projects will continue to some degree, the protection of the reserve will remain a priority and the training and education program will expand to capture a wider net of Malagasy students and teachers.

Andohahela

Physical and Cultural Setting

The setting of Andohahela is more complex than Beza Mahafaly, due to the much larger area and number of people involved. The basic community and political structure is the same as in Beza. However, two groups -- the Tandroy and the Tanosy -- are affected by the reserve boundaries and project activities. These groups are sectarian and have diverse, if not opposing views and practices vis a vis natural resource use. The Tandroy are mainly pastoralists who have more recently taken up settled agriculture in addition to their cattle culture. They, like the Mahafaly further west, have strong taboos against killing many species of wildlife; however, these are breaking down more rapidly due to their proximity of the Anosy region which provides a ready market for wildlife products. For example, killing tortoises is taboo for the Tandroy, but they are considered a delicacy by the Tanosy. The Tandroy have adapted to circumstances and now often sell live tortoises to the Tanosy despite knowing that they will be killed for food. The radiated tortoise, an
endangered species theoretically protected by law, suffers considerably from this trade.

The Tanosy are agriculturalists, with rice as the principal crop. They have few cultural attitudes which protect wildlife. Traditionally the forest provided food in the form of plants and animals as well as wood for fuel and construction. These traditions continue throughout Anosy, even though increasingly people are now employed in major towns.

Project Objectives

The Andohahela project represents an expansion of the Beza Mahafaly project, and was initiated in 1987 with similar but more ambitious goals:

1) to protect the biodiversity of the region by ensuring an efficient and sustainable conservation and management of the Andohahela Reserve and the adjacent Classified Forests of Taviala and Tsitongambarika

2) to establish or strengthen land use practices in buffer zones around the reserve to alleviate pressure on the natural resources held in the protected areas

3) to develop touristic and educational opportunities in the forested areas

4) to heighten local public awareness of the importance of the environment and the need for serious management of natural resources

5) to provide the means for training, education and research of Malagasy technicians and scholars.

Project Components

Like Beza Mahafaly, the Andohahela project activities comprise conservation, development, environmental education and public awareness, and research. As the project is at a very early stage, conservation studies and conservation management are being carried out simultaneously. The studies include surveys of forest cover, socio-economic investigations of the region, analyses of land zoning, tenure and availability, and biological inventories. Management of the protected area includes recruitment, training, equipping and other support of forest guards. The infrastructure for administration of the reserve has also been improved to meet its responsibilities for boundary marking, trail cutting, fire patrols and the creation of a larger protected area complex.

Development activities are multifaceted, including agriculture, forestry and tourism. Development activities completed so far include:

- construction or repair of 10 small irrigation canals or other water diversions
- permanent employment of 6 local people
- establishment of 4 market gardens
- distribution of tools and seeds
- study of land tenure issues.

Proposed activities for the future include:

- establishment of 9 village tree nurseries
- training and equipping 4 agricultural extension agents to be based in the villages
- expanding guard staff to 10 and employing some 30 temporary workers
- creation of village-operated fire patrols
- establishment of a locally-operated information center
- tourism development
- development of agroforestry programs
- development of a community-based public awareness campaign
- establishment of 4 more market gardens
- continued distribution of tools and seeds.

The most successful activity thus far is the construction and/or repair of small irrigation systems. The national reforestation program will expand its activities into the region of the reserve and the project is providing expertise and financial support. Village tree nurseries and agroforestry programs will be set up according to the needs and requests of
individuals. A community-based plantation is also envisaged to provide fuel and construction materials for Tolagnaro and Ambovombe (major towns nearby). Tourism development is a program for the immediate future. By law, Integral Reserves such as Andohahela cannot have visitors other than scientists carrying out specific research. Therefore, a proposal is under review to make room for tourism development by expanding the protected areas into a complex including the adjacent Classified Forests.

Environmental education and public awareness activities go hand in hand with other project components. WWF, in collaboration with the national media service, has begun radio broadcasts on environmental issues. Books dealing with these issues are being provided to schools near the reserve. Training seminars for teachers in these locations have already been conducted. In addition, poster sessions and audio-visual displays will be incorporated into school and community activities. An information center will be developed and run by local people for the benefit of both Malagasy and foreign visitors.

The project's research program will contribute to conservation management of the protected areas. The project will provide logistical and financial support to Malagasy nationals interested in the region and the project.

**Implementation Structure**

The Andohahela project is a collaborative effort between the government's SPN/MPAEF and WWF. An Orientation Committee, whose membership includes representatives of MPAEF, WWF and USAID with an observer representing the inter-university agreement, makes decisions on project policy and the distribution of incoming funds. On-site administration, coordination and execution of project activities is the responsibility of the Malagasy project leader, the expatriate technical advisor, project forester and educational officer. SPN/MPAEF staff, which include the head of the reserve, the sector chiefs and canton and circonscription leaders, are recruited and hired through the Ministry.

Under each broad category of project activities, participating organizations have different responsibilities according to their expertise. WWF and MPAEF will be involved in tourism development, possibly in collaboration with the Ministry of Tourism and private tour operators. Under the development component, training and supervision of the extension agents will be done by the agricultural development branch of the Lutheran church (SAFAFI). The Ministry of Secondary and Basic Education is involved in the environmental education and public awareness campaigns. Local cooperatives may be responsible for tree plantations in some areas. Micro-development activities in the villages are usually awarded to co-operating families directly, but in some cases the head of the village takes complete authority.

**Extent of Local Participation**

Real local participation will be more difficult to achieve in the Andohahela than at Beza Mahafaly, if only because of the number of people involved. If the nearest major towns are considered this may potentially mean tens of thousands of people. For the moment, however, development activities (as opposed to education and public awareness campaigns) are restricted to villages which are on the borders of the reserve and thus within a vital buffer zone. Nine pilot villages were selected to participate based on their enthusiasm and willingness to cooperate.

Development activities are tailor-designed to meet the needs of each village, within the limitations of the areas of expertise which the project possesses, i.e. forestry and agriculture. These needs were determined by site visits and discussions with the people.

As in Beza Mahafaly, local recruitment is a high priority: all forest guards are locally recruited to facilitate positive relations with other villagers, and the same will be true of extension agents (to be trained for the purpose) and, hopefully, the future Project Leader.
Benefits and Costs to the Community

Both benefits and costs are similar to Beza Mahafaly. Mini-irrigation projects to increase rice production are built upon the request of the fokonolona, the villagers or their council, or of individuals. There are already hundreds of applicants, and not all can be accommodated: proposals are reviewed and selected by a committee based on feasibility and the number of beneficiaries. Market gardens and tree nurseries are provided on a volunteer basis. Participating families become direct owners of their crops or trees, so these are most often planted on their own land. The proposed larger plantation scheme would be run by a village cooperative, with earnings to be split by participating families. Benefits from tourism or research currently are in the form of wages earned by individuals hired as guards, guides and porters. These benefits should increase and broaden as further tourism development provides increased opportunities in the service industry and markets for produce, handicrafts, lodging, etc.

As in Beza Mahafaly, loss of access to reserve resources is one cost of the project. However, at Andohahela there is the additional cost that the buffer zone management plan will restrict burning which has traditionally been used to increase the grazing lands for cattle. In fact, some of the existing grassland areas will be reforested to counter erosion.

Results of Projects to Date

Certain "hot spots" in the Andohahela reserve which were frequent sites of burning and poaching are now better protected through the efforts of guards hired under the project. Live fencing has been built around one parcel of the reserve and has virtually stopped illegal collecting of an endangered palm in that area. A program to eradicate potentially damaging introduced plant species has been initiated in another parcel. Four training programs for guards and other MPAEF personnel have been completed.

Ten small irrigation projects have been completed so far, resulting in the improvement or creation of 40 ha of rice fields benefitting 23 families who doubled their rice production. Five local people are currently permanently employed as guards, one has been hired as the project assistant and two others as temporary guards. The guards were provided with uniforms and equipment. Temporary workers are frequently hired, providing them with supplemental income. The market gardens have produced crops this year and almost all the vegetables were sold in local markets. A study of land tenure issues was completed.

The project is too young for any real analysis of its success. In the "hot spot" areas peoples' awareness of the reserve has increased and poaching is rare within the boundaries, but fire remains a serious threat to the integrity of the reserve. To protect an area of 76,020 ha efficiently would require over 30 guards. These guards would also have to be empowered to make arrests (which is not currently the case).

The irrigation schemes have high public relations value and certainly increase rice yields. There have been implementation problems because of poorly trained personnel. Decisions on which streams should be dammed must be made based on thorough studies of hydrology, stream ecology and downstream uses but this is not yet the case. Another problem is that the beneficiaries have not been sufficiently involved in actual construction of the dams, so they have not developed a feeling of ownership and responsibility. In case of damage, they turn to MPAEF to make repairs, despite the fact that based on the benefits they provide in terms of increased yields and income the dams should become self-sustaining operations.

More progress is also needed on the public education side, particularly integration with the development program to create a better understanding of the relationship between rice paddies, water systems and forested slopes. At the same time, the distribution of benefits remains an important issue, as families who do not own valley bottom land do not benefit from the irrigation dams. As a result, they continue to clear forested slopes to plant hill rice and other crops. Community cohesion is not sufficient to lead people to curtail hillside
farming based benefits accruing to their neighbors with land in the valleys.

Conclusions

Beza Mahafaly and Andohahela represent one end of a spectrum of integrated conservation/development projects. In both areas there is strong national and international interest in preserving the natural habitat and biodiversity, primarily for scientific and aesthetic reasons. Prospects for income generation from wildlife utilization are slight for Beza Mahafaly and relatively modest for Andohahela even with some degree of tourism development in the future.

Forest conservation is important to the local communities in the long term because of its role in water regulation and because of the traditional use of a variety of forest products. Indeed, in Beza Mahafaly the value that the local communities place on the forest is clear from the fact that they protected it themselves for many years and then sought help to continue that protection. However, the short needs of the people in both areas are such that they would seem to preclude long-term planning and thus virtually ensure continued conversion of the forests and over-exploitation of their resources.

As a result of these factors, both projects are based on using external resources to provide local communities with employment and other benefits in exchange for their cooperation in maintaining the reserves. The development components are aimed in part at providing local populations alternatives to exploitation of resources in the reserve. Still, however successful they are their impact will be limited by the rate of population growth and the lifestyles of some of the people which conflict directly with conservation objectives (eg. slash-and-burn farming on the hillsides, extensive grazing). Because this situation is not likely to change very much in the future continuation of protection-oriented project activities will depend to a great extent on continuation of external resources to support them. Local communities may agree to respect the reserves themselves in exchange for development benefits (at least as long as these continue to come in), but are not likely to employ guards to protect the forests and wildlife from others.

Fortunately, Madagascar is recognized as a high conservation priority and well-conceived and well-managed conservation projects based there are likely to continue to receive international and government support. The prospects for adequate external support for Andohahela are somewhat less bright than for Beza Mahafaly because it is a larger and more expensive project with more players involved. There is therefore more potential for bureaucratic problems, misunderstandings and mismanagement which could threaten the international good will and the flow of funds.

Both projects are notable for the integral role of nationals (from the University of Antananarivo and MPAEF) as opposed to expatriates. Expatriate advisors representing the external funding agencies play an important role in steering, policy mobilization and disbursement of funds, but their national counterparts appear to have had the basic responsibility for development and implementation from the beginning.

However, participation by local communities has been very limited. The local community apparently had the deciding voice in favor of establishment of the Beza Mahafaly Reserve, but the Andohahela Reserve was created by Presidential decree without local agreement. The steering committees for both projects are made up of representatives of the responsible government ministries and the universities and external funding agencies. The intention is to eventually recruit Project Leaders from within the respective communities, but this step has not yet been taken. Local involvement in the protection component is currently largely limited to local recruitment of forest guards. Local communities participate in the development component in that they propose the specific activities which they want carried out. However, the project management decides which proposals to accept, based on feasibility and the number of potential beneficiaries, and most of the actual labor is done not by the local people but by contractors hired by the project or the government.
Local hiring and soliciting proposals for micro-development projects are positive steps and undoubtedly contribute to good public relations, but are not the same as involving local or traditional authorities in project policy, direction or implementation. Unlike some of the other case studies described in this paper, the government of Madagascar has not taken steps to devolve either responsibility or revenues to the local communities or even to local government levels despite an overall national policy of decentralization of government administration. Not even the local field staff of the MPAEF have any direct responsibility or access to revenues or to funds from external donors. Both reserves belong to the central government and are controlled and administered from Ministry headquarters. Park entry fees have only recently been introduced in Madagascar and the total revenues are undoubtedly small at this point; nevertheless, what there is goes directly to the central treasury.

All in all, protection of the Reserves continues to be the responsibility of the government, which receives financial and technical assistance from outside agencies interested in conserving the area. From this perspective, the Beza Mahafaly and Andohahela Reserves do not represent good examples of "wildlife management with local participation." However, this may in fact be the most effective strategy in cases where a protected area is not likely to provide sufficient direct revenues (as opposed to long-term environmental benefits) to make the local community interested in taking on this responsibility.

The WWF, in collaboration with various other organizations, is planning several other conservation projects in Madagascar (eg. in the Northern Complex near Antsiranana and in Andringitra near Fianarantsoa) based on the same principles of: (1) rural development, (2) public awareness and education and (3) development of sound management plans based on research. Experience gained in Beza Mahafaly and Andohahela has helped to identify some issues which should be taken into account.

For example, while the small and relatively homogeneous community at Beza Mahafaly appears to be satisfied, distribution of benefits remains a problem in Andohahela. Many people cannot be reached by the dams and irrigation works which have been the main focus of the development component so far, so they have no alternative to continuing their slash-and-burn cultivation on the forested hillsides. Hopefully, other development-related activities planned for the future will benefit a wider range of people. There is also the question of functional linkages between the development benefits provided and the conservation activities. Once any given individual has his irrigation dam there would appear to be little direct incentive for him or her to continue to cooperate with conservation efforts. Furthermore, because they have contributed little of their own labor or resources to carrying out the micro-development projects, the beneficiaries appear to regard their maintenance as the responsibility of the project or the government. The likely result of this is that maintenance and repairs will not be done in a timely way, which could erode local support for the project. These problems could be alleviated or at least mitigated by involving local traditional authorities in implementation and in allocation of community benefits and responsibilities. However, this assumes that a suitably representative and effective traditional authority exists, which may not be the case for the large and culturally diverse population targeted by the Andohahela project.
NIGER

The Air-Tenere National Nature Reserve

by John Newby */

Introduction and National Setting

As in the other Sahelian nations, Niger's wildlife has suffered the full impact and combined effects of overhunting, drought and habitat loss through desertification and poor land use over the past decades. Today, viable wildlife populations are restricted to the country's few protected areas and to the land considered too marginal or hostile for human use or occupancy.

With central Niger's sahelo-sudanian zone fully occupied by herders and farmers, the distribution of remaining wildlife resources is polarized between the deep south, with its last remaining protected savannah habitats, and the desert north. It is in this latter hyperarid environment, making up fully half of Niger's surface area (1,267,000 km sq.), that the potential exists for the conservation, management and sustainable development of wildlife. Species present include the addax (Addax nasomaculatus), dama and dorcas gazelles (Gazella dama, G. dorcas) Barbary sheep (Ammotragus lervia) and ostrich (Struthio camelus). While all are under varying degrees of threat, they represent some of the few remaining viable populations of their types in sahelo-saharan Africa.

Conservation work in the arid regions of Niger dates from the mid-1970's when, prompted by alarming declines in most species, WWF, IUCN and UNEP launched a Sahel-wide investigation of the problem. The final report confirmed the worst fears and provided a list of priority species and areas for future action.

In 1979 the government of Niger invited a joint WWF/IUCN/Zoological Society of London mission to visit one of these priority areas, the Air Mountains and surrounding desert country. The mission was encouraged to find in this area a diverse fauna in a reasonable state of conservation. Between 1980-82 a great deal of information on the region's ecology was collected and submitted to the government with a view to establishing a protected area. Simultaneously, an appeal for funds was launched by WWF and IUCN. Thanks to government support and an anonymous donation, implementation of the Air-Tenere project began in earnest in 1982. Since then, with continuous support from the government, WWF and IUCN, the project has developed well beyond its original objectives of wildlife conservation, evolving into a full-fledged integrated natural resource management program with a large input into local rural development.

The Physical and Social Setting

The project area covers nearly 80,000 km sq. (equal to twice the size of Switzerland) of open desert and mountain habitats. Habitat diversity is high by desert standards because of the relief of the area. The climate is extreme, with annual temperatures ranging between 0 - 50 degrees centigrade. Rainfall is low, between 0-75 mm annually, and spatially and temporally

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highly erratic and unpredictable in occurrence.

The project area is inhabited by the Twareg, a desert-dwelling people of Berber descent. Their livelihood is based on herding (principally camels and goats), and on farming small plots of irrigated land. In earlier days the caravan trade was also practiced, but this has waned due to lack of camels, drought and competition from motorized transport.

The population of the project area is around 4,500, with the majority settled in the villages of Iferouane and Tin Telloust. By sahelian standards, the nomadic population is relatively sedentary, moving only fairly short distances between wet and dry season pastures and watering points. The sedentary nature of the local population is definitely an advantage for project development and execution, allowing as it does permanent contact with the people and facilitating making local people directly responsible for conservation, sensitization and training tasks.

Although the Twareg used to hunt for food and meat for the caravan trade, this is rarely practiced today; wildlife is too rare and inaccessible to render hunting profitable. The general attitude toward wildlife is one of benevolence, as the Twareg cite the cultural and aesthetic values of wildlife as part of their environment. Also, as might be expected of a people almost wholly reliant on renewable natural resources for their subsistence, the Twaregs' perception of environmental conditions is acute and they recognize wildlife as both an indicator and a product of a healthy environment. However, while the Twareg may be benevolent, the area's wildlife is seriously threatened by other factors such as hunting by armed forces, harassment by tourists, desertification and drought.

Project Description

Objectives

The long-term goal of the Air/Tenere project is the sustainable use of the area's natural and cultural resources: wildlife, pasture, forest products, soil, water and touristic attractions (landscape, prehistoric sites, etc.). The short- to medium-term objectives, regarded as paths toward the long-term objective, are for the moment three-fold:

1) conservation and protection of existing resources
2) rehabilitation of degraded resources
3) promotion of appropriate, sustainable land use practices.

It is hoped that soon a fourth objective, regional planning, will be added soon.

In the beginning project objectives were oriented primarily toward wildlife conservation, but they have since broadened to encompass a large array of inter-related social and environmental issues including the development of tourism, the introduction of woodless building techniques to conserve scarce trees, and training rural health workers. The broader scope of the project was recognized as logical and highly desirable, considering the intimate relationship among wildlife, its habitat and man.

Project Activities

1) Conservation and management of existing resources

In many ways, the most significant conservation activity to date has been the establishment of a protected area to coincide with the project's physical zone of intervention. This has been and will continue to be fundamental to overall project success. The Air and Tenere National Nature Reserve (77,360 km. sq.) was created by presidential decree in January, 1988. It is the largest managed nature reserve in Africa and one of the largest in the world.

The existence of the Reserve provides a physical, administrative and legislative framework for project execution. Rules and regulations have been drawn up and tailored specifically to the region's needs and potential. This specificity (and thus direct relevance) of the legislation governing the Reserve contrasts with the national law regulating natural resource use and abuse, which tends to be either too general or
inappropriate for real management purposes. The Reserve has become an object of national pride and awareness as well as a focal point for international interest.

Within the context of protected area management, activities include surveillance and policing, zoning of the area, public awareness and sensitization, wildlife research, inventories of natural resources and and archeological sites, boudnary delimitation and sign-posting. Surveillance, information gathering and sensitization are greatly assisted by a network of local representatives selected from the reserve's resident population. These representatives act as a vital link between the project and the local people. It is also a first (embryonic) step toward transfer of responsibility for management from a largely expatriate project staff to the land users themselves.

2) Habitat and natural resource rehabilitation

Drought and drought-provoked over-grazing and destructive land use have had a serious effect on the reserve's vegetation and particularly on the trees and shrubs which represent a staple dry season and drought period fodder for the nomads' herds. Rehabilitation of tens of thousands of hectares of degraded habitat would clearly be impossible, but smaller, site-specific initiatives are producing encouraging results.

The rehabilitation techniques used are both directly restorative (reseeding of grasses, tree planting and (possibly in the near future) reintroduction of wildlife) and indirect/inductive (physical protection of parcels of land from external influences, watershed management to facilitate plant colonization, etc.). For anything other than small parcels of very valuable land active restoration is both expensive and largely insignificant in comparison with local needs or the scale of the problem. Therefore, large scale rehabilitation will depend on the weather (i.e. rainfall) and on voluntary popular restraint.

3) Rural development and sustainable use of natural resources

Considering the local peoples' almost total reliance on renewable natural resources, sustainability of the local economy will depend on conservation and measured use of those resources. The project is trying to address problems arising when existing resource use practices represent a constraint to conservation objectives or are themselves constrained by lack of needed resources.

Specific activities include the diffusion of fuel-efficient wood stoves and some highly innovative work with woodless roofing techniques. Both traditional homes (grass and matting huts) and more recently adopted housing styles (wood-beamed adopbe;) consume large amounts of increasingly rare plant material. Over the past six years the project has developed woodless, domed and vaulted roofing methods that provide a range of accommodations to suit all needs and incomes. These homes are not only cheaper to build and maintain but, more importantly, can be built entirely with local materials and by locally trained masons.

In addition to housing, other appropriate rural development activities have been undertaken. These include promotion of simple well-building techniques, construction of drystone check-dams to protect gardens from flooding and solar drying of vegetables. The project is also assisting the local population by supporting the training of rural health workers, establishing adult literacy centers and improving pastoral wells.

Another important area of activity is tourism development. Tourism is recognized as having considerable economic potential, both locally and nationally. The Air and Tenere already attract thousands of visitors but, as in many isolated, exotic places the local people are the last to benefit from this influx. The project is trying to remedy this through creation of a local tourist cooperative, construction of a tourist information center and encouragement of local artisanal skills. Over the years, there has unfortunately been considerable abusive practice on the part of tourists and tour operators, particularly harassment of wildlife and pillaging of prehistoric sites. The project is therefore developing ties with the tourist trade and tourists in an effort to curb abuse and to better inform people of the area's importance and unique resources.
Project Implementation Structure

The Air-Tenere project is administered by the Direction of Wildlife, Fishing and Pisciculture within the Ministry of Agriculture and Environment. A Nigerien forester is responsible for on-site direction of the project, managing a staff of over 30 people including: 3 foresters, 3 nurserymen, 4 extension workers, 2 site foremen and 8 garage staff and drivers. On-site technical advice is provided by five resident expatriates: a conservation advisor, a rural development advisor, two biologists from the U.S. Peace Corps and a head mechanic who is a German volunteer. The IUCN/WWF Representative to Niger provides overall technical supervision and backstopping and ensures liaison between the project, national administration, IUCN/WWF and other project donors (Swiss government, Band Aid). In the project area, local government and technical services are involved in project planning and execution of some activities relating to health, literacy, agriculture, etc.

Intended Benefits and Foreseen Costs

The project aims to produce benefits which accrue as directly as possible to the local population. In the short term this relates more to the rural development activities than to those in wildlife conservation and habitat rehabilitation. In the medium term the project anticipates benefits in the form of economic opportunities offered by development of tourism based in large part on wildlife. Sport hunting may eventually be feasible for some species (such as Barbary sheep) if populations increase sufficiently through habitat improvement and protection. Culling for meat is not viewed as a realistic proposition.

All rural development activities have a large training component, which builds local skills in construction, metal-work, well-building, watershed management, etc. These skills are directly applicable and, in the case of woodless roofing techniques, have already provided trainees opportunities for employment and increased income. Training of health workers and midwives is also a great boon to the isolated, rural population. The project has injected considerable amounts of money into the local economy, in the form of salaries, rent, purchase of materials, etc. This "development business" can be very important for a small community which has benefited relatively little from external interest in the past. It provides financial benefits, but at the same time risks drawing local interest away from what are supposed to be the true goals of a project toward individual economic gain.

The legislation governing the Air and Tenere National Nature Reserve largely follows general national law, although it is adapted in a site-specific way. For the most part, creation of the Reserve has brought little change or restriction to the local peoples' way of life. Although a significant area is now zoned as a strict nature reserve which precludes community access, the area was previously rarely used and current management practices are being developed flexibly. Restrictions on the use and cutting of certain trees have been reinforced, affecting to a certain extent the local artisans who produce household objects such as mortars for pounding grain. In this case, compensatory action is being taken through importing mortars, with the aim of establishing a commercial network among the artisans to preserve their livelihood.

Local Participation

The level of local participation in the project is mixed: in some sectors it is high and in others totally lacking. This is due in part to the nature of activities and the project area, but also in part to a lack of initiative both on the part of the project team and the local community to develop closer working relations.

Given the immensity of the project zone and the paucity and uneven distribution of the population, it is in fact often difficult to find people to work with. This is particularly true for wildlife management work such as surveillance, monitoring and inventory.

Although Niger is trying to develop a popular and democratic grassroots development process, this is far from operative for the moment, particularly in the marginal lands where the isolation of the people results in lack of political awareness.
or experience. In these regions decisions are mostly made and implemented by the local government technicians and administrators and then "rubber stamped" by the various regional and local popular representative bodies. The intention is to involve local people in the design of projects which affect them, and project proposals are passed to them. In fact, however, while local communities may identify the problems which concern them (and which may or may not match the objectives of various projects or donors) true participation is often only developed after a project has already been accepted and is under implementation.

This has been the case for the Air-Tenere project, in spite of the fact that those involved are well aware that long-term success will ultimately depend on genuine public support. The project approach has been "pragmatic," both to facilitate getting it off the ground and also as a result of a lack of conviction concerning the capacity and efficacy of the local democratic process. The dilemma may be interpreted as a question of whether one is primarily interested in the process of development or in the product of a particular project's intervention. The urgency of the region's conservation problems dictates against the lengthy process of developing local support and participatory capacity, however important this may be for long-term success.

The project is further confounded by practical problems associated with land tenure and common property management. In highly marginal arid lands such as the Air-Tenere project area, it is far from certain that actual ownership of resources such as wildlife, pasture or water is either feasible or desirable. The nomadic lifestyle in which groups occupy any given area only on a transitory basis may well be the most rational. However, traditional systems governing rights to land and resources have been undermined by political, social and climatic changes over the past century, leaving a vacuum. Until outstanding issues concerning ownership or proprietorship of these resources can be resolved, the concept of transferring responsibility for their management remains extremely tenuous.

At present, the project's rural development and rehabilitation activities benefit from a high degree of local participation, although this is largely on an employer-employee basis for the moment. True participation has been difficult to mobilize for several reasons: lack of conviction, fatalism, precedents set by other projects, politicas, nepotism, etc. The project's "philosophy" is that popular support and, eventually, voluntary and internally motivated participation, can only be achieved through a belief in what one is doing. Therefore, the approach which the project is taking is to produce tangible evidence of the beneficial results of its various activities. To this end, it has made significant progress in implementing well construction, woodless housing construction, garden protection, solar drying, etc.

Meanwhile, the project bears the risks and costs of its experimental approaches, realizing that the local people will not voluntarily undertake risky or time-consuming new activities unless they perceive a worthy return for the time, energy and money.

Results to Date

The results of the project to date are positive on the whole. In spite of the fact that rehabilitation of the habitat and natural resources takes a long time in drought-prone marginal lands, improvements are already noticeable. Most importantly, they have been noticed by the local population, thus heightening their appreciation of the project's intervention. Wildlife is more abundant and forest resources are recuperating after years of drought and overuse. The long-term future for rural development activities will depend on the local peoples' desire to carry on with them. In the short term, however, results under project implementation have been very encouraging and significantly improved the status of health, housing and garden protection.

The creation of a national nature reserve has had a significant effect on local and national awareness of conservation issues and of the need to conserve the region's increasingly unique natural resources and environment.

Analysis of Results

The Air-Tenere experience to date has confirmed the vital role that appropriately designed and managed protected areas can
play in natural resource conservation and, by extension, in sustainable rural development. The key lies in having a physical framework within which to operate and to focus attention and a set of rules which are specifically designed to suit local conservation and management requirements. The project also provides justification for a departure from the conventional concept of protected areas which are aimed solely or overwhelmingly at preservation of wildlife, in favor of one which encompasses land use in general.

While the short-term results are encouraging, the real question is whether project activities will continue beyond the life of the project and beyond the time that people are paid by the project to carry out the work. The outlook for construction work is very favorable, but it is less certain for other aspects even though the results so far have been positive and the work is within the capacity of local people to carry on without external assistance. The garden protection component is a good example. Flooding has been controlled through erection of drystone check-dams in the temporary watercourses and several teams of local workers have been fully trained in the techniques. Over the next few seasons the project will leave the gardeners to maintain and to extend, if they choose, the system of dams. However, even with the skills and materials locally available there is no guarantee that the work will continue. To complicate the issue, local and national politics can provide considerable disincentives to self-help. Pressure can be and is put on to use externally-supported projects to solve problems that could be solved indigenously. Graft, nepotism, self-agrandissement and political expediency all pay a role.

Another concern is that, although habitat and wildlife rehabilitation are progressing satisfactorily under the project, there are no real guarantees that the restored resources will be used and managed correctly in the future. Currently the project is largely responsible for ensuring that the law is enforced and the Reserve and its wildlife protected physically. Given the economic state of the country it is unlikely that a similar level of protection could continue in the absence of outside assistance. Only the development of realistic and enforceable land use practices offers a promise for long-term sustainability of the area's resources.

Conclusions

The main points which the Air-Tenere project experience might contribute to an understanding of wildlife and natural resource conservation in arid lands are:

- protected areas can be valuable tools in achieving long-term conservation goals
- wildlife conservation is best and most realistically attained through a broad-based and integrated approach to land and resource use and rural development
- the benefits of wildlife to local populations can be far from evident, and developing what benefits there may be is difficult in the absence of short-term gains
- establishing responsibility of local people to manage commonly held resources is difficult
- addressing international conservation priorities (e.g. preservation of endangered species) will require considerable external input.
- due to the urgency of the situation, protection of threatened habitats and species probably cannot generally be integrated with the development process in the short term, even if it must be in the long term. Thus it may be necessary in many cases to concentrate first on halting and remediating deterioration and extinction processes, even if for a time this is at the expense of the greater goals of development and true participation;
- availability of local skills and materials with which to combat locally perceived problems does not guarantee the sustainability of remedies which are developed
- short-term rehabilitation of natural resources and habitat is no guarantee of their long term stability in the absence of adequate land use and management practices.
UGANDA
Queen Elizabeth Park

by B. Nganwa Kamugasha*
(with additional information from D. Wasawo, 1987)**

General Description

The Queen Elizabeth National Park (QENP) covers an area of 1,978 km. sq. It is situated in western Uganda, in part of the western arm of the East African Rift Valley. The park is bounded by the Rwenzori Mountains to the North, Lake Edward and Zaire to the west, Lake George to the northeast and the Rift Valley escarpments of Kichwamba and Bunyaruguru to the east.

Lakes Edward and George are connected by the Kazinga channel. There are five commercially important species in these waters, and the Lake George is considered to be one of the most productive lakes in the tropics. The fish resources of these waters are exploited by inhabitants of fishing villages both inside and outside the park although they are not themselves within the park boundaries. Within the park there are eleven fishing villages, including two on salt lakes. These, together with the Park administrative headquarters, Uganda Institute of Ecology, Mweya Safari Lodge, Rest Camp Kabatoro and ten ranger posts constitute a human population of about 20-25,000 inside the park itself.

The Uganda National Parks Handbook (1971) lists 66 species of mammals within the park, including elephants, giant forest hog, buffalo, kob, bushbuck, hippopotamus, lion, leopard, banded mongoose, chimpanzee and baboon. As a result of poaching primarily in the mid to late 1970's, populations of most large mammal species have fallen compared with the 1960s. However, given the chance, it is believed that these populations could recover as is already being observed with the Elephant and the Kob. The park is also rich in bird species, due to its varied habitats and productive waters.

The vegetation of the park shows the effect of regular fires. Fire has created and maintained the open grasslands which support the kob. Thicket and woodland is probably the climax vegetation, because of the nature of the soils and relatively low rainfall levels in most areas of the park. Human activities affects the vegetation in the park both through clearing and by starting most of the fires.

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Summary of Park History

The QENP is included as a case study for analysis of the issues of local participation in park and wildlife conservation, not because of a particularly project in place but because of the varied and significant history of interaction between park authorities and local people since the beginning of the century. This interaction has been characterized on the one hand by worsening conflict over land use and the integrity of the protected area and exploitation of its resources, yet on the other hand by an overall government policy of accommodating villagers living in and around the park, first by allowing many to remain in place when the park was gazetted and later by trying to distribute some revenues and benefits to them. Thus, it may be viewed as an illustration of generally good intentions complicated by economic, social and political factors.

The history of the area which is now QENP can be divided broadly into five periods:

1) the ancient and pre-colonial period, when human communities co-existed with wildlife in apparent harmony;

2) the colonial period during which the area was set aside exclusively for wildlife and signs of conflict with indigenous communities over land use began to arise but was suppressed;

3) the post-independence period of 1962-1973, years of economic growth during which the government was very interested in national parks as a source of tourism revenues and began trying to reduce conflicts by providing compensatory benefits to local communities;

4) 1973-83, a period of general economic decline when falling tourist revenues and international assistance forced the government to reduce support to national parks and abandon incentive and revenue-sharing programs, while at the same time migration into the QEP increased; and

5) 1983-today, a period which has seen revived government and international interest in rehabilitating national parks, but the problem of land-use conflicts remains due to population pressures.

People have been living in and around the QENP area since pre-historic times: the first signs of occupation by hunter-gatherer peoples date from the middle pleistocene about 50,000 years ago. Further evidence indicates that a settled fishing society existed at Ishango, across Lake Edward in what is now Zaire, 10,000 years ago, and hunting and fishing in the area probably continued largely uninterrupted to the present day. Agriculture is thought to have been introduced in the area within the first 1,000 years AD. More recently pastoralism has become important.

Based on records of European explorers in the 1890s, human occupation during changed during this period due to war and epidemics of smallpox, rinderpest, trypanosomiasis and sleeping sickness. Indigenous inhabitants of the area were first evacuated by the colonial government in 1912, because of a serious epidemic of sleeping sickness. Measures to control the tsetse fly included closing off much of the area to human settlement until about 1940 when a general resettlement began to take place. In some areas, however, (Katwe, Kazinga and Katunguru) people in fishing villages were allowed to remain or to resettle earlier, being required only to clear their surroundings of bush vegetation which harboured the tsetse fly.

In 1925 part of the restricted area was established as the Lake George Game Reserve (the neighboring Lake Edward Game reserve was declared in 1930). There was also a corridor area, the Kibale Forest Corridor Game Reserve, which provided an outlet for elephants and other animals to move in and out of the Kibale Forest Reserve.

Human presence and activity, mainly fishing and a salt industry based at Katwe and Kasenyi, continued when the area became a game reserve in 1934. In 1952 the area was declared a national park and set aside exclusively for wildlife, except that the 13 existing fishing villages were again permitted
to remain as enclaves within the park, based on the understanding that they would be allowed only to fish and to collect deadwood for their fuel requirements. In addition, the salt mining and trade at Lake Katwe, which had been going on for centuries, was allowed to continue.

Signs of conflict over land use and potential antagonism between the goals of conservation and the rights of indigenous people became evident early on. However, during the colonial administration any resistance on the part of the local communities was suppressed. This approach may have had the effect of hardening peoples' attitudes towards the whole concept of the national park from the beginning.

In the years following independence in 1962, the Government showed considerable interest in national parks all over the country, because of the tourism revenue they generated. As a result, areas like QENP received substantial support to develop as tourist attractions. It was even predicted that the tourism sector would emerge as the country's top foreign exchange earner, surpassing coffee by the year 1973. However, this hope was dashed by the military coup of 1971.

In the 1960's and early 1970's, conflicts between Government, conservationists and people living around the park began to surface. Conservationists complained that the government was emphasizing tourism for the sake of revenues and ignoring its impact on the park. At the same time, the local people felt that they were not getting a fair share of the revenues collected. In order to ease these conflicts, the government initiated a policy aimed at granting the people compensatory benefits. However, initiatives to implement this policy were haphazard and the benefits never materialized to any significant degree.

Between 1974 and 1983 the park entered what may have been its worst period. Following the 1971 coup and due to the poor economic policies of the time, there was a general economic decline in all sectors of the country. Tourism revenues fell sharply as a result of the security situation and the government lost interest in the park. Internationally funded projects in the QENP and other parks also declined because of the political climate. The few incentive schemes which had been put into place to benefit local people had relied on revenue collected from tourists visiting the park, and therefore they could not be sustained. Communities resorted back to the practices, such as poaching and encroachment, which these schemes were meant to discourage. There was also massive migration of people into the areas surrounding the park and some, illegally, into the park itself. With the breakdown of law and order poaching became a major problem, resulting in the desimation of much of the wild game, particularly elephant, buffalo, hippo and Kob. Much of the poaching was by people living in the communities in and around the park.

With a general economic revival beginning about 1983, the government renewed its interest in the national parks, which thus figured prominently in the National Conservation Strategy prepared in early 1983. Since that time there have been serious efforts aimed at rehabilitating national parks, with active participation by international organizations like the UNDP and the EEC. However, in the QENP these rehabilitation efforts are constrained by the human activity which mushroomed over the past two decades. With increased human activity within and adjacent to the park, the patterns of land use have changed in problematic ways. Now one of the key issues to be addressed in attempting to rehabilitate the QENP is how to accommodate or contain these human activities without undermining the original objectives of the park.

Land Use Conflicts

People living in QENP engage in various forms of natural resource exploitation, primarily fishing, cultivation, livestock grazing, hunting or poaching (depending on one's perspective), collection of firewood and medicinal plants and building materials and the harvesting of salt. These activities have a varying impact on the park and its environs, depending on the intensity which in turn depends on the size of the human settlement. Most of these activities contravene park by-laws which basically prohibit any exploitation of resources within park boundaries. This represents an obvious cause for conflict.
The impact of human activity on the park's flora and fauna is generally limited around smaller settlements such as Hamukungu and Katunguru. However, the impact is more severe near larger settlements such as Katwe and Rwenshama. In these areas there are obvious signs of destruction of vegetation, including bare patches of earth and consequent soil erosion (some of which, however, is also caused by hippos, for example along the Kazinga channel).

Fire is one important and controversial issue. Fires occur over much of the park, once or twice a year during the dry season. To some extent, fire is used as a park management tool to encourage the growth of grass for large herbivores. However, illegal fires are also started by poachers and others.

A major factor which has influenced the impact of human activity in QEP is its easy accessibility. The Mbarara/Kasese Fort-Portal Highway almost traverses the park, and there are important routes which cross the park and provide access to eastern Zaire. There is also an important salt industry with a modern plant inside the park, and an important industrial town which is a rail head to the port of Mombasa is on the park border. The massive Kilembe Mines (now partially closed down) are only about 20 km away.

The total effect of this infrastructure and development has been to attract large migrant populations to the areas surrounding the park. These migrants come in search of employment, but with the economic decline in the from the early 1970's it has not been easy to find. Thus, some of this population has turned to fishing and hunting in the park for a living and the immigrant's activities have been more devastating than those of the indigenous populations. For example, there is reason to believe that the cessation of mining activities at the Kilembe Copper Mines in 1975 led to increased incidence of commercial poaching in QENP. A strengthening economy may now alleviate some of these problems, but also raises new concerns. For example, a modern salt complex was built inside the Park at Katwe, and there is some concern about potential environmental damage when it becomes operational.

The basic problem, along with the population growth, is that no serious efforts have been made to integrate the two components of the system, i.e. the park's wildlife and administration on one hand and the human inhabitants, particularly the fishing villages, on the other. Instead, there has been misunderstanding and resentment on both sides. An attempt was made in the 1960's to share tourist revenues with the local people in and around the QEP by providing specific and direct grants from the central government through the Local Administration of Kasese (then the Toro Kingdom). In practice, however, these funds never reached the people themselves. The situation has been exacerbated by the insecurity and lawlessness prevalent during the 1970's and early 1980's. As a result, the integrity of the park and the success of rehabilitation efforts are continue to be seriously threatened.

The people living in and around the park have never been seriously involved in running it. The early attempts to distribute a part of tourist revenues to local communities have not been revived, so they receive little benefit other than some limited employment opportunities. As a result, the inhabitants do not feel part of the park and do not value it. In fact, many feel that being in or near the park and its authorities is a nuisance because there are so many possibilities to run into conflict. Wildlife is an important source of that conflict because poaching continues despite an intensified anti-poaching campaign by park authorities under a project jointly financed by the government, UNDP and EEC.

Status of the Fishing Villages

Preliminary surveys indicate unsatisfactory living standards among village inhabitants, including poor housing, sanitation, water supply and health facilities. The borders of the villages were determined when the park was gazetted (so the villages exist as de-gazetted enclaves), and they were not supposed to grow significantly in size or population. However, over the years they have grown. Thus the borders of the villages has become a subject for discussion and a source of conflict which has not yet been resolved.
Fishing is a potentially lucrative and sustainable occupation in the area. However, over the years the system of licensing broke down and many unlicensed fishermen began to operate in the 1970s and early 1980s. This is thought to have resulted in overfishing. In addition, fishing is presently hampered by a lack of equipment, leaving the fishermen under-employed and more likely to turn to poaching to supplement their livelihoods. At the same time, the supply of food from the outside has declined as fewer trucks come in to deliver supplies and collect fish. With declining returns from fishing, the fishing villages have also been turning increasingly to cultivation and livestock grazing, which put them into a direct conflict with the park over land use.

Thus, it may be that improving fishing conditions and living conditions within fishing villages (eg. with improved roads, schools, health services, etc.) would help to reduce poaching problems stemming from these villages. However, such improvements must be planned carefully to avoid compounding the problem by attracting more people to the area in search of the improved services.

The Park Authorities

There has been a lack of continuity and clear policy within the park administration regarding how to deal with the issue of the human settlements. One important complicating factor is that, legally, fishing activity falls under the Department of Fisheries and not the Parks authority, and there may be a lack of coordination between these agencies. Furthermore, the approach taken to a particular problem often depends upon the attitude and personality of the Chief Game Warden, who may be replaced at any time with no guarantee that his successor will follow the same policies. Over the past years, several wardens have made efforts to resolve the problems and have in some cases managed to establish some form of understanding with the settlements; unfortunately, this inevitably ended when they were transferred. Like other public service employees in Uganda, park authorities have been affected by the economic decline of the country and demoralized by low levels of compensation, often far below a living wage. This has sometimes led to wardens collaborating with wrong-doing by villagers and failing to enforce regulations.

The cumulative effect of these problems within the parks authority has been a worsening situation, as the villagers have become increasingly cynical and hostile about the park administration.

Possible Solutions

The Biosphere Reserve Concept

The QENP has been a declared Biosphere Reserve since 1979, but in most respects this has been in name only. The concept of the Biosphere Reserve, which aims at harmonizing man and nature for mutual benefit, has not been implemented. According to the established concept, a protected area which is a Biosphere Reserve would consist of a core area, in which no human disturbance or exploitation is permitted, surrounded by a series of buffer zones in which controlled human activity for sustainable use of resources is allowed.

Applying this concept to the QENP would require some adaptation. The core areas and buffer zones would have to be scattered, because of the distribution of habitat types (from forest to wetland) which would have to be included in the core areas and because of the existing, scattered human settlements. The waters of Lakes Edward and George and the Kazinga channel would have to be included since they play an important economic and biological role in the region. The buffer zones would have to accommodate a variety of human activities, including collection of firewood and building materials, fishing, hunting and tourism. Grazing and cultivation would have to be limited to designated areas in the immediate vicinity of settlements and agroforestry would have to play an important role in providing firewood, poles, fruit and fodder.
Local Participation and Incentives

True integration of local communities into the management of the area would be essential to the success of any integrated management plan. The local people must become active participants in decision making and management activities. The sharing of tourism revenues with local people would have to be revived, but with better planning of the distribution channel to ensure that the funds reached the grass roots level instead of simply creating a new level of government bureaucracy as it did in the 1960's. Local people must be directly involved in developing any incentive schemes involving collection, distribution and use of revenues.

It is recognized that improving the quality of life in the fishing village is an important prerequisite to generating local participation and support for the park. Various approaches to doing this may be considered, such as working through fishermen's cooperative societies as a means of pooling resources to maximize results. The cooperatives could be multi-purpose and incorporated into the management and administration of the area. They could initiate self-help projects to provide credit and marketing facilities, low-cost housing, water supply and transportation.

Unfortunately, current budget mechanisms and government financial regulations are not conducive to community participation. Under present accounting regulations it is difficult to give financial grants directly to local NGOs. Local cooperatives could theoretically receive such grants, but their administration would be subject to supervision by the Ministry of Cooperatives and Marketing: experience in the coffee industry has shown how this can frustrate the development of cooperative enterprises. In the final analysis it may be necessary to streamline the government's financial regulations in order for any incentive program aimed at stimulating local participation in park management and benefits to work.

On the positive side, the government of Uganda has recently introduced the system of Resistance Committees (RCs) at the grassroots level throughout the country, which meet regularly to give people a forum in which to discuss, plan and implement development programs. Indications so far are that these RCs can provide an effective means of mobilizing people for action. The RC system has already taken roots in the fishing villages within the QEP and on its borders. This might provide the institutional and administrative arrangement needed to channel local participation in park management.

Other possible channels include youth groups and women's groups. Whatever the avenue for mobilizing participation, it will be necessary to build up awareness on all sides (government, park administration and local communities) of the need for integrated management and the benefits that would arise from it. People must become aware of the problem (i.e. the threat to the natural resources upon which their livelihood depends) and of possible solutions before they can be enlisted as willing participants. Similarly, park administrators must recognize the importance of enlisting them.

Park Management and Administration

While economic incentives and development benefits for the local community should ultimately reduce conflicts and improve local attitudes toward the park, there will be a continuing role for parks authorities to protect the protected area and its wildlife. One critical need is to raise park guards' compensation up to a living wage. Other types of recognition are also important for building moral, such as awards and for exemplary performance and programs and ceremonies to publicize and draw positive attention to the park and its custodians.

Community support would be facilitated by ensuring that local people receive preference for employment opportunities. This would include provision of training to improve their qualifications for available jobs. Relations between parks authorities and local people would also be improved by a compensation scheme for damage to crops and livestock and for personal injury or death resulting from wildlife attacks.
Regional Cooperation

Like many of the remaining wildlife areas in Africa, QENP is on a national border: in this case much of the western side of the park is contiguous with the Uganda/Zaire border. Therefore, activities on the Zairean side have a major impact on the park and its wildlife. According to international law, principles of territorial integrity and diplomacy, Uganda cannot interfere in the internal affairs of Zaire, for example by extending infrastructure development or other incentive programs to include the park’s Zairean neighbors. The border location also makes enforcement difficult as miscreants can escape the authority of Ugandan officers.

The only logical solution is to develop cooperation between the two countries. In the case of QENP this is made easier by the fact that the contiguous area on the Zairean side is also protected (the Virunga Volcanoes National Park--VVNP). The cooperation should take the form of harmonizing policy and management plans and developing mutually supportive strategies which recognize the area as a single ecological unit. For example, Ugandan park wardens in QENP can be made honorary wardens of VVNP with powers of arrest, and vice-versa. Regular meetings could be held to discuss management strategies and resolve problems that arise. Collaborative efforts for survey and monitoring of wildlife populations and for promoting tourism would also be possible and beneficial because costs could be reduced and the value of both areas enhanced. Establishing such collaborative efforts is within the purview of the governments involved, but the process could be greatly encouraged and expedited by support from international assistance agencies prepared to provide funds for suitable regional programs.

Current Programs

The Uganda Institute of Ecology has been given the task of preparing management plans for the country’s national parks. As a result of various studies, a project assisted by EEC is now underway to prepare a management plan for QENP. At present the project is in the preliminary stages of collecting information on aspects such as the socio-economic status of local communities, level of fuelwood demand and options for reducing it, nature and status of fishery resources. Aerial surveys are being undertaken as a step toward possible zoning of the area. Regional cooperation is a realistic possibility as a similar EEC project is operating in the contiguous VVNP in Zaire. If successful cooperation is established in this case it could serve as an important model for the many other trans-border protected ecosystems in Africa.

Meanwhile, efforts are being made to establish an improved dialogue with local inhabitants. A community development program has been proposed to assist local communities in: (i) collection of fuelwood and medicinal plants, (ii) fencing of village boundaries against wild animals, (iii) maintenance of access roads, (iv) energy-saving devices such as fuel-efficient stoves, (v) community woodlot development, (vi) improvement of water supplies and (vii) improved cooperation with the Fisheries Department authorities. In return the communities will be expected to adhere to park regulations and will also be asked to consider voluntary compliance with closure of some settlements. (It is worth noting that similar negotiations have recently succeeded in persuading inhabitants to leave their villages in the Kahuzi-Biega National Park in Zaire and to abandon grazing lands inside the Tsavo National Park in Kenya).
Introduction

Probably the earliest major program in Africa to embody the principle of community participation in conservation was the establishment of the Maasai Mara and Amboseli District Council Game Reserves. They were conceived, negotiated and established nearly thirty years ago with the specific objective of involving the local communities. Consequently their history provides a unique body of information and experience.

The origins and establishment of the two reserves were essentially parallel and occurred at the same time. However, shortly after their establishment the histories of the two areas diverged. Maasai Mara is arguably Africa's most sustained success in incorporating local communities in conservation, while the Amboseli initiative suffered numerous setbacks which led the government to return the Reserve to National Park status and continues to raise questions about the local communities' attitude toward the Park. An examination of the ecological, political, sociological, institutional and economic reasons for their differential success serves as an object lesson illustrating many of the key points raised in this Technical Paper.

The Setting and Early History

The Mara is the northern portion of the Serengeti-Mara ecosystem. It is a rolling area of mixed open grassland interspersed with riverine forests and hilly bush or woodland areas, bounded on the west and north by the Isuria and Mau Escarpments and on the south by the Serengeti National Park of Tanzania. During the dry seasons hundreds of thousands of wildebeest, zebra and other plains animals migrate into the well-watered Mara from the Serengeti plains to the south. These migrants, combined with the area's magnificent resident wildlife, provide one of the greatest wildlife spectacles in the world.

Amboseli is a rather different situation. Here, large springs create a perennial source of water and grazing (the Amboseli Basin) in an otherwise arid semi-desert savanna at the northern base of snow-capped Mt. Kilimanjaro. The 600 km. sq. Amboseli basin appeared as a verdant island in a sea of overgrazed semi-desert, and was

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***/with additional information from:

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thus heavily used in the dry season by wildlife and livestock which concentrated there from a wet season grazing area of some 5000 km. sq.

Prior to 1961, the part of the Mara west of the Mara River had the status of a National Reserve within the Royal National Parks of Kenya. While formally under the jurisdiction of the National Parks Department, in practice it was managed by the Game Department which also administered wildlife in the remainder of the area. Hunting was prohibited in the central area, and strictly limited elsewhere. Safari tent camping was allowed in the Mara under strict regulations. In the same period Amboseli was a National reserve administered by National Parks. Hunting was prohibited and there was a small tourist lodge and tent camp at the Reserve headquarters.

Both areas are located in Maasailand. The Amboseli area was administered by the Kajiado Maasai African District Council (ADC) and the Mara area by the Narok Maasai ADC. Both areas were used as open grazing lands for the Maasai pastoralists with their herds of cattle and small stock.

In much of the Maasailand area a history of conflict developed between the interests of the Maasai and the wildlife authorities over access to water and grazing, and overgrazing and poaching were continuing problems. Prior to 1930 there was no attempt to curtail the traditional use of the area by local Maasai pastoralists. After that time, however, the colonial government was increasingly emphasizing protection of wildlife, taking the approach of establishing national parks which excluded local populations and their herds and prohibited hunting. The pastoral population of the Amboseli area was too large to be ignored, and so it was designated a National Reserve in 1947, instead of a National Park, thus permitting some entry and use by local populations. Nevertheless, this was a step toward alienation of the population from land and resources which they considered to be theirs. The conflicts grew as the human and livestock populations grew, along with their requirements for water and grazing, while at the same time Amboseli began to develop into a popular tourist attraction, thus bringing in other interested parties on the "side" of the wildlife.

In the Mara, the Mara River and its tributaries also provided the Narok District Maasai water and grazing in the dry season, but there was not the same history of conflict for two reasons. First, much of the Mara area at that time was infested with tsetse fly which effectively excluded cattle while leaving the wildlife unaffected. However, year by year the tsetse infested area was reduced by Maasai fires and brush cutting which removed the habitat needed by the fly, so that by 1959 the part of the Mara still infested was limited largely to the southern area near the Tanzanian border.

The second reason for the good relationship between the local people and the wildlife authorities was the Narok District Game Warden himself. Major Lynn Temple-Boreham had been warden since 1946. He exercised very strong control over wildlife matters in the Mara Region but he respected the local people and their needs and customs and he was just and equable in his relations with them. For example, recognizing the central role of hunting in the life of the small group of Wanderobo, a hunter-gatherer people living in the area, he allowed them to harvest whatever wildlife they needed so long as it was by traditional methods and did not involve rare or endangered species. In the same way, he respected the Maasai and their customs and assisted them in whatever way he could. As a result, his relationship with them was outstanding and they provided invaluable cooperation to him in excercising his wildlife related duties.

Protected Status and the Question of Community Participation

The government of the Kenya Colony recognized the outstanding conservation value of these two areas, and also their fragility and the probability that without special protection they would become severely overgrazed (as it was held had already happened to most of the Maasailand, although this has been questioned--eg. see Lindsay, 1987) and their wealth of wildlife would be lost. Accordingly, in the late 1950's the Royal National Parks of Kenya
proposed that these areas should become national parks.

As noted above, at that time Kenya and many other African countries subscribed to the western philosophy of national parks as the last bastions of wildlife, islands of untouched nature within a great sea of landscape altered by man. The prevalent attitude toward local communities was simply to keep them outside the park boundaries. They also rejected the idea that wildlife could be managed on a sustainable basis outside of parks, as this undermined the rationale for the existence of parks. As a result, the parks authorities were often at odds with the authorities responsible for wildlife outside of parks and, in some parts of East Africa, actively sought to undercut the authorities responsible for wildlife outside of parks and, in some parts of East Africa, actively sought to undercut the administration of the area was wholly the responsibility of the Narok African District Council. The Council passed ADC by-laws for the management of the area, including control of grazing and burning. The Council provided a warden, rangers and other staff to maintain the area and the Game Department provided training for them. The Council agreed to develop (by itself or through concessions) the necessary roads and tourist facilities, and it was to establish and collect entry and any other appropriate fees. In view of this situation, the Kenya Game Department and the Wildlife Advisor to the government of Kenya took the position that it would be better if Amboseli and the Mara were not incorporated into the Royal National Parks of Kenya. Instead, in fairness to the Maasai inhabitants and in consideration of the potential for success in conserving the areas, it was felt that they should receive some status which protected them but which also provided benefits from that protection to the Maasai. Their rationale, very innovative for the time, was that if the areas were to be conserved for the benefit of the country and posterity, they would have to be supported by the people who lived near them. To accomplish this, those people would have to receive a share of the tangible benefits of the areas and, ideally, they should participate fully in their creation and management.

Birth of the Maasai District Game Reserves

The concept of the Maasai District Game Reserve was originally put forward by Major Temple-Boreham. The idea was further developed and debated through many meetings with the Maasai in the area, the Narok District Council, and the government authorities in Nairobi. After about two years of negotiations the proposal for the Maasai Mara Game Reserve (and the parallel one for Amboseli) appeared in its final form. Final approval was reached and the areas were gazetted in 1961.

In the Mara an area of some 700 sq. miles adjoining the Tanganyika border and the Serengeti National Park was gazetted as the Maasai Mara Game Reserve. The central portion of this area, between the Telek River and the border, was to be maintained inviolate, with no grazing or human use other than development of appropriate facilities for tourists. The administration of the area was wholly the responsibility of the Narok African District Council. The Council passed ADC by-laws for the management of the area, including control of grazing and burning. The Council provided a warden, rangers and other staff to maintain the area and the Game Department provided training for them. The Council agreed to develop (by itself or through concessions) the necessary roads and tourist facilities, and it was to establish and collect entry and any other appropriate fees. These fees were to go to the Council for the use of the Maasai, with the intention that a certain portion would be distributed to the families adjacent to the reserve and the rest would go to development projects agreed upon by the Council. In such cases, appropriate signs were to be placed informing the people that the Mara Reserve was the source of the funds which made development possible.

In addition to the Reserve itself, the adjacent and nearby areas of grazing land were divided into a series of shooting and photographic blocks. The District Council could set appropriate fees for visitors' use of these facilities, including camping, vehicle entry and trophy fees (the latter being incremental to the Kenya Government's game license fees). While these fees were to be collected by the District Council, the intent was that they would primarily benefit
the families or villages in whose areas the shooting or photographic blocks were located.

In 1961 the government also handed administration of the Amboseli reserve over to the Kajiado County Council, which was the local authority for a 20,000 sq. km. district which included the Amboseli Basin. Soon after, the Council negotiated with the Maasai living adjacent to Amboseli to set aside a 78 sq. km. area free of livestock to protect what the Council recognized as a significant wildlife asset (by 1968 revenues from Amboseli accounted for some 75% of the Council's annual income).

The First Decade

Until his death a few years after the establishment of the Maasai Mara Reserve, Major Temple-Boreham continued to work closely with the Maasai, providing training, advice and assistance. The Narok ADC provided strong protection against poaching, leaving spectacular wildlife migrations largely undisturbed. The Reserve prospered and was considered a complete success. The Maasai adhered to their side of the agreements, maintaining the area totally free of grazing. They received considerable and constantly expanding revenues from the increasing numbers of tourists. The early revenues went to Council activities including mobile and fixed dispensaries and schools, all of which bore signs crediting the Reserve for their establishment.

By the end of the first decade following the Reserve's establishment, the Mara was recognized internationally as one of the world's foremost wildlife sanctuaries and was a mainstay of Kenya's tourist industry. The revenues from tourism were so high and constant that the Mara African District Council (known as the Mara County Council after independence) became and has since remained financially the most stable County Council in Kenya.

The picture was quite different in the Amboseli Reserve. There was no one like Major Temple-Boreham to provide guidance and help insure sympathetic incorporation of cultural values of the Maasai into the management plans. The Kajiado ADC was now responsible for managing the reserve, but had little expertise and did not receive adequate training to do it and there was a series of incidents of fraudulent mismanagement. Almost from the beginning there were constant conflicts among the Maasai of the Kajiado District about the disposition and use of the revenues which they had collected from the Reserve. In part this was because the nomadic habit of the inhabitants of the Kajiado district so that any social welfare facilities constructed with wildlife revenues were widely scattered and hard for the people to appreciate. The area was also very large, and the communities living adjacent to the wildlife areas were distant, both physically and politically, from the Council which controlled the revenues; they complained that they received no benefit from it at all.

Unlike in the Mara, the Maasai of Amboseli area continued to move their livestock into the Basin for water and grazing during dry periods. To show their frustration and resentment, they also began to spear rhinos, lions and other wildlife. This spurred conservationists into pushing for National Park status for Amboseli, while the Maasai responded by mounting political pressure to gain title to the entire region themselves.

By the late 1960's the conflict had intensified to the point of forcing the Council and the Government to find a resolution. They began by commissioning studies of the Amboseli ecosystem, including wildlife and domestic livestock and the traditional and changing attitudes of the Maasai. In 1968 a plan was presented to the Kajiado Council which proposed that the 600 sq. km. should become a Maasai park, i.e. with all the legal status of a National Park, but vested in the council.

This proposal was rejected by the Council, but the central Government stepped in and forced the issue in the national interest. Finally, it was decided that Amboseli would become a National Park under government jurisdiction. Political pressures from the local Maasai forced the government to reduce the park area to 488 sq. km. A number of changes were to be made to encourage the support of the local community:
1) A major water supply system would be put in place, pumping water from the Amboseli swamp to surrounding communal lands for use by livestock. Four permanent boreholes would be sunk on the periphery of the Reserve, designed to separate the wildlife from the livestock;

2) The principle of revenue sharing was maintained, but with different rules. Two hundred ha of land surrounding the established tourist lodge would remain an enclave of Council land within the Park to guarantee the Council future income. The Council would also receive a portion of the entry fees each year (guaranteed to equal the average gross income for the preceding three years), with the remainder going to the central government;

3) The central government would absorb all developmental and recurrent costs of the Park, using its share of the entry fees;

4) The government would retain all locally recruited staff as rangers, game scouts and lodge employees; and

5) The local Maasai would receive title to the remainder of the land in the ecosystem, which would be cooperatively owned as group ranches. Once in possession of land title, they would be eligible for livestock development plans (although their interest was more in the security of the land than its commercial potential).

The Later Years

In 1977, in response to strong pressure from conservationists and international public opinion, the government of Kenya imposed a ban on all hunting in the country. This had a significant effect on the community-based wildlife schemes because revenues from hunting on communal land adjacent to parks ceased. The losses were also felt on a national level as hunters took their business elsewhere. To compensate, Kenya began a concerted effort to promote photographic and viewing tourism.

This approach temporarily left local communities at a loss since all of this tourism was centered within the parks and the revenues went mostly to tour operators, hotels and the central Government. However, the problem was reduced by the impact of an earlier decision of the Kenya National Park Trustees to discourage further construction of game lodges inside National Parks and Reserves, thus redirecting development of tourist facilities onto private lands. More recently, extensive meetings between the Wildlife Department, local County Councils, tour operators and lodge managers have also resulted in more equitable distribution of tourist facilities, benefiting communities who own land in dispersal areas and thus bear wildlife costs.

One element was an increase in viewing fees in all wildlife areas, with the increment being set aside for the direct benefit of local communities living in the immediate vicinity of the Parks and Reserves. These decisions have been credited with significantly improving local attitudes to wildlife in these areas.

Throughout these various developments, the Maasai Mara Reserve continued to be regarded as a major success, both from the point of view of conservation and of community support and local participation. Thanks to tourism revenues, the Mara County Council remains the most financially stable in the country. A blanket viewing levy on overnight visitors currently yields over 1 million Ksh/month, providing a gross revenue far in excess of gross annual incomes derived from livestock for all families in the area. The traditional Maasai custom of maximizing the number of cattle kept has begun to change, and local Maasai have been heard to say that wildlife has become as important to them as cattle, if not more so because wildlife revenues continue to come in during times of drought or floods. Poaching and expenditure on anti-poaching efforts have reportedly dropped to negligible levels, and unlike the situation in most of the country numbers of elephant and rhino are increasing inside the Park. Maasai Mara has become the model that other County Councils in Kenya which have established National Reserves wish to emulate. It has also stimulated discussion of approaches to expand revenue sharing to communities living in broader dispersal areas of National Parks.
Amboseli continued to experience problems. The Reserve was declared a National Park by Presidential decree in 1974. Over the next few years negotiations among park authorities, the central Government, County Councils and group ranches continued with the result that various additional concessions were made to the local Maasai. First, portions of the swamp basin were detached from the Park to give the local Maasai more dry season pasture, leaving the Park area at 392 sq. km. The ceded area included the sites of the tourist lodges, which were now located on Maasailand just outside the new Park boundaries. A "wildlife utilization fee" was introduced as a sort of rent for grazing land, to compensate the group ranchers for loss of access to additional grazing and other costs associated with sharing their land with wildlife. The intention was that these fees would eventually be phased out as community revenues from tourism, game cropping, safari hunting increased over the years. A school, dispensary and community center were provided at the edge of the Park. As a result of the agreements reached, they agreed to vacate the Park land in 1977.

Despite the extensively negotiated agreements, the conflicts continued. This may be attributed in large part to failure to implement the agreements, to the lack of an official written agreement outlining the management responsibilities of the different parties and to policy changes. The water pumping system, financed by the New York Zoological Society and the World Bank, worked well for a few years and then began to fail due to technical and administrative problems which were not corrected by the central Government which had built it. An inadequate water supply during critical dry periods left the Maasai little option but to return to find water inside the Park. The problems were aggravated by a drought in 1984, in which the Maasai lost a substantial part of their livestock and received no assistance from the park authorities. The wildlife utilization fees were paid regularly until about 1981, then the payments became sporadic without explanation to the Maasai. The agreement for group ranches to retain a portion of Park entry fees fell through, perhaps due to administrative changes (amalgamation of the National Parks and Game Departments). Anticipated income from tourism did not increase as quickly as expected. Direct income was limited to wood and gravel sales and campsite fees, totalling about 160,000 Ksh/year. Construction of new lodges and viewing circuits on group ranch lands failed to materialize as expected. Finally, the 1977 hunting ban eliminated anticipated income from safari hunting license fees.

Another development with major and increasing impact has been a gradual change of lifestyle among the local Maasai. In 1983 an existing small area of irrigated agriculture just east of the Park was greatly expanded. Despite the fact that poor agricultural conditions make the economic viability of cultivation in this area highly questionable, the expansion is likely to continue, creating increasing conflicts as wildlife raid the crops. The new farmers are mostly members of the two group ranches which were involved in negotiating the Park agreement, showing their lack of faith in the promise of sustainable economic benefits from the Park.

Despite these problems, Amboseli has been viewed as successful from a conservation viewpoint. Populations of some species have grown, particularly wildebeest and zebra, perhaps due to decreased grazing competition. There has also been an overall increase in elephant and rhino populations (however, there are reports that the poaching problem which was reduced in the late 1970's due to the cooperation of group ranch elders is increasing again). Wildlife are also now distributed more uniformly throughout the park, following removal of Maasai settlements. Tourism has continued to grow, to the extent that tourist impact and management is now becoming a concern in itself.

The effort to improve the Amboseli program continues, with an emphasis to correct past problems. One major issue being addressed is the level of communication among the local Maasai, the County Council and the Parks authorities. The African Wildlife Foundation provided funding for an adult education officer to work in wildlife extension at the national level from 1979-83. Then, in 1984, the African Fund for Endangered Wildlife funded a wildlife extension pilot project in the Loitokitok Division of the Kajiado District (later expanded to the Narok area). The focus of this project was to promote community participation through: (1) community surveys and needs assessments,
(2) workshops, meetings and field visits with community leaders, ranchers and farmers, (3) training community leaders and local conservation action teams, (4) community level demonstration projects with technical inputs, and (5) training government and local NGO staff in wildlife extension methods. A committee has been set up to improve cooperation among the wildlife authorities, the range department and members of the surrounding group ranch. Other improvements are planned although not yet in place: repair and modification of the water pumping system is scheduled to reduce conflicts over access and a project to divert part of the deeper swamp outside the park to increase further the Maasai dry season grazing area. The government has also agreed to extend the arrangement made in the Mara area, benefiting land owners who provide security to animals migrating outside the park, to Amboseli (proposed to begin in 1990).

Lessons Learned

The troubled history of Amboseli is particularly worrying because one might imagine that if community-based conservation will succeed anywhere it should be there. Amboseli ranks with Nairobi Park and the Mara reserve among the country's top tourist attractions, receiving some 100,000 visitors a year and earning an average of Kshs 9,000,000 per year. Few proposed conservation areas are likely to have this type of revenue base to share among central government and local communities. Furthermore, the government committed itself early to revenue sharing and, with countless outside advisors and supporters has been actively working to refine the system for almost thirty years. Fortunately, the relatively smooth and positive progress of the Maasai Mara Reserve serves as a counterpoint and helps to identify the specific circumstances which may be responsible for Amboseli's problems.

The principle difference between the two cases is the degree to which the Maasai living adjacent to the protected areas are satisfied with the arrangement. This in turn relates to the overall level of conflict between wildlife and community interests and to the distribution of revenues and other benefits. Conflicts between wildlife (and wildlife authorities) and the Maasai appears to have been lower in Mara than in Amboseli for a very long time. This is due in part to ecological conditions, with greater competition for water and grazing in the Amboseli basin, and in part to the sensitivity of the district game warden (Major Temple-Boreham) who served in the Mara area from 1946 to 1969. Distribution of revenues and benefits has also been markedly different, as in Amboseli the Maasai living adjacent to the Reserve persistently complained that they did not receive the promised benefits either in terms of direct revenues or development.

Amboseli and Maasai Mara were gazetted as District Reserves at the same time (1961) and by the same legislation. In both cases, the transfer to District Council management was preceded by extensive negotiations resulting in specific agreements intended to provide concrete economic benefits to the local communities. Both areas had the demonstrated potential to generate significant revenues from tourism alone, and both were similarly affected by the 1977 hunting ban which eliminated another anticipated source of income. Thus, except for the historical conflicts, the starting points would appear to be the same.

However, implementation of the transfer to local administration differed in the two areas from the beginning. In the Mara area, Major Temple-Boreham remained involved for several years until his death, and helped to guide the process. In accordance with his habitual sensitivity to Maasai culture, he helped to ensure that the negotiation process followed the traditional Maasai system of community meetings and direct involvement of the Maasai Elders as well as the officials of the Narok District Council. He was aided by the fact that there had been little externally supported development in the area and so the traditional cultural system was relatively intact.

In Kajiado conditions were different. There was no counterpart to Major Temple-Boreham to guide the process. Furthermore, Kajiado had received considerably more attention from development agencies so that a new social and political order had significantly disrupted the traditional authority system. Wildlife officials met and
negotiated only with officials of the Kajiado District Council, who reported the agreements to the communities involved but had relatively little direct connection and accountability to the local Elders. Therefore, the Maasai actually living in the areas adjacent to the Reserve were not really represented in negotiations and their cooperation was not secured. When it came to distribution of benefits, the Mara region Maasai knew what they were owed and were in a position to demand it, unlike those in Amboseli. In the Mara, funds were distributed directly to the Maasai in the areas adjacent to the reserve and visible community development projects were implemented, all with signs identifying them as funded by revenues from the Reserve. In Amboseli, apparently little of the revenues were spent outside the District capital at least in the early years.

Another significant difference is that, in the case of the Mara Reserve, the transition process was carefully planned and training was provided for Narok District Council staff assigned to manage and run the Reserve. The training provided in Amboseli was inadequate, with the result that Park administration was handed over to people with no preparation to take it on.

1. However, this was also true in the Maasai Mara area, where a similar distribution problem did not occur.

2. Since this case study was presented in September 1989, the Government of Kenya has reassumed responsibility for management of the Maasai Mara Reserve, on the grounds that inadequate maintenance was resulting in deterioration of the reserve.
Introduction

The Central African Republic is endowed with a diversity of habitats, from dense forests in the south to the steppes in the north, with a resulting diversity of plant and animal species. Some believe it to have the richest fauna in west and central Africa. The forest region covers only 6% of the country (some 36,500 sq. km.) but contains 3600 known species of plants and 208 spp. of mammals.

Wildlife plays an important economic and cultural role in the CAR. Informal, subsistence-level hunting is a major source of nourishment, representing an estimated 30-40% of the meat consumed in the country each year. In some areas, where livestock husbandry is seasonal or nonexistent it is the principal source of animal protein along with fishing. Wild meat is particularly important in the rural areas, but a large part also goes to urban markets. The market value of a buffalo is about $622. Extrapolation from a study in the Bagne area indicates a value of some 708 CFA ($3 million dollars) consumed locally or sold each year. To help meet the demand for wild meat, two wildlife farming pilot projects have recently been proposed: one in the northern zone for rearing Kob antelope (under the Projet de Developpement de la Region Nord) and the other in the south (under the WWF project described below) for Duiker.

Safari hunting is also an important economic activity although the industry in the CAR is small by the standards of some other countries (such as Zimbabwe). There are currently 65 safari concessions leased to 18 companies. Sport hunting brings in about 900 million CFA each year, of which 150 million goes into the public treasury in the form of direct receipts. This does not include fees for rifle permits, etc. Despite this active industry, subsistence and informal hunting remains the largest consumptive sector. For example, in the Bangui area, an average of about 4000 buffalo are hunted for meat each year compared to 225 taken by sport hunters.

Wildlife-based tourism also exists although it has declined greatly over the past five years. In the Bayanga zone estimated annual receipts from tourism are about 3,676,000 CFA ($12,250). The Dzanga-Ndoki park area received 242 visitors in 1988/89, with revenues of about 1.05 million CFA.

The Dzanga-Sangha Dense Forest Reserve Project

The WWF-US supported bilateral project began in 1988 with the aim of creating, developing, protecting and managing a National Park (1220 sq. km.) and a surrounding "Multiple Use Special Reserve" (3159 sq. km.) in the Dzanga area (see Figures 1 and 2).

Background of the Project

The Dzanga area was well known for many years as an area rich in wildlife, particularly forest elephant and bongo which attracted large numbers of hunters. However, heavy hunting depleted the populations. In 1981 the government's Technical Advisor on Wildlife recommended
a ban on Bongo hunting in the area and proposed that a sanctuary for this species be created in the Sangha Economic Prefecture (a draft decree to create this sanctuary was prepared but not passed).

Despite the recent decline in numbers, the potential of the area for wildlife utilization and management was recognized by a number of people who played important roles in laying the groundwork for the project. Among these were several expatriates from a timber company (Slovenia-Bois) operating a concession in the area in the early 1970's. They believed that the area had great potential for wildlife-based viewing tourism and took an interest in promoting it, urging the creation of a national park to protect this last bastion of forest elephants in the country.

In 1986, the responsible Ministry ordered an evaluation mission to examine the touristic possibilities of the area. This mission (which included a member of the Ministry staff, a member of the staff of the New York Zoological Society and an international expert on forest elephants) recommended that Dzanga be classified as a Protected Area. Follow-up studies sponsored by the Missouri Botanical Garden confirmed that the entire Bayanga region surrounding the Dzanga area was rich in a number of valuable species including elephant, bongo, chimpanzee, etc. and possessed a vegetation unique in the area. They stressed the importance of the area as a reservoir of biodiversity. The authors of these studies began seeking financial support in the U.S. for creation of a Special Reserve in the Dzanga-Sangha Dense Forest. In 1987, a presidential decree banned all hunting in the region in order to allow wildlife populations to rebuild.

Social and Cultural Setting

The target community is the populations of the villages of Bayanga and Lindjombo (see Figures 1 and 2). However, this is a heterogeneous community comprised of distinct ethnic groups, including the Pygmy tribe which is most closely concerned with and dependent upon the wildlife and the forest habitat. As in many cases where distinct groups coexist and compete for resources, there is a certain level of hostility and conflict, with the Pygmies at a distinct disadvantage in terms of power and influence.

The Pygmy culture in Bayanga is based on hunting and gathering. In earlier times all artifacts, tools and clothing were made from plant and animal products, although stones, pottery and cloth have been introduced in recent years. The people live in camps in shelters constructed by the women from leaves. Collective hunting with traps and spears is an important economic and social activity. Wild animals have an important cultural and religious significance (as they do for other ethnic groups in the CAR). There are totem species which must not be killed, and other species which have specific uses for talismans, rituals (such as coming-of-age and marriages), medicines and ornaments.

The Pygmies are the most familiar with the forest and the animals and have long been hired as guides by hunters and poachers. While accurate figures are difficult to obtain, it has been estimated that there are about 20 hunter groups in the project area, and that these groups kill on average 52,000 duiker each year for subsistence purposes.

The attitude of the local community toward wildlife was somewhat ambiguous. They considered it an indispensable source of protein and income, and believed that it was a gift of God to their tribe to satisfy their needs. At the same time, they believed that protecting and managing wildlife was the responsibility the State--although it should not interfere with their own inalienable hunting rights.

Resisters and Supporters

Resistance to the proposal for creation of a national park and reserve came mostly from people, primarily outsiders, engaged in the very lucrative business of elephant hunting in the area.

The indigenous people of the Bayanga area (the Sangha-Sangha, the Ngondi riverine tribe, and the Bayaka Pygmies) did not object to the creation of a national park as an "animal reservoir" because their right to hunt in the rest of the reserve was recognized. The village chiefs and leaders therefore supported the proposal.
The project also received strong support and cooperation from the local representatives of the National Party, the RDC: most of the information received by the project management concerning the presence and movements of poachers was supplied courtesy of this group. On the regional level, the Prefect of Sangha-Economic and the Deputy Economic Counselor also supported the project and intervened against those who were opposed to it. The national Government was also supportive, particularly the Ministry of Water, Forests, Hunting, fishing and Tourism. The Resident Minister of Sangha-Economic has been one of the key figures in establishing the project at Bayanga.

International support has come from several sources. The Missouri Botanical Garden played an important role in supporting the original surveys and initiating the project. The WWF-US provides financial and technical support for project implementation. USAID also provides some financial, as will a new World Bank Natural Resource Management Project. A number of organizations (Primate Action Fund Grant and Africa Program, Inter-Africa Team, Plants Program, Save the Children Federation) supported preliminary studies. U.S. Peace Corps volunteers have been involved in the conservation education program and a fishing study and it is proposed that they work on the agroforestry and health and social affairs aspects as well.

Objectives and Design of the Project

The primary objective for strengthening the protection and management of the Dzanga-ndoki National Park and for creation of the Special Dense Forest Reserve of Dzanga-Sanghafor was to protect a representative sample of the unique humid dense forest of southwestern CAR and to provide a sanctuary for a number of threatened species (gorilla, forest elephant, chimpanzee, forest buffalo, bongo). The forest is also regarded as a vital resource for maintaining the livelihood of the Pygmy tribe.

The approach is to provide complete protection in the National Park itself, and to manage the Reserve in an integrated manner, with controlled utilization of its resources. The reserve area is divided into different zones: a rural development zone, a communal hunting zone, a safari hunting zone and a zone for forestry exploitation. Traditional hunting for nourishment of the local community is authorized throughout the reserve.

The long term objectives include institutional development to ensure coherent protection and management of the park and reserve on a permanent basis, and development of research programs and establishment of zoological and botanical stations for CAR and outside students.

Project Activities

The project activities fall into five broad components:

(i) protection
(ii) control of forestry exploitation
(iii) public awareness and educational programs
(iv) development of research programs
(v) general rural development

The project also aims to help put into place a Pygmy Development Fund and a Committee for Nature Management (both to be local non-governmental organizations).

Protection

This includes both "direct" and "indirect" protection activities. The "active" component consists of anti-poaching patrols. At present, the Anti-Poaching Unit is composed of 10 reserve guards and 6 Pygmy guides. All were recruited locally (among the best poachers in the region). This promotes integration of the local community in wildlife protection and provides direct benefits in the form of employment. It also is an effective method of controlling poachers, as those remaining in the area are well known by their erstwhile comrades. The Pygmies have been selected as guides because of their superior knowledge of the forest and its wildlife.

The "indirect" component refers to control of the trade in bushmeat and other animal products. This is facilitated by the natural situation of the Bayanga region. The population density is fairly low (< 1 inhabitant/sq. km.), and the area is bounded on three sides by forest. River traffic to
and from Bayanga is relatively easy to control because there is a permanent brigade of militia on-site. The only access to the village is from the North (Nola), going through Lindjombo. Lindjombo has been the main center of traffic in ivory and for arms, precious stones, etc. Surveillance posts have been installed at three sites.

Public Education

The Education Unit of the project has worked with four groups active in the area (the Nature Club, the Messengers of Good News, the Church of Brothers and the Democratic Union of Central African Women) to promote nature conservation among the local community. One of its primary activities has been the creation of a Nature Conservation Club within the local community. This Unit is also engaged in a census and, in anticipation of the upcoming "Health and Social Affairs" program, is working with a local group on an assistance program for Pygmies with leprosy and tuberculosis.

Rural Development

This component (not yet launched) is concerned with improving local standards of living and providing alternatives to over-exploitation of forest resources and wildlife. Proposed components include:

- a study of the potential for development of artisanal fishing in the Sangha River (currently little practiced)
- an agroforestry program for mixed oil palm and banana plantations
- improved collection and preparation of Irvingia fruits (widely used in cooking throughout the region)
- apiculture
- a program for raising duikers for meat consumption
- a health and social services program to address the serious problem of providing potable water and prevention of infectious diseases which afflict the Pygmy population when they leave the forest and settle in villages
- a village tape library to document and preserve traditional knowledge of the largely illiterate population.

The proposed Pygmy Development Fund would take in revenues from tourism activities (and from pro rata contributions by those employed in related activities) and be used for development activities specifically to benefit the Pygmy community.

Institutional structure

The project is co-directed by the Ministry of Water, Forests, Hunting Fishing and Tourism and by the WWF-US. It is financially supported by WWF-US and by USAID. The U.S. Peace Corps has collaborated in execution, and various local NGOs have also been involved in various ways.

The project staffing currently comprises the following groups:

- the Administrative Unit
- the Protection Unit (1 military instructor, 10 guards, 6 guides)
- the Educational Unit (Peace Corps Volunteers)
- the Rural Development Unit (currently limited to the fishing study executed by the Peace Corps)
- Infrastructure Unit (temporary laborers for construction and maintenance--all locally recruited).

In the near future, a Committee for Wildlife Management will be established as a forum for discussion and decision-making concerning wildlife resources in Bayanga. This committee will bring together the various parties involved with wildlife planning, management and use. Its proposed membership include representatives of the local government (Prefect of Sangha-Economic), the project management, leaders of the village and Pygmy communities, a local womens' group among others.
Intended Benefits to the Local Community

The local community (local government in Bayanga) now receives 40% of the revenues from entrance fees to the Dzanga National Park. For the 1988/89 season the total revenues were about 400,000 CFA. It is hoped that tourism development promoted by the project will increase this amount in the future.

During project implementation to date, the local community has received approximately 17 million CFA in the form of salaries, social security, medical services, etc.

The Social Welfare and Health component has not yet begun, but it proposes to provide potable water to at least 2000 persons and to support construction of an infirmary, latrines and wells, and a school which will be constructed by the village community.

Project Results

On the political level, a new type of protected area—the Special Multiple Use Reserve—has been defined in the CAR network. Also for the first time, a hunting area has been designated to the local community in the context of a conservation project.

The number of poachers apprehended and the collection of fines has increased significantly since the inception of the project. Nevertheless, control of poaching and bushmeat marketing remains a problem. This has been aggravated by the closing of the Slovenia-Bois timber enterprise in 1985, creating unemployment affecting some 400 families. In addition, the legal process for dealing with captured poachers has been slow and ineffective. A large number of cases remain open and thus the deterrent effect on poachers is less than it should be.

Fifty km of roads have been opened and three camps built. Local standards of living have improved through the receipt of revenues from Park entry fees, payment of salaries and the provision of medical services.

A Nature Conservation Club has been created, with about 150 active members.

The Rural Development components (except for the fishing study) have not yet begun due to shortage of funds. However, support from the new World Bank project should alleviate this constraint in the near future.

1. The company was apparently relatively little concerned about any threat to their activities because the profitability of timber production from the area was already declining in part due to the economics of the timber sector. Furthermore, they anticipated that development of tourism would provide a profitable use for the company's 10-seater airplane.
Figure 1: Location of the Dzanga National Park and the Dzanga-Sangha Dense Forest Reserve, Central African Republic

October 1990
Figure 2: Dzanga-Sangha Dense Forest Reserve Project Location of Villages and Camps
RWANDA

The Mountain Gorilla Project
(Volcanoes National Park)

Amy Vedder* and William Weber**

Rwanda is a land of sharp, and often surprising, contrasts. Covering barely 26,000 km² of central African highlands, this landlocked nation's rugged relief nevertheless contains a high degree of ecological diversity. Furthermore, despite the highest human population densities in Africa, nearly 15% of the country remains in a predominantly natural state. Included in this total area are three major blocks of afromontane forest which, while smaller and less rich than many lowland rain forests, are still of considerable conservation importance due to their high proportion of rare, endangered and endemic species.

It is in this context of extreme conditions that Rwanda takes on great importance as a living laboratory for balancing the interests of conservation and development. For the past 12 years, the Mountain Gorilla Project has been a key experiment in this effort.

Background

The Virunga volcanoes stretch across a 65 km front to form a natural boundary between Rwanda and the neighboring nations of Zaire and Uganda to the north. Rising to heights of more than 4500 m and drenched in nearly constant mist and rainfall, the Virungas are covered with prime examples of afromontane vegetation communities. The richest rain forest combines with dense thickets of bamboo at lower elevations, before giving way to more open woodland near 3000 m. Above the treeline, Ericaceous shrubland and fragile alpine communities complete the vegetation sequence.

The vegetational cover of the Virungas serves a dual ecological role vital to the region. During the prolonged rainy seasons, the mountain forest protects vulnerable volcanic soils from erosion, thus preventing downstream siltation and reduction in water quality. Furthermore, it ensures infiltration of water during the rains, followed by slow release of subsurface water during the dry season. By this process, a more even distribution of water is found year-round: increased availability during the dry season and reduced flooding during the rains, both of which greatly enhance human well-being in the surrounding area.

The Virunga vegetation, particularly the forested zones, also provides critical habitat for a very distinctive fauna, adapted to life at high elevations. Among the more than 100 species of birds are many afromontane endemics, while golden monkeys, golden cats, leopards and elephants represent some of the numerous rare and endangered species found

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in the region. The Virungas are best known, however, as the unique home of the mountain gorilla: the most endangered of the great apes.

The combination of its water catchment, esthetic and biological values led Belgian colonial authorities to create Africa's first national park in the Virungas in 1925. Through independence and subsequent political turbulence, the reserve has continued to serve its protective function. The Virungas do not exist in isolation, however, and mounting outside pressures threaten its continued existence.

The principal source of pressure on the remnant forests and all other natural resources of Rwanda is the rapidly expanding human population. Since the turn of the century, this population has increased seven-fold to its current level of more than seven million. This translates to an average density of almost 270/km\(^2\), or more than 500/km\(^2\) if only the arable land base is considered. These figures take on even greater importance when one considers that more than 90% of all Rwandans subsist on the produce and revenue generated on farms which now average less than one hectare per family. In addition, Rwanda's lack of any appreciable mineral resources means that the government places great emphasis on the agricultural export sector, especially coffee and tea, which in turn competes with subsistence production. As a result, land is at a premium, and the pressure to convert remaining wildlands to farmlands increases exponentially with population growth.

The Parc National des Volcans (PNV) in Rwanda's sector of the Virungas has already suffered from this pressure. In 1958, more than 7,500 ha were degazetted for an agricultural settlement program, while another 10,000 ha were cleared in the late 1960s for a cash crop venture focused on pyrethrum. Though the latter was a complete economic failure, 5,000 Rwandan families did secure land upon which they are now permanently established. In total, more than half of the original PNV was thus converted to agriculture and, in combination with poaching pressure from all sides of the reserve, the effect on the population of mountain gorillas was devastating. Between 1960 and the mid-1970s, the already small Virunga population crashed from a level of roughly 450 to only 274 individuals, with an aging population structure that showed little potential for growth.

By 1978, the mountain gorilla was one of the most studied and best-known species in Africa. Much of what we know today about the behavior and social organization of this magnificent creature had already been discovered and transmitted to a fascinated western public through books, articles and films. Yet no substantive attention at all had been given to the root causes of the gorilla's endangered status; nor had any serious effort been made to communicate and cooperate with the Rwandan leaders and general public, upon whom the species' survival depended most directly. In January 1978, efforts were initiated to address these problems, and to reconcile conservation and development interests in the Virunga region.

Pre-project

Although officially not part of the Mountain Gorilla Project (MGP) itself, an 18-month multidisciplinary study conducted prior to establishment of the project proved critical in determining the approach subsequently taken by the MGP. Funded by the New York Zoological Society, authorized by the Rwandan Office of Tourism and National Parks (ORTPN), and undertaken by ourselves during 1978-1979, this work combined research on the demographic, ecological and socio-economic factors involved in the gorillas' decline. Results led to a series of recommendations and applied pilot project activities intended to address the causes of these problems.

The first priority consisted of traditional conservation biology: assessment of the status of the gorilla population, determination of the animals' resource requirements, and consequent evaluation of the viability of the population. A detailed census conducted in 1978 indicated that while the drastic decline in gorilla numbers had slowed, the total population remained small and showed a continued decrease in the percentage of young. The latter indicated a greater effect of poaching and other human disturbance on infant mortality, however, as
basic reproduction rates remained quite high. Furthermore, comprehensive ecological research demonstrated that the current population's requirements for food and space were exceeded by resources available in the park. Thus it was projected that intrinsic population growth could theoretically allow the Virunga gorillas to double in number in a period of 30 years. The major factor identified as a deterrent to growth was illegal hunting of the gorillas, although it was clear that any further habitat loss would also greatly reduce resource availability in the rich lower forest/bamboo zone.

Concurrent research departed from standard conservation practice by examining social and economic factors outside the park ecosystem. Surveys of the population living around the PNV found that the vast majority of farmers believed that their children would not have sufficient land to meet their future needs. In addition, attitudinal surveys indicated that this local population viewed the Virunga forest and its wildlife quite differently than did the western conservationists who sought to protect them. In particular, the farmers living around the park did not recognize or grant much weight to non-consumptive -- scientific, esthetic and moral -- values of conservation. More than half of those surveyed could not cite a single value of protecting the forest or its fauna (see Fig. 1). Among those who did respond, most referred to a limited set of utilitarian values related to either tourism development or hydro-climatological regulation. When questioned directly about the latter, however, fewer than half of those surveyed saw any connection between the Virunga rain forest above them and the availability of rain or stream water in their fields below.

In parallel surveys, the better educated residents of the nearby town of Ruhengeri and students from the National University were more likely to cite pro-conservation values and arguments. Yet their opinions mattered less than those of their rural relatives: those asked to bear the primary opportunity costs of park protection, and whose illegal activities most threatened the future of the reserve. The fact that a majority of these farmers openly expressed the belief that the park should be opened to agriculture was therefore a serious concern -- although excessively steep slopes, shallow soils, heavy rainfall and high elevation combine to virtually eliminate any possibility of sustainable agricultural production on remaining parkland.

One value cited by all groups concerned the economic benefits of tourism, and thus had potential as a basis for broad popular support for park and gorilla conservation. Oddly, such benefits at that time were almost non-existent. In 1977, the year before the survey, fewer than 500 visitors had paid a total of less than $2,000 to enter the PNV. And while the park did employ about 20 people, the pay was poor and morale low. The national and regional development potential of tourism was thus perceived, but unrealized.

Finally, it was clear from our work that while the rest of the world had recently learned a great deal about their country's gorillas, Rwandans themselves had not been exposed to this information. No Rwandan scientist had ever seen, let alone studied gorillas, no university students had been trained to fill this void, no references were made to the gorilla or its habitat in primary or secondary school curricula, and no effort had been made in the broad area of public education. Lacking information and involvement, Rwandans were left without interest in conservation. Based on these findings, it was concluded that long-term conservation of the Virunga gorillas and their habitat was possible, but only if both Rwandan leaders and the local population came to recognize greater value in the park. As a series of project recommendations focusing on both park and people was submitted to the Rwandan government, substantial pilot work was already beginning in conservation education. By mid-1979, authorization to proceed with the project was granted by ORTPN, with further agreement for cooperation from the Ministry of Education. Implementation funds were sought from the U.S. Agency for International Development, but were declined due to the agency's self-imposed restriction to agricultural support. Core funding therefore came from non-governmental conservation organizations. Mobilized in the wake of several highly-publicized gorilla killings in 1978, several of these private groups were searching for a helpful role to play. They
eventually formed the Mountain Gorilla Project consortium\(^2\) in collaboration with Rwandan authorities. Additional support was provided by the Belgian technical assistance program and the U.S. Peace Corps.

**The Mountain Gorilla Project**

The Mountain Gorilla Project of Rwanda was established to preserve the Volcanoes National Park and its wildlife, particularly the mountain gorilla, in a manner consistent with recognition of local, national and international interests. This goal was to be met via a three-pronged approach:

1) improvement of park security to greatly reduce, if not halt, wildlife poaching,

2) establishment of a program of tourism based on tightly-controlled visits to gorillas, in order to provide an economic incentive to protect the park, and

3) development of a conservation education program to increase Rwandan awareness of and interest in their own wildlife resources.

**Improvement of Park Security.** Only 20 park guards and minimal administrative staff were salaried by the government at project inception, and they were in need of equipment, training and motivation in order to work effectively. Initially one, and later two expatriate advisors\(^3\) worked with park personnel to develop a mobile system of anti-poaching patrols. Guards were supplied with uniforms, camping equipment, transportation to departure points, and limited supplemental incentives ($1.10 per trap cut) for 3-6 day foot patrols conducted throughout the park. As the program developed, Belgian technical assistance provided major logistic support in the form of central park offices and guard houses, and the MGP consortium funded the construction of small peripheral sub-stations for guards at selected points along the border of the park. As proceeds from tourism increased over the years (see below), the anti-poaching force was steadily augmented to the current level of more than 70 active, full-time guards, all of whom are fully paid by ORTPN.

**Development of Tourism.** Prior to the beginning of the project, the occasional Virunga visitor looking for gorillas was escorted by a park guard or local resident into the park to wander in search of animals, but would rarely find them. With the technical help of one-two expatriate advisors who had extensive prior experience with mountain gorillas, tour guides were trained to track selected free-ranging gorilla groups, to approach and observe the animals with minimal disturbance and maximal safety, and to manage small groups of visitors during the entire process. All training was designed to provide a high-quality, intimate experience for tourists who would be willing to meet gorillas in their own habitat, on their own terms.

Within the first few months of operation, a reservation system was instituted in order to handle the rapidly growing number of visitors wishing to participate. Since the major objective in establishing a tourist program was to generate park revenue, there was initial resistance on the part of Rwandan authorities to limiting the number of paying tourists visiting gorilla groups per day. An incident in which a staff person accompanying an unwieldy group of tourists was injured, however, led to agreement on the part of all that restrictions were required. The agreed upon number of 6 individuals per group ensured both a higher-quality experience for tourists as well as greater safety for visitors and gorillas. Again, as the program began to succeed, additional logistic development was provided by Belgian technical aid, which constructed a guesthouse to serve overnight visitors.

**Conservation Education.** As described above, a survey of Rwandans in 1978 demonstrated very little awareness of non-consumptive values of the Virunga forest. This lack of appreciation, combined with the Ministry of Education's strong interest in teaching locally-relevant science, offered tremendous potential for development of an effective conservation education program. During the years 1979-1982, one-two expatriates worked in collaboration with the Ministry of Education, which seconded one staff person half-time, to produce educational materials and portions of a new science
curriculum. Film and slide shows were distributed and shown in conjunction with talks by MGP personnel at schools and at the national university. The general public was reached via additional film shows, radio programs, and distribution of informational calendars and stickers. The message conveyed focused on two themes: the nature and endangered status of mountain gorillas, and the multiple values provided by the mountain forest (particularly watershed and soil protection).

Due to a lapse in both outside financial support and within-ministry continuity, however, the education program became defunct after 1982. It was reborn in 1986 and continues to date, under the auspices of renewed consortium funding and ORTPN management. Two full-time Rwandan personnel are currently employed, one of whom has received high-level training via short courses in Europe and East Africa. Further assistance has been provided by a US Peace Corps volunteer. Education activities have expanded to include seminars for technical school students, local officials, and in-service training for teachers. Project staff are also working in collaboration with other regional conservation educators to produce nation-wide program materials.

Overall Park Management. Throughout the duration of the Mountain Gorilla Project, expatriate personnel have helped stimulate and guide park management planning. This has primarily been on a per-need basis, with considerable emphasis on individual initiative. Since 1985, however, a five-year management plan for the PNV has provided a framework for coordination among the various project components, park and ORTPN staff, and conservation organizations.

Rwandan Participation. Since 1978, when preliminary work began which led to the development of the Mountain Gorilla Project, local and national interests and needs have been surveyed, evaluated, and incorporated into MGP design where possible. It should be stated, however, that initial identification of the need, urgency, and approach to be taken in the conservation of mountain gorillas and their habitat was generated primarily by expatriates. We think it goes without saying that activities initiated by local people, with strong local commitment, have a greater likelihood of long-term success than actions determined by others from afar. As described earlier, however, there was a dramatic lack of recognition of the ecological services provided directly to Rwandans -- both on a local and a national level -- by the Virunga forest. Furthermore, there was virtually no knowledge or appreciation of the unique status of the Virunga gorilla population -- the only confirmed population of mountain gorillas in the world. These kinds of information were required for recognition of the need for conservation action, and thus ideas for such action came first from outside the country where this information was readily available.

During project design and development, however, as this information became more widespread, Rwandan participation in and appreciation for conservation efforts increased. As might be expected, ORTPN personnel first supported traditional anti-poaching efforts. The initial attitude toward tourism development, on the other hand, was largely one of bemused doubt. The small amount of tourism of this sort taking place anywhere in the world was generally limited to infrequent, low-paying overland travelers. National park officials, as well as European advisors, thought it unlikely that a significant number of foreign visitors would pay to climb rugged slopes in cold, wet, muddy conditions in order to view gorillas. Whereas park guards began working at once on patrols, no official park employees were made available to train as tour guides during the first 2 months of the project. As the project progressed and showed initial success, however, all doubts were erased and ORTPN became a full partner, then the controlling agency for tourism. ORTPN's active involvement, the increasing number of international visitors, and the growing revenues which resulted each undoubtedly played a role in the cancelling of all park conversion projects that were being discussed by other ministries. The national government, and in particular the president of Rwanda, became committed to long-term preservation of the PNV.

As park protection efforts improved, the opportunity costs of forgone exploitation increased for those people living closest to the PNV. In this situation, it seemed appropriate
to discuss the idea of revenue-sharing based on tourism receipts with those communities (known as communes) bordering the park. Under such an arrangement, the communes would receive a percentage (5% has been proposed) of entry fees, which they could then apply to their own local development interests. This concept, however, has been repeatedly rejected by central government authorities.

Eventual recognition of human needs and their effect on the PNV, however, resulted in the establishment in 1985 of a national resource management project in the surrounding Ruhengeri prefecture. Funded by the U.S. Agency for International Development, the project conducted a more exhaustive survey of regional environmental conditions and local resource requirements. Among numerous recommendations which stemmed from this survey, priority attention was given to the linked issues of soil conservation and agroforestry.

Results of the Mountain Gorilla Project

Ten years after its inception, it is possible to make an interim assessment of the various components of the MGP. First, gorilla poaching declined through the early years of the project, as the guard force improved steadily. ORTPN currently employs approximately 70 guards, roughly one man for every 2 km² of parkland, and pays their combined salaries of more than $100,000 per year. As a result of the collaborative efforts of park and project staff, not a single gorilla is known to have been killed directly by hunters since 1984, although one has died in a trap set for antelope. It is sobering to note, however, that the number of antelope traps cut has not declined over the past six years, with an average of 2350 traps per year.

An average of more than 5,000 tourists now come to the park to see gorillas annually (see Fig. 2). Visits include an average 2-hour guided hike through the park in search of a gorilla family, followed by observations of gorillas as they rest, play, and feed at midday. Tour groups are limited to 6-8 people, remain no more than one hour, and approach no closer than 5-10m from the animals in order to minimize disturbance to the gorillas.

With demand for this rare experience proving to be nearly price inelastic, visitors pay almost $200 each for an intimate, but highly controlled visit to one of four habituated, yet free-ranging gorilla groups. These visits thus generate nearly $1,000,000 per year in direct park revenues, which pass directly into central government coffers. A portion of these benefits are returned to the PNV to cover operating costs. Over the years, as profits have increased, this portion has grown to support a greater number of park guards and facilities.

The remaining portion of park benefits is retained by the national government. On a national and/or regional scale, Rwandans therefore benefit to the extent that these revenues are reinvested for development purposes. Furthermore, it is estimated that foreign tourists spend an additional $600 each, or roughly $3,000,000 annually in the country. Although most of this money is spent in the capital city where tourist vehicles are rented, fuel and supplies are purchased, and hotels are frequented, a significant amount is left in the PNV region at local restaurants and hotels, all of which are privately owned. With gorillas thus leading the way, it is generally agreed that tourism has become the fastest growth sector in the Rwandan economy. Estimated revenues from all tourist-related sources total $6-8 million per year, moving tourism ahead of all but coffee and tea exports as one of Rwanda's principal sources of foreign exchange.

The education program has reached hundreds of thousands of Rwandans via presentations to school and public audiences. Spin-off activities generated by individuals and institutions unrelated to the project have aided in raising the profile of mountain gorillas in the country: popular songs have been written, postage stamps produced, and business logos developed with gorillas as their focus. Results are more difficult to quantify than for other aspects of the project, but assimilation of new information is shown from before-and-after surveys focusing on current student and teacher-training presentations. Positive changes on the part of the general public are indicated by comparisons of matched surveys conducted in 1979 and 1984. The more recent interviews showed the local farming population to be more likely to cite
non-consumptive values of park and wildlife preservation than they were five years earlier (see Fig. 3). With respect to national park status, more than half of the local farmers originally surveyed had wanted to convert the park to agriculture, whereas less than 30% supported this idea in 1984. At that time tourism seemed to have made the strongest impression on the population: more than 80% of all farmers thought that both the country as a whole, and their region, benefited economically from tourism development.

Evaluation of the MGP ultimately depends on the status of the mountain gorilla, the project's *raison d'être*. Several censuses have been completed since the project began, with results presented in Fig. 4. After an apparent gradual decline in numbers to a low of approximately 254 in 1981, the population was estimated to number 293 by 1986. This was the first recorded increase in nearly three decades. Further analysis showed that percentages of young were highest in gorilla groups visited by tourists, thus negating any concerns that tourism was having a negative effect on reproduction to that point. Finally, the most recent census, coordinated by C. Sholley in late 1989, has shown a further increase to more than 320 individuals.

**Qualifications.** To date the Mountain Gorilla Project has proven a remarkable success. However, long-term results cannot yet be evaluated. In the midst of a rapidly growing human population, with increasing resource requirements and few alternatives to living off the land, conservation efforts must persist well into the future. Park security will require continued vigilance. Tourism, even when carefully controlled, brings with it a risk of introduction of disease or disturbance to the gorilla population upon which it depends. An education program can be difficult to sustain, as already evidenced in the lapse encountered in the mid-1980s, and its true rewards may not be noticeable for many years.

In addition, several specific criticisms can justifiably be levied against the gorilla conservation program. Most of these center around economic issues. Although all project components have increased the employment of local people, the vast majority of economic benefits have flowed into the capital city or into central government coffers. Only a minor portion of total benefits have remained in the area around the park. As mentioned above, the idea of revenue-sharing with communities around the park has been steadily resisted by national authorities. This is incongruent with the current official policy, however, which identifies the commune as the engine of national development.

Furthermore, in the interests of raising revenue, officials decided in 1988 that the two-tiered pricing system for gorilla visits would be abandoned: Rwandan visitors are currently required to pay the same $200 price that an expatriate vacationer pays. The result, in a country where per capita annual income is only $260, has been a virtual cessation of local visitation. This unfortunately works counter to educational goals: fewer Rwandans have a first-hand appreciation for the gorillas, and goodwill toward the park will most certainly be reduced.

Along with the steady success shown by the tourism program have come heightened expectations. At present, with four gorilla families habituated for tourists, virtually all accessible groups are being visited at a peak rate. Only by increasing the number of visitors to each group, or increasing the ticket price even further, can more income be generated. In 1989, for the first time, the pressure to enhance revenues resulted in a decision by park officials to increase the number of tourists allowed to visit each gorilla group. Only time will tell if this, or possible subsequent increases, will result in less control over tourist behavior, a decline in the quality of viewing, or a negative impact via disturbance of the gorillas themselves.

Apart from economic concerns, the final limitation to be noted has been the still incomplete transfer of information and expertise to Rwandan personnel. Tighter collaboration between advisors and counterparts throughout the years might have resulted in more of the responsibility for project workings being currently shouldered by Rwandan park officials. This is still a goal to be pursued.
Conclusions

Despite the caveats mentioned above, the Mountain Gorilla Project has so far proved to be a dramatic success story. Receding park boundaries have been stabilized, gorilla numbers are rebounding, substantial revenue is being generated to more than cover the costs of park operation, excellent potential for local revenue-sharing exists, local support for conservation has increased significantly, and a strong long-term commitment has been made on the part of the national government of Rwanda to protect the Volcanoes National Park and its wildlife. These aspects of success have not gone unnoticed. The project has served as a model for gorilla conservation in Zaire and Uganda, and its principles have been applied in conservation projects concerned with tropical forests as far away as Brazil and Madagascar.

Caution should be exercised, however, in attempting to transfer project activities to other contexts. The MGP has been blessed with a combination of an attractive focal species, a long-standing national park system, a scenic and politically stable host country, relatively good access routes, and a favorable climate. These are but a few of the factors which have led to the initial success of tourism, which in turn has had a profound, positive impact on all other project activities. Many regions of equal or greater biological diversity do not have this combination of advantages, nor are they necessarily found in similar socio-economic contexts. Although the specific activities undertaken by the MGP should therefore not be seen as fixed prescriptions for success, the general approach has much to offer. In particular, the multidisciplinary, problem-oriented design phase of the project would appear to have great potential as a means of identifying and incorporating a broad range of interests -- local, national and international, as well as biological and socio-economic -- into the conservation equation for any given area.

1. The Virungas comprise a single, contiguous ecosystem. Administrative responsibility for the 420 km² protected area, however, is subdivided among Rwanda, Zaire and Uganda.

2. Initial supporting organizations were: the African Wildlife Foundation (which has remained the lead organization throughout), the Fauna and Flora Preservation Society, and the Peoples's Trust for Endangered Species (PTES). Later the World Wildlife Fund joined the consortium, while the PTES ended support. The New York Zoological Society has continued to fund Virunga gorilla censuses.

3. MGP staff has varied in number through the years in response to changing priorities and uneven funding from the consortium. At any point in time, professional staff salaried by the project has numbered 3-4 expatriates, and up to 2 Rwandans. Project staff work with the full complement of PNV personnel (currently numbering approximately 80).
GHANA

Coastal Wetlands Conservation:
The Save the Seashore Birds Project

by Yaa Ntiamoa-Baidu *

Introduction

Ghana's coastal wetlands are very important for waterbirds and also provide valuable resources for the human communities who live around them. These resources include fish, shells for animal feed and building material, salt for domestic and industrial use, grass for thatch and mats and mangrove for firewood. A large number of people depend on these coastal resources for their livelihood, while others use them to supplement their income. For example, in the small Sakumo lagoon situated on the coastal road between Accra and Tema, tilapia and crab fisheries provide an income 2-8 times the daily minimum government wage, and the income from shell collection is as much as 10 times higher than government wage. As many as 310 fishermen have been found using the lagoon during the peak season. The lagoon fisheries become particularly important as a source of protein for coastal communities during the lean season for marine fisheries.

Six of Ghana's coastal wetlands (Esiama Beach, Muni Lagoon, Densu Delta and Salt Pans, Sakumo Lagoon, Songaw and Keta Lagoon complexes) qualify as wetlands of international importance. These wetlands provide important roosting, feeding and nesting sites for large numbers of waders, herons and egrets, ducks and terns, some of them in internationally important populations. Among the thousands of migrant terns which arrive in August each year to feed and roost along the Ghana coast are substantial numbers of the threatened Roseate tern, Sterna dougallii. All of the bird species are hunted for food and/or cash income and for sport.

The extensive use which local communities make of the lagoons' resources means that their needs must be taken into account in any proposed conservation program. This case study describes the approach taken under the "Save the Seashore Birds" project, which aims to protect the birds and their wetland habitats while providing the local communities benefits from the wetlands and reinforcing traditional resource management strategies.

History and Framework of the Project

The "Save the Seashore Birds Project-Ghana" (SSBP-G) is a cooperative program involving the government of Ghana, the Royal Society for the Protection of Birds (RSPB) and the International Council for Bird Preservation (ICBP). It grew out of a concern for the survival of the Roseate tern, whose breeding populations in Britain and Ireland have declined over the past 20 years from some 2500 pairs to under 500. Studies showed that large numbers of the terns died as a result of trapping on the Ghanaian

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coast, which is the species' most important wintering ground.

The project agreement, signed in June 1985, gave the aim of the project as protecting sea and shore birds and their coastal habitats through research, site protection activities, education and public awareness campaigns. Under the agreement, the RSPB and ICBP provide financial and technical support while the government provides staff and basic salaries. On average, the RSPB provides 30,000 pounds sterling each year for equipment, training and running costs.

From the beginning, it was recognized that involvement of Ghanaians, both in decision making and implementation, and the availability of trained manpower was crucial for project success. Therefore, a three-member Ghanaian delegation comprising a government representative, a wildlife official and a media representative was invited to the UK to participate in project planning. The general Project Coordinator (based in the U.K.) is an expatriate, appointed by the funding agencies, but all others involved in project implementation, including the Project Officer, are Ghanaians.

The Project Coordinator serves as a liaison between the funding agencies and the Project Officer and to ensure that funds, equipment and technical support are made available on schedule. The Project Officer (PO) is responsible for day to day running of the project. She is supported by technical staff who carry out the various programs undertaken by the project.

An advisory committee (AC) provides a forum for advice to the Project and to PO regarding the direction and execution of the project and for dissemination of information about the project to the local community and the general public. The AC is comprised of five core members: three independent Ghanaian wildlife conservation experts and one representative each from the Department of Wildlife and the Ministry of Education. The core members are supported by additional members from various policy-related government departments, the media and elected representatives of local organizations (e.g., the Canoe Fishermen's Council) whose activities affect the coastal zone and the seashore birds.

All the local organizations and institutions represented on the AC existed prior to the project (as opposed to Wildlife Clubs which were formed under project auspices--see below). As supporting members of the AC, the local representatives serve a two-way function. They advise the PO and serve as the community's voice in decision making and problem solving, and they also inform their constituents of the project's activities and decisions taken. For example, after a meeting the representative of the Canoe Fishermen's Council will inform the chief fishermen of the villages of the project's objectives and its decision that trapping of terns must stop. The chief fishermen carry the message to their respective villages, where the local fishermen discuss the matter. Ultimately it is their responsibility to ensure that the village children stop the trapping.

Project Components

The project has four main components: training, education and public awareness campaigns, research and site protection. Project staff receive both formal and informal training locally and abroad in bird counting techniques, conservation education and site management. In addition, the project organizes special training programs for wildlife workers and officers from Ghana and neighboring West African countries, and for organization and leadership training for leaders of Wildlife Clubs.

The education component aims at creating awareness and promoting public interest in conservation issues and the target groups have been mainly school children and coastal communities. Project staff visit schools and communities for talks and slide film shows, organizes field trips, participates in radio and television programs and produces publicity materials such as films and badges, T-shirts, pens and stickers which bear the project's name and a conservation message. Groups are encouraged to form wildlife clubs and the project organizes camps for wildlife club members during school vacations as a means of encouraging young peoples' interest in wild animals and plants and the inter-relationships between man and his environment.
Research activities include monitoring and data collection aimed at enabling the PO to identify development activities and changes in resource use which are likely to have adverse effects on the wetlands habitat and wildlife. Based on this information, the PO can discuss the issues with the local communities and help them voice their concerns to the government to prevent or redirect harmful development proposals.

The site protection component involves two elements: (1) control of exploitation, economic activities and development which may be harmful to the wildlife and habitat in the project area, and (2) development of management plans for the sites to reduce conflicts among the different groups who use the wetland resources. An example of the former is the Sakumo Lagoon, where proposals to develop shrimp culture were opposed by the Project based on their anticipated impact on the habitat and its resources. As a result of the opposition, the proposals were abandoned. The second element is illustrated by the examples of the Densu and Muni areas discussed below.

Integration of Traditional and Modern Conservation Systems

The primary objective of the SSBP-G is to protect seashore bird populations and to manage coastal wetlands to maintain their value as bird habitats. However, it also seeks to enhance the benefits which local communities obtain from the wetlands. Rather than developing and introducing (or imposing) completely new approaches and conservation measures, the project's approach is to integrate traditional local conservation strategies with modern systems.

In the past, conservation of the coastal lagoons and their resources was based on religious beliefs and superstitions associated with fetishes and prohibitions entrenched in taboos. These prohibitions and taboos constituted a traditional system of rules and regulations which served to protect and maintain the habitat and the wildlife. They included such features as closed seasons, sacred days, tabooed species and sacred groves, which effectively prevented over-exploitation and, in fact, have clear parallels in modern methods of wildlife protection and management. These rules were enforced by traditional authorities such as local Chiefs and Fetish Priests supported by the local communities, and although they had no legal backing in the modern sense the traditional beliefs were strong enough to maintain peoples' respect and compliance.

Unfortunately, these traditional belief systems have either broken down or are in the process of breaking down, due to factors such as the introduction of Christianity and western education and a growing human population with its associated increase in demand for resources. The SSBP-G's approach is to revive, promote and build upon these traditional conservation strategies with which the local people are already familiar. Specific components of the traditional beliefs and practices are evaluated with respect to their value as conservation tools, with the aim of using the modern legal system to strengthen those which are positive and effective.

To some extent this approach is supported by a recent law which established district assemblies in Ghana. This law empowers the local communities to formulate local by-laws to protect their environment and natural resources for their own benefit. However, under this law the communities themselves are responsible for management and protection of any areas which they designate for protection.

Area and Resource Management Strategies

All of the key bird habitat sites along the Ghanaian coast are heavily utilized by the local communities. In most of these areas there are conflicting interests among different user groups and some of the current use practices are degrading the habitat and biological resources. The first priority under the site protection component was to identify and clarify these local needs and conflicts through environmental surveys and community meetings and discussions with local organizations and knowledgeable individuals. This has largely been accomplished, as described below. The next step is to develop management strategies which are acceptable to all of the interested parties and provide concrete economic benefits to the local community. The
following two examples illustrate the process and the types of issues which arise.

Densu Delta, Lagoon and Salt Pans

This wetland, situated 11 km west of Accra, consists of sand dunes, open lagoon salt pans, marshlands and scrublands. It is fed by the Densu River which is dammed upstream to supply water to Accra. The water flow into the wetlands is regulated by the Water Works. Other human activities in the area include fishing, hunting and large scale commercial salt extraction. The wetland supports large numbers of terns, waders and herons.

The main interests in the wetland, therefore, are the salt industry, the water works, fisheries and wildlife. The sources of conflict are the water regime and human disturbance. The management of the Water Works must periodically release water into the wetlands to maintain the reservoir level and avoid flooding of a nearby major road. The release of water makes the management of the salt company unhappy because the pans are flooded and the fishermen are unhappy if the lagoon fills up and becomes too deep for fishing. The flooding also covers bird roosting and feeding sites, and in a number of cases nests and eggs have been washed away. At the same time, hunting, fishing and other human activities in the area destroy or disturb roosting and nesting birds.

A management strategy has been proposed which advocates zonation of the area, including the establishment of a sanctuary in some parts of the marshland which would be kept free of human disturbance. This area has been proposed by the government to be designated as a wetland of international importance under the Ramsar Convention. Other elements of the strategy include regulation of hunting and development of a water management strategy that would satisfy the requirements of all interested parties. The water management strategy will involve the construction of sluices to ensure that adequate water is retained in the wetland during the dry season, and excess water can be released into the wetland by the water works. Both the salt company and the local fishermen welcome this proposal and the water works management considers it acceptable.

Muni Lagoon

The Muni Lagoon is significant for the large numbers of terns and herons it supports. The lagoon is situated near Winneba and adjoins the Yenku Forest Reserve and its surroundings, which together are the traditional hunting grounds of the Efutu people. The people of this area observe an annual festival, the Aboakyir Festival, which involves capturing a live Bushbuck with bare hands for sacrifice to their gods. The festival is an important social event binding the community. Heavy hunting and habitat destruction through expanding agriculture have resulted in serious depletion of wild animals in the area, to the extent that in recent years the hunting parties have failed to catch a Bushbuck. This is a serious concern for the local people, and they are anxious to have the area protected.

The interests here are cultural activities, fisheries and wildlife with conflicts arising because of overexploitation, as well as the agricultural interests which are converting wildlife habitat. The management strategy which has been proposed here again involves zonation, including establishment of a wildlife sanctuary, retention of the traditional fishing and hunting rights and regulation of exploitation.

Project Achievements and Status

The primary objectives of the SSBP-G were: (1) preservation of the bird populations and their habitat, and (2) raising public awareness of conservation to gain the support of the local populations in this conservation effort. To gain this support, project initiators knew they would have to persuade the local people that conservation was in their own best interests, not just for the birds. The broader objective of developing area management plans has grown out of the realization that only land use planning which resolves conflicting interests in these areas will provide long-term security for the wetlands and the wildlife.
The second three-year term of the project will end in June, 1991. The primary objectives have been attained, as the hunting and trapping of seashore birds in the project area has reportedly been greatly reduced. Furthermore, local communities have demonstrated their support through their willingness to set aside wildlife sanctuaries within the wetland areas. Collection of data on wildlife populations and environmental conditions has also progressed well. Considerable progress has been made in clarifying the key conservation issues and conflicting interests, thus providing the basis for development of land use plans which will maintain the wildlife and habitats and still allow communities to exploit the wetlands resources in a sustainable way. Among other proposals, it is hoped that additional environmentally benign revenue-earning activities can be introduced, such as expansion of tourism based on birdwatching. In a few areas management plans have been proposed and generally accepted by the different parties concerned, although implementation has not yet begun.

Achievements in relation to public awareness, education and training have been significant. The seven project staff who have been trained now represent a core of nationals with ornithological expertise. Thirty-eight Wildlife Clubs have been formed with a collective membership of over 2,500 (and growing). The project has contributed to a significant increase in public awareness and interest in conservation issues, as indicated by measures such as newspaper coverage of wildlife and related issues (a mean of 30 items per month in early 1989, compared with 4 per month in 1986 in the country's major newspaper) and entrants in a national wildlife essay competition (no entries in 1986, vs. 222 in 1989).

A top priority for the future is establishment of the legal framework by which the government can: (1) support local communities' rights of access to their resources, and (2) strengthen traditional conservation systems and integrate them with modern requirements and regulations. Another emphasis will be institutionalizing the data collection activities into sustainable environmental and wildlife monitoring systems.

Conclusions

Among the key elements in this project is the recognition that a program aimed at preservation of endangered species will be accepted and supported by the local community only when local people see that it will also contribute to meeting their own, direct needs. The SSBP-G would have had little chance of success if it had concentrated only on conservation of the Roseate Tern. However, the local communities had themselves become concerned about low fish catches from the lagoons, the scarcity of bushmeat and disappearance of bushbuck and, in general, the threat posed by environmental deterioration to their ancestral traditions and their way of life. The two-way role of representatives of the community and resource user groups is also significant: their participation in the project's Advisory Committee both gives the community a voice in decision making and problem solving and serves to inform community members of their responsibilities in implementing decisions that are made. Finally, the important role of the funding agencies (RSPB/ICBP) in providing the required financial and technical support and the support and high degree of interest accorded by the government must also be recognized.
ZAMBIA WETLANDS PROJECT

WWF Project No. 3515: Zambia, Conservation and Development of Kafue Flats and Bangweulu Basin

by R.C.V. Jeffery /

Background

Zambia is a landlocked country in Southern Africa. The land surface is predominantly elevated plateau (over 1000 m above sea level) dominated by Miombo woodlands. There are two major catchments: the Zambezi which drains into the Indian Ocean, and the Luapula which is part of the Congo system and drains into the Atlantic Ocean. About 6% of Zambia may be classified as wetlands, including the Kafue and the black lechwe (subspecies endemic to Zambia), the sitatunga, tsessebe, zebra, wattled cranes and shoebills. The first five are officially protected species in Zambia. However, these wetlands also have a major importance as intact environments supporting fisheries, irrigation, HEP production, water supply, agriculture, communal grazing, tourism and hunting activities. For these reasons, these areas were selected for a project aimed at developing natural resource management on a multi-disciplinary basis, despite the complicating factor that the majority of the territory falls into protected areas, either National Parks or Game Management Areas, subject to the jurisdiction of the National Parks and Wildlife Act.

The Kafue Flats and Bangweulu Swamps are important refuges for wildlife, including the kafue and the black lechwe (subspecies endemic to Zambia), the sitatunga, tsessebe, zebra, wattled cranes and shoebills. The full economic potential of wildlife in Zambia is far from being realized, particularly within the formal economy as poaching and illegal trade in wildlife products have been extensive since the mid-1970's. Nevertheless, wildlife contributed US$ 3.3 million to the Central Government in 1988 through statutory fees alone, and raised US$ 1.4 million for the National Parks and Wildlife Service's Wildlife Conservation Revolving Fund [see case study on Zambia LIRDP]. With better management and investment in wildlife development, this performance may be greatly improved.

The basic objective of the WWF-Zambia Wetlands Project was to establish (or re-establish) a natural resource management regime in participation with the local communities, in recognition of the importance of the project area to both the nation and the local communities. The project was formally developed by the Government of Zambia in 1986, following regional discussions about a wetlands program for the SADCC states. Financial and technical assistance has been provided by IUCN and WWF-International.

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The Target Communities

The target communities for the project are the indigenous residents of 14 Chiefdoms of the Kafue Flats and Bangweulu Swamps. To a lesser extent, they also include the non-indigenous (immigrant) populations in the area, and the public servants of the various authorities concerned with management, control and regulation of the project areas.

The indigenous people of the Kafue Flats are predominantly Ila and Tonga, traditional cattle-keeping people. They also engage in subsistence and small-scale commercial agriculture, mainly on the periphery of the wetlands themselves. A traditional form of hunting was once practised by the local people under the authority of the Chiefs. It consisted of herding groups of lechwe toward hunters armed with spears and dogs on one or two occasions in a year. Most of the fishermen of the Kafue Flats are recent immigrants.

The indigenous people of the Bangweulu Swamps are Bisas and Ungas, traditionally hunters and fishermen. Both parts of the project area were once occupied by the BaTwa, a non-Bantu people racially similar to Pygmies, Hottentots and Bushmen.

As in most parts of Zambia, hunting was strictly controlled by the Chiefs in the past. However, infiltration by powerful outside hunting interests and the trend of Centralization of government in pre- and early post-independence Zambia, resulted in the alienation of the hunting rights of the traditional authorities. Along with these rights, the local people lost their interest in control and management of the wildlife. However, a recent shift in government policy towards de-centralization [see also case study on LIRDP] has fostered the establishment of this and similar projects around Zambia, which aim to revive the interest of local communities in the wildlife resource.

The WWF-Zambia Wetlands Project

Objectives and Activities

The overall objectives of the project are to conserve and manage natural resources of the Kafue Flats and Bangweulu Swamps, in order to maintain or enhance their natural productivity for the sustainable use and development of resident communities and the nation as a whole. The project addresses a variety of resources, but this report will focus on wildlife.

Activities so far have chiefly been concerned with organizing local communities to participate in the project, and assessing their priority needs and development requirements. Other activities include community development, research (biological, environmental and sociological), management, training and education.

Community development includes building and rehabilitation of rural health centers (clinics) local schools, access routes and water supply (wells and boreholes) and development of indigenous economic enterprises such as safari camps, shops and a game cropping scheme. Research includes wildlife censuses and other stock assessments, monitoring of water flows, usage and pollution, and assessment of community needs, aspirations and attitudes. Management includes anti-poaching, control of hunting and infrastructure development. Training includes training of community members in skills related to wetlands management or utilization of wetlands resources. Education includes extension work, public relations and development of conservation awareness.

Implementation Structure and Local Participation

The project is established as a project of the Department of National Parks and Wildlife, and is implemented in conjunction with the Department's Administrative Management Design Policy for Game Management Areas (ADMADE--see LIRDP case study) and its Wildlife Conservation Revolving Fund. Project activities are carried out by 39 project staff (all, with the exception of the expatriate Project Leader, recruited from within the project area), 3 individuals seconded by the government and a large number of civil servants associated
with the project and the project area. Formal associations have been developed with other agencies, such as the Departments of Fisheries and Social Development, the University of Zambia and the National Conservation Committee. There is a plan to increase integration with various departments by setting up a multi-disciplinary Professional and Technical Advisory Committee. A multi-disciplinary, high level Steering Committee has already been established by the parent Ministry, the Ministry of Tourism. One objective of this broadening is to help ensure continuation of the program after major external funding ceases in 4-8 years.

In the field, Community Development Units (CDUs) are being established in every participating Chiefdom. These will be incorporated in their various groupings to constitute four Wetlands Management Authorities in the four Wetlands Management Units of the two project areas. The WMAs will be constituted by the Principal District Councils of the four WMUs. While technical management and research will always remain a function of the various technical authorities concerned, the WMAs will make their own decisions on how to apply the information, advice and financial resources which come to them to promote their own development programs. The project areas as a whole will be subject to development regulations which will be established in a framework of land-use management plans which will be approved by the WMAs in collaboration with appropriate technical authorities. Meanwhile, care is being taken to consult local communities and their leaders at every step of project development to ensure it fulfills both its own objectives and the aspirations of the local people.

Once the WMAs are established, local communities should again have a direct say and share in the management and benefits of their traditional wetlands resources. However, this will not mean simply re-establishing the traditional authorities and management systems as the pressures on the land have greatly increased, due to human population growth and expansion. Therefore, the project aims at developing a revival of traditional authority supported by contemporary technology, politics and government. This means that there must be an interface between traditional and contemporary systems of authority, and this is provided by the membership of CDUs (Chiefdoms) on the WMAs established at the District Council level.

Benefits to the Local Communities

The project is still in its very early stages, so that the benefits accruing to local communities are mainly in the form of community development programs funded by the project. These programs have been provided largely in response to the priorities outlined by the communities themselves. Of course, the Civil Service also benefits from the project as it provides means (such as vehicles) to help government officers execute their responsibilities and also improved benefits and incentives for them.

In the long term, however, the success of the project will depend on the successful establishment and functioning of CDUs and WMAs. To this end, the CDUs and WMAs will be made into statutory bodies within a development infrastructure already established by the Ministry of Tourism. The CDUs, through their respective WMAs, will exercise their traditional rights to participate in both the management and utilization of the area's natural resources to improve their standards of living.

The revenues to help realize these aims are to come through a system of local "rights" attached to the Statutory Fees already collected by the central government for use of various resources. For example, for every Kafue lechwe hunting license issued to a foreign safari hunter at a price of US$ 1000, a "Hunting Rights Fee" of US$ 100 must also be paid to the local WMA. The challenge now is to develop this system further for all local natural resources to maximise returns to the communities of the project areas without alienating the interests of the central government (practically speaking, this means deciding on a revenue sharing system acceptable to both parties). Also under discussion are means to give the WMAs preferred access to the resources of the project area, to the exclusion of outside interests.

The project aims to benefit the community at large by capturing revenues from communal resources. This includes re-
establishing law enforcement in the project area, thus curtailing illicit individual hunting. Clearly, some individuals will see this as a negative feature and a personal cost. However, the project does not intend to interfere with any legal enterprises, such as licensed hunting or cattle husbandry in the project area.

Wildlife Production and Harvesting

Production and harvesting of wildlife resources is only one facet of the natural resource management goals of the Wetlands Project. Legal offtakes of game for both areas are small (less than 600 Kafue and black lechwe in 1988), including all animals killed for commercial safari hunting, local recreational or subsistence hunting and animals captured for live sale and restocking. Offtake from poaching far exceeds the legal offtake. Poaching does contribute to the cash economy and nutritional levels of the local communities to some extent, but has many disadvantages. It is non-selective and unregulated, and therefore usually overexploitative and unsustainable, it does not maximize return from the products and it does not contribute to government revenues (either central or local). The benefits are usually monopolized by a small group of people who are often not even residents of the area.

The potential for wildlife harvesting may be seen by examining the population trends of the Kafue lechwe population. Historically, the lechwe occupied a large range covering most of the Kafue Flats and probably numbered in excess of 250,000 animals. By the 1970s the range was much restricted (by expanding agriculture and other activities) but, in the absence of natural predators this more restricted area became overpopulated (ca. 100,000 animals.) By the 1980's the populations had crashed to about 40,000, due to natural causes -- increased poaching and perhaps environmental restrictions caused by newly constructed dams. With improved law enforcement, by 1988 the population had begun to recover and had reached about 65,000.

Assuming a static population at about 50,000 with a potential maximum annual rate of increase of 20% or a more modest 10% (i.e., 10,000 or 5,000 animals per year), large numbers of lechwe could be available for legal cropping each year if illegal poaching could be stopped.

Therefore, the project has focused on curbing poaching and experimenting with a number of different methods of cropping lechwe and retaining the benefits in the project area. Technical and biological considerations will determine the annual quotas for each species, and it will be up to the WMAs to decide how to allocate them (e.g. safari hunting, local hunting, ceremonies, etc.).

Results to Date

It is too early in the project to expect to detect or interpret a substantial increase in natural resource availability as a result of project activities, although the increase in lechwe populations is encouraging. The most significant achievements of the project to date are the changing attitudes and interests of the local communities, which are clearly expressing their wish to participate.

The project has succeeded in establishing most of the anticipated 14 CDUs in the project areas, with the remaining expected to be formed soon. The project is thus poised to establish its four WMAs.

The major difficulties may be summarized as follows:

1) suspicions on the part of local communities, arising from past government neglect of development needs in their area. For example, the Nakambala Sugar Estates (which eliminated one Game Management Area and the traditional grazing rights for one Chief's people) is regarded as a national success but was a disaster for the local communities;

2) continued attempts to impose top-down development schemes which fail to address community needs, existing land-use and proposed integrated developments;

3) insufficient revenues for WMAs
These problems are being tackled at various levels. Alleviating suspicion and hostilities is a major objective of the educational and training component of the project, to forge a positive working relationship between local communities and area administrators for mutual benefit. Similarly, there is great emphasis on involving local communities in development of land use management plans for the area. Apart from negotiating with the Central Government for greater shares of revenues accruing from use of natural resources in the project areas, the project aims to stimulate indigenous economic activity.

The current phase of the project will continue for at least four more years. Ultimately, the aim is for community development programs to become largely self-sufficient in the project areas, and for wetlands management to become a joint function of government authorities and local communities (through interactions among the civil service, WMAs and CDUs), supported by both central government funds and revenues from the project areas themselves.

Over the years, the government has created protected areas in the Kafues Flats and Bangweuler systems. While this has been a well-intentioned and probably necessary measure, the onus is now on the government to prove that there can be more equitable benefits derived from the management of these areas.
KENYA AND TANZANIA

Pilot Projects

Protected Areas: Neighbors as Partners Program

by Deborah Snelson* and Peter Lembuya**

Introduction

The "Protected Areas: Neighbors as Partners" (PA:NP) program of the African Wildlife Foundation (AWF) works to improve relationships and develop cooperative partnerships among national parks and wildlife authorities, local governments, and rural communities living adjacent to national parks. This approach, called "community conservation," helps identify local peoples' problems and focuses on collaborative development of solutions. The methodology is based on principles developed from the experience of AWF field projects underway in Kenya, Nigeria, Rwanda and Tanzania. These principles include:

i) managers of protected areas have legitimate interests in land practices outside their formal boundaries, and protected areas have biological and economic values to surrounding communities;

ii) park managers and neighboring farmers and pastoralists thus have common interests (of which they may not be aware);

iii) permanent, two-way communication channels must be created among managers of protected areas, local governments, and local communities in order that each understands the others' needs, problems, and perspectives and that issues can be defined and solutions developed through discussion and negotiation;

iv) local people are usually the most familiar with the local ecology and, under many conditions, should be the guardians of local resources;

v) local communities should retain a significant portion of locally-derived wildlife revenues;

vi) the benefits of community-based natural resource conservation are spread through all levels of the community and benefit the least advantaged members of rural societies.

Two ongoing AWF community conservation projects are described below. Both involve the Maasai people of Kenya and Tanzania, focusing on two of the largest protected areas in these countries--Tsavo National Park and Serengeti National Park (see Figure 1). But, the projects have been set up differently, reflecting the important role of local and national political priorities in planning and running such projects.

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Tanzania: Loliondo Pilot Project

Introduction

Within its 945,000 sq. km., Tanzania has a remarkable diversity of ecosystems, supporting an abundance of wildlife. The high value which the country places on these resources is shown by the fact that 25 percent of the land is included in a network of protected areas comprising 38,000 sq. km. of National Parks, 96,000 sq. km. of Game Reserves, 8,000 sq. km. in the Ngorongoro Conservation Area, and 90,000 sq. km. of Game Controlled Areas. The conservation of these areas yields rich benefits, direct and indirect, to the country. The principal direct economic benefits derive from wildlife tourism (mainly in the parks), safari hunting (mainly in the reserves), and consumptive utilization by local people in the game controlled areas and in the extensive remaining unprotected wildlife areas.

Thus, wildlife already makes a substantial contribution to the Tanzanian economy. A 1988 report on wildlife utilization estimates a gross annual value from wildlife of over $120 million. About half is from legal utilization (consumptive and non-consumptive), and most of this brings in foreign exchange.

The Tanzanian National Parks (TANAPA) and AWF began a project in 1987 to develop a "Community Conservation Service" within TANAPA as a way to encourage partnership between the national parks and the neighboring communities. The project is run jointly by TANAPA, which provides staff for implementation, and AWF which provides support and advice through an AWF project officer and occasional consultants.

Objectives

The primary objective of the Tanzania project was to establish the community conservation approach within TANAPA, both at headquarters level as an overall policy and in the field as the mode of operation of field staff. It thus emphasized awareness-building, training, and institution building within the TANAPA system. A small pilot project was initiated as a vehicle for introducing the concept of village-based community relations work and for developing methodologies for TANAPA staff to establish a dialogue with local communities and initiate a partnership for conservation and management of natural resources.

The Pilot Project Area

The area selected for the pilot project is adjacent to the northeastern boundary of the Serengeti National Park in the Loliondo Game Controlled Area (see Figure 2). This is an area of high scenic value, and is important to the future of the park as the ecosystem extends beyond the park boundaries. The project area is the Soitsambu Ward of Loliondo Division and incorporates three villages: Ololosoikwan, Soitsambu and Oloipiri.

Loliondo is a sparsely populated region inhabited mainly by Maasai pastoralists who keep cattle, sheep, and goats and engage in very limited cultivation. The soils are fairly fertile, and the rainfall is moderate, averaging 700-800 mm/year. Because of its location adjacent to an international border and a national park, the area has received little development attention. There are few roads, no large markets, and very few employment opportunities. However, like many other rangeland areas, Loliondo is under increasing pressure for conversion to commercial ranching and large-scale cultivation of cereals. This would inevitably result in dietary and lifestyle changes for the Maasai.

The general interests of TANAPA lie in ensuring that there is an effective buffer zone to accommodate the regular movements of wildlife in the area within 10-15 km of the park boundary, and in maintaining the integrity of the park itself. Traditional livestock grazing by the Maasai has not presented a threat to this wildlife movement so far, but the imminent development of commercial farming and ranching does. Therefore the future of the area as a buffer zone is central to TANAPA's interests in local community relations work. This objective is consistent with the interests of the local Maasai to hold on to their land and maintain their preferred lifestyle.
Implementation Structure

TANAPA named the Zonal Warden for Lobo, the Park Zone nearest to the selected area, as the project field officer (PFO). The PFO comes from the project area and the same clan of the Maasai tribe as the inhabitants of two of the three villages of the Soitsambu Ward. He was therefore acceptable to the local communities and able to communicate with them easily. The PFO had also received some training in community relations at a training workshop on extension techniques. His task was to integrate the community relations work in the villages with his regular park management functions. The commercial safari company which had also received some training in operates a hunting camp located community relations at a training workshop within the buffer zone has indicated that it is prepared to make an agreement with one of the villages to share some of the revenues arising from their utilization of the wildlife resources. The terms of this agreement need to be negotiated.

To establish a close working relationship with the local government, the Director of TANAPA introduced district leaders and local political party leaders to the project and the PFO at an early stage. The district commissioner appointed the divisional officer as government liaison to the project. This government counterpart helped the PFO introduce himself and the project to the third village, which is composed of a different clan.

At community meetings organized by the PFO, it was decided that each village would appoint a wildlife committee for continued dialogue with the TANAPA authorities and to serve as liaison and communications channel between the park and the local people.

Phase One of the Pilot Project

The aim of the first phase was to establish a dialogue with the local community, elucidate their concerns and interests and those of the park authorities, and identify common ground. The first step in the project was to collect information about the structure and composition of the communities and the local leadership. This was accomplished through village meetings attended by TANAPA staff and a community survey conducted by the PFO.

The meetings and survey revealed a number of issues which concern the people living in this area adjacent to the Serengeti National Park:

- There is an atmosphere of instability arising from large-scale cattle raiding affecting two of the villages. The raiders pass through the northern part of the park to make their raids and then drive the stolen cattle back across the park. These cattle raids represent a serious threat to the food security of these pastoralists and their way of life.

- The commercial safari company which operates a hunting camp located within the buffer zone has indicated that it is prepared to make an agreement with one of the villages to share some of the revenues arising from their utilization of the wildlife resources. The terms of this agreement need to be negotiated.

- There is much local concern over the prospect of an imminent lease for commercial ranching and cultivation for a large area of land which was traditionally used for dry season pasture but has not been used in recent years because of the cattle raids. The new managers are offering alleged benefits to the local villages, and this offer needs to be assessed.

These issues have therefore been made the central focus of the pilot project. This has re-affirmed the importance of having TANAPA involved in discussions concerning land use livelihood in the areas surrounding the national park.

Because the Maasai do not traditionally hunt, the lack of access to hunting in the park and the buffer zones is not an issue of contention. However, one possible cost to the community in engaging in this partnership would be restrictions on setting of fires to generate new pasture and control ticks. Such fires often run out of control and burn large sections of the park. An additional potential cost is that increased presence of wildebeest around calving time might result in greater incidence of malignant catarrh fever (MCF) in cattle.

Phase Two of the Pilot Project

AWF and TANAPA have recently embarked on a 3-year second phase project. Under this second phase the pilot project would decide on and implement solutions to
the issues identified in the first phase. The most critical of these is the security issue. Better communication and partnership between the local community and TANAPA staff is the key. Recently TANAPA wardens have been notified immediately when cattle raids were in progress and were able to help stop the raids and reclaim stolen cattle. There is a proposal for establishment of a TANAPA ranger post in the area to assist with this. This facility would also double as a community center.

Various options are under discussion for development of wildlife-based activities which would generate appropriate benefits for the villages. One key point under discussion is mechanisms for revenue-sharing by the district council with the local communities. There is also interest in developing tourism and other commercial activities to generate local employment. Refining and developing this aspect will be the concern of the newly formed wildlife committees in the three villages, in collaboration with the PFO. Discussions with representatives from safari hunting and tour companies are planned for a later stage.

On the institutional side, the objective during the second phase will be to promote integration of wildlife development options with the work of different government agencies, including liaison with the National Land Use Planning Commission as it prepares to produce a report on the Loliondo district. Similarly, the project will seek to coordinate with rural development agencies in the area (particularly the Arusha Diocese Development Organization) and try to interest others in working to promote rural development for the Maasai community.

Finally, the project will provide environmentally related teaching materials for teachers and pupils in local schools.

The second phase of the project will also support community conservation wardens at two additional parks, Arusha and Tarangire.

**Results of the Pilot Project to Date**

The first phase of the pilot project met its objectives of establishing a dialogue with the three target villages. It accomplished the goals of local and governmental institutional development through creation of village wildlife committees and establishment of a Community Conservation Service which are poised to expand their activities based on the methodologies developed in the pilot project. The second phase has just begun.

**Other Activities under the PA:NP Project**

In addition to the pilot project in Loliondo, the PA:NP project aimed to establish the community conservation approach within TANAPA.

Training has formed a key component of the project. As the whole concept of community conservation was new and a deviation from traditional practice, it was agreed that this training should focus first on a few key people, including the public relations officer and the warden (PFO). AWF provided resource people for this training, which later broadened into a wider program for headquarters staff in general. This included a study tour to Kenya to familiarize TANAPA officers with wildlife extension projects and current conservation activities in that country.

To provide orientation and training for current and future field staff, a course on "Man and Wildlife" has been developed and is being offered at the College of African Wildlife Management at Mwaka for the first time in the 1989/90 academic year. This course examines many facets of man's interaction with wildlife and particularly emphasizes the importance of community conservation in modern park management.

Late in the first phase of the project, TANAPA also organized a workshop for wardens from other parks in northern Tanzania. The purpose was to review the pilot project, to introduce the wardens to the concepts of community liaison work, and to make recommendations for integrating community conservation into the TANAPA structure. In preparation for the workshop a questionnaire was distributed to the wardens to survey the important park management issues which relate to neighboring communities in their areas. The workshop developed recommendations for in-service training and headquarters support, and the definition of a new official
position on the National Parks staff, "community conservation warden," with the following responsibilities:

i) to make contact with district government officials concerned with issues relating to communities and their (legal or illegal) use of the parks or park buffer zones;

(ii) to make contact (normally through government channels) with local communities, conduct meetings with local leaders to identify problems relating to the parks, buffer zones, wildlife and other environmental issues;

(iii) to establish procedures for maintaining contact with communities;

(iv) to gather relevant information concerning the communities and the issues described above;

(v) to collect information on government and nongovernment agencies active in the area.

Phase Two of the PA:NP Project

In addition to continuing the existing pilot project in Loliondo, the second phase of the project will support community conservation wardens in two additional parks, Arusha and Tarangire.

A community conservation coordinator will be appointed at TANAPA headquarters. This individual will be responsible for promoting the community conservation concept with regional authorities and ministries, including the Wildlife Division (separate from the National Parks Authority). He will also promote the drafting of legislation required for formal establishment of buffer zones (also a component of the IUCN Regional Conservation Strategy); assist and coordinate the work of the three community conservation wardens; help other field wardens develop the buffer zone concept; work with rural development agencies to promote wildlife as a valuable natural resource for utilization and management, particularly in buffer zones; continue to refine methods for field wardens to work with local communities; ensure the continuation of the Community Conservation Service as a permanent body within TANAPA (including in-service training for wardens in community relations and other necessary skills); develop methods to promote the values of protected areas to all levels of Tanzanian society; and promote TANAPA's efforts in community conservation as a model for other African countries.

Meanwhile, two formal workshops have been held within the last few months in which project directors, TANAPA officials, and local leaders discussed implementation of specific elements of the partnership. The first workshop focussed on two main issues: security and local community benefits from wildlife resources. Following up on a recommendation from the pilot project, it was agreed that TANAPA would establish a ranger post in the area which may also serve as a center for community extension work and as a park entrance gate. Various potential sources of benefits to the local community were proposed, including direct and indirect revenues such as percentages of park entrance fees and/or hunting fees, bed night fees from camps and lodges, donkey rentals for foot safaris, concession fees, individual employment and craft sales in lodges, as well as government development assistance (dispensaries, roads, cattle dips).

Regarding possible mechanisms for channelling benefits, serious consideration is being given to working through a budding local NGO, the Korongoro Integrated People on Conservation (KIPOC). KIPOC -- which means "we will survive" in the Maasai language -- is an initiative of Maasai from the district, who want to create self-help activities within their communities. Finally, the first workshop identified needs for other projects in the Loliondo area, for which it is proposed that revenues from wildlife related activities could provide seed funds.

At the second workshop, held in March 1990, AWF confirmed to participants that funds had been raised for the ranger post, and district leaders were presented with specific proposals for its design and placement. Discussions on the mechanism for administering and managing the distribution of benefits continue: AWF was asked to produce a discussion paper for consideration by district authorities and the village wildlife committees.
The Costs of Community Conservation

The Community Conservation Service is off to a good start and enjoys good support within TANAPA. It is not intended to become self-sustaining. TANAPA recognizes community conservation as an aspect of park management that maintains the integrity of the wildlife estate and must therefore be included as part of the cost of managing protected areas. Like any element of park management, it may indirectly pay for itself through enhanced use of the protected area by paying tourists.

Kenya: Tsavo National Park

Background

In 1985 the AWF assisted the Kenya Wildlife Conservation and Management Department (WCMD), of the Ministry of Tourism and Wildlife (1985) to set up a Wildlife Extension Project (WEP) in the Loitokitok Division adjacent to Tsavo National Park. This project pioneered increased participation of local people in wildlife conservation in the area (see case study on Amboseli and Maasai Mara for earlier programs in other parts of Kenya).

The AWF Tsavo Community Conservation Project (TCCP), begun in November 1988, builds on some of the methods developed by WEP, but differs in that it focusses primarily on resolving specific conflict between park authorities and the neighboring Maasai community. Tsavo West National Park (see Figure 3) was long famous for its elephant and rhino populations. However, an increase in demand for land adjacent to the park for agricultural purposes has led to a decrease in available grazing land and, consequently, to large-scale incursions of livestock into the park. This trend has caused a serious conflict between the park authorities and the local communities. WCMD saw the need to establish a dialogue with the livestock owners, and felt that working through an extension team would be the best method. As WCMD lacked the resources to carry this out, AWF developed the TCCP on its behalf.

Objectives

The broad objectives of the project are to establish community dialogue and partnership, as described above for the PA:NP program. In this case, the specific objective is to address the problem of livestock incursion in Tsavo West National Park.

Local Sociological and Cultural Setting

Traditional Maasai lands in Kenya are divided into communally owned group ranches. This has permitted the Maasai to share the land with wildlife. Recently, however, the land is being adjudicated and subdivided to private owners on long term leases. These leases are in great demand among people from outside the area, who often offer high prices for parts of the group ranches which have high potential for horticultural production. As more and more of the land is converted, the area of grazing land decreases, leaving the Maasai pastoralists to look for alternative grazing areas inside the adjacent National Park. As many as 10,000 head of cattle were using the park as their main grazing area by late 1989 (equivalent to a density of 1/2.4 hectares).

The target groups of the TCCP are thus the members of group ranches (Rombo and Kuku) adjacent to the park, as well as local officials responsible for future land use policy.

Implementation Structure

A community conservation officer who speaks the local language was recruited from within the local community and is supported by AWF. An AWF senior projects officer provides overall supervision from Nairobi. The project works closely with government departments, such as range officers, wardens, foresters, social service officers, and agricultural officers. It is also collaborating with NGOs active in the district, such as DANIDA (working with smallholders on shallow wells and soil conservation projects) and the Bellerive Foundation (fuelwood energy project).
In accordance with the requirements of the Kenyan Government, the project proposal was submitted for approval at three levels of authority in the district: the Divisional committees (sub-DDCs), the District Executive Committee (DEC) and the District Development Committee (DDC).

**Intended Benefits to the Local Community**

Unlike other projects in the district which aim to provide tangible development benefits, the TCCP seeks to work with the community to identify important local environmental problems then involve the community in finding and implementing the solutions. However, when the project proposal was being evaluated by the various district committees, the issue of direct, tangible benefits became paramount. Thus, AWF suggested that the project could provide the following benefits to the district:

- job opportunities
- revenue from wildlife tourism and bird hunting
- establishment of tourist campsites (source of fees)
- establishment of local tour operator services.

In addition, the sub-DDC and DDC also recommended that AWF assist in:

- completion of a partially-built wildlife department building in the town of Taveta,
- provision of electric fencing along the boundary of the park, and
- provision of water in the park to stop game from entering onto agricultural lands.

AWF made no commitment to provide funds directly for these purposes, but agreed that project staff would seek ways to fulfill these requests.

**Possible Costs to the Local Community**

Since the project's intention was to persuade people to remove their livestock from the park and offer alternative methods of gaining revenue, the obvious cost to the community is losing access to grazing land. But, grazing in the park is illegal, and local people always face enforced eviction without compensation or consultation. In the past, park authorities periodically evicted cattle using aeroplanes. This expensive and obviously non-sustainable technique frightens the cattle and causes stampedes, often resulting in injuries.

**Activities to Date**

The long district approval process caused considerable delay in the initiation of project activities. However, the AWF-supported community conservation officer (CCO) started work in the field in April 1989. He began with a preliminary survey of the project area, with special emphasis on attitudes towards group ranch sub-division and the future availability of grazing lands in the project area.

Channels of communication with the local communities have been maintained through regular workshops and field meetings with local leaders and local government personnel (23 held in the 1 1/2 years the project has been in place). The issues included illegal livestock grazing in Tsavo West, subdivision and land-use management in areas neighboring Tsavo West, buffer zone establishment, elephant attacks on people and crops, and wildlife poaching on group ranches and in Tsavo West. These meetings have made substantial progress in changing local communities' attitudes about natural resources conservation and management and led to specific actions. For example:

1) In September 1988, the CCO had successfully negotiated the removal of all Maasai cattle from Tsavo West National Park, but (due in part to lack of backup support from WCMD) most of them returned in October. In January 1990, Rombo Group
Ranch again voluntarily removed all of its cattle (about 5,000 head), and negotiations are continuing with the Kuku Group Ranch. One important incentive is that KWS has indicated it will not consider sharing revenues from Tsavo West with group ranches until all the cattle are out of the park. Furthermore, local leaders realize that KWS has the option to fence the park boundary unless they voluntarily curb intrusions into the park. Meanwhile, the CCO is working with KWS and the group ranch leaders to develop park management options which can help maintain livestock outside the park.

2) To district authorities, the most important wildlife issue are the elephants in the Mwatate area, just outside Tsavo West. High population densities in the Taita hills are leading people to move into the marginal areas near the park, increasing elephant encounters and causing damage to property and crops, and even loss of human life. At the beginning of the project, district authorities asked AWF to find a solution. In December 1989, representatives of the district government, local communities, tourist hotels, and international donors attended a meeting on human/elephant conflicts sponsored by AWF and agreed on a proposal to place a fence to control elephant movements.

3) Leaders of the Community Conservation Committee (CCC) of Rombo Group Ranch have suggested that an area along the western boundary of the national park be considered for a buffer zone. The proposed zone could be a dry season grazing area that prohibited any activities incompatible with wildlife (settlement, cultivation). It could also support tourism to earn revenues for surrounding communities. As a start, five campsites have been registered along the group ranch/park boundary in the past six months.

4) The Rombo CCC is very concerned about increased poaching of zebra, eland, and giraffe in the area, allegedly by members of a tribe from northern Tanzania, and is providing information to KWS to help end it.

5) The project is also working with group ranches to improve their understanding of the ranch subdivision process and its effect on Maasai culture and livelihood.

Additional funds provided by USAID in December 1989, enabled the project to appoint two conservation action leaders (CALs) who represent two of the group ranches. These CALs will be the link between the project leader and their respective group ranches, thus maintaining the dialogue with the local communities. They will also work with the Community Conservation Committee organized within each group ranch to promote conservation activities. As part of the working agreement with the District Development Council, AWF and WCMD have been asked to rehabilitate the WCMD office in Taveta.

The TCCP also maintains strong contacts with the continuing Wildlife Extension Project, holding joint workshops for group ranches in the Tsavo/Loitokitok areas. These workshops examine ways in which local communities in the Loliondo area outside the national park can benefit from wildlife in the Serengeti ecosystem. The government has decided that all KWS extension activities in Tsavo will be directed through the TCCP.

1. By the International Trade Centre and the International Union for the Conservation of Nature and Natural Resources.

2. This individual has remained in the post throughout the project to date and has been a key factor in maintaining an open dialogue between TANAPA and the local community.

3. Since January 1990, the national parks in Kenya are under the jurisdiction of a parastatal body, the Kenya Wildlife Services.
UGANDA

The Ruwenzori Mountains Conservation and Development Project

by D.K. Etoori * / **/

Introduction

This project differs from the other case studies presented, in that it is only at the proposal stage and the emphasis is not so much on protection or utilization of wildlife per se as on protection of an area of wildland habitat and management of its resources. It has been included because it represents one case where part of the initiative for the project came from a local community group (the Ruwenzori Mountaineering Services). Furthermore it shows some of the sources of conflict which might arise out of social and political factors and may undermine or re-direct a project.

The Setting

Physical setting

The Ruwenzori mountain range (fabled "Mountains of the Moon") straddles the border between Uganda and Zaire, overlooking the western rift valley of central Africa. There are six glacial peaks rising above the equator, endowed with a diverse vegetation that remains largely undisturbed.

The Ugandan portion, which represents about 80 percent of the massif, is currently classified as a Forest Reserve. It serves as an important water catchment benefiting approximately 500,000 people living and farming on the lower slopes as well as downstream hydroelectric and irrigation uses. The area is also the habitat for numerous endemic animals and plants and has a tremendous potential as a recreational area as it attracts mountain climbers from around the world.

Social and Political Setting

The area of the Ruwenzori mountain range above 2,100 m elevation is managed as a Central Forest Reserve by the Ministry of Environment Protection Forestry Department. The lower slopes are cultivated by people predominantly of the Bakonjo tribe. Administratively the area straddles three districts: (Bundibugyo, Kabarole (Fort Portal) and Kasese) including five counties.

The Government of Uganda has established a system of grass-roots representation in which each village elects a nine-member Resistance Committee and organizes self-help activities for sustainable development. There is a hierarchy of Resistance Councils, beginning at the village level (RC I) and going up to the District level (RC V), with the membership at each level elected from among the members of Councils at the level immediately below. This RC system aims to ensure that all local communities are adequately represented in

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**/With additional information from WWF Draft Proposal to USAID, April 1989, and comments from B. Kamugasha.
local government from the grass-roots up. It also provides the forum through which the proposed project must establish contact and dialogue with the local communities and mobilize their participation.

Parallel to this community organization hierarchy there is a Government hierarchy headed by a District Administrator. Under this office come the local representatives of the various Government departments, including the Forest Department. District Development Committees (DDC), which serve as the national planning machinery at District level, are composed of representatives of all the sectors (e.g. forestry, agriculture) as well as the people (at the RC V level). They have the responsibility to initiate, organize, and oversee implementation of development programs in their respective Districts. The level of organization of the local communities varies from county to county, particularly with regard to the efficacy of the political system.

The majority of the people living adjacent to the forest reserve are small-scale farmers. Forest products (e.g. wild meat and skins, fuelwood, poles, medicinal plants, honey, etc.) also play an important role in the local economy and culture. Hunting for meat is an important traditional activity in the culture, and various animal parts are used in traditional medicine. Thus, it is regarded as important to maintain the possibility for hunting in the area. It is also proposed that further development of tourism would provide income which could be used to improve the local standard of living.

The District Forest Offices of Bundibugyo, Kabarole and Kasese are responsible for management of the Ruwenzori Forest Reserve, under the supervision of the (Western) Regional Forest Office. If the proposal to "upgrade" the reserve to a national park is implemented (see below), authority over the area will pass from the Forest Department (FD) to the Uganda National Parks (UNP) within the Ministry of Tourism and Wildlife. However, the current proposal calls for the Forest Department to be represented on the Board of Trustees of the UNP and for the existing FD staff to manage the protected area in conjunction with UNP staff.

The Ruwenzori Mountaineering Services

The RMS was formally established as an organization in 1987/88. It is composed primarily of local Bakonjo who have long served as guides for visitors who come to the area for mountain climbing. These guides were originally organized under the Uganda Mountain Club which was established in the early 1950 by mountaineering enthusiasts. However, when the UMC became inactive in the early 1970s, the guides continued to accompany climbers and more or less developed a monopoly over mountaineering in the area, including taking over the huts which the UMC had constructed along the routes up the mountain.

Soon after the RMS was officially established it began to receive assistance from USAID (PL 480 local currency funds), based on a project proposal aimed at providing mountaineering services and further developing the tourism potential of the area. Activities under the project included renovation of the existing huts and construction of some new ones, construction of a bridge and walkway and establishment of signposts around the central tourist circuit.

The RMS is essentially a cooperative society, composed of members of the local community, and the revenue it earns is meant to go back into the group and for community development activities. Originally it was intended that the RMS would work closely with the Government (Ministries of Tourism and Wildlife, and Environment Protection), but this collaboration did not develop.

As an existing, active, non-governmental community organization with both experience and interest in promoting mountaineering tourism, the RMS could presumably play an important role in implementation of the proposed project. However, there are some problems relating to the organization's failure to liaise with the relevant Government departments. In particular, the RMS has been exercising de facto control over tourism in the area, setting its own charges and collecting fees, and not remitting any of the revenues to the Government despite the fact that the area is a Forest Reserve. Furthermore, there is some concern (particularly on the part of prospective donors) that the RMS represents
only one element of the community and excludes others, such as women, from direct participation in its revenue-earning activities. One possible reflection of the existing friction is that, although the RMS is mentioned in the project proposals, its specific role and relationship to other institutions is not clear.

The Project Proposal

The "Ruwenzori Conservation and Development Project" is currently at the draft proposal stage. A first draft was prepared in 1989 by the World Wildlife Fund-U.S., and submitted to the U.S. Agency for International Development (USAID). The latest draft, incorporating several stages of revisions based on consultations with USAID the Government, has been prepared by the WWF Regional Office in Nairobi and for resubmission to USAID. It proposes a three-year project (budgeted at $600,000), including a two-year first phase "needs assessment" and the preparation of a management plan for the project area. This plan may then be presented as the basis for a follow-up project for implementation.

Objectives

The ultimate objective of the project is to preserve the ecosystem and biodiversity of the Ruwenzori mountains area in Uganda, to ensure sufficient forest and vegetative cover on watersheds and catchment areas to maintain critical environmental services (control of unnatural erosion and excessive water run-off), and to establish sustainable management of its natural resources (animal and plant) for the benefit of the local communities. It also proposes to improve the local quality of life through fostering rural development activities and developing tourism as a source of income.

The proposed approach is to involve local people in the design and management of the protected area to ensure that the maximum possible financial benefits or other development opportunities accrue to them. It would also seek to give special consideration (e.g., preference in employment) to those most affected by the change of status, such as people who have traditionally hunted in the area.

The project also proposes to provide training of protected area personnel and conservation agents and stimulate community organization.

Elements

The main component of the proposed first phase of the project is a comprehensive "needs assessment" which would review the status of the area's biological, socio-cultural, institutional and economic resources with the aim of maximizing the potential to protect its biological diversity while also meeting the needs of its human inhabitants.

Based on this assessment a formal proposal would be developed for gazetting the existing Forest Reserve (or a portion of it) as a national park, incorporating this into the Uganda 3-year Rehabilitation and Development Plan. The current draft proposes dividing the region into a core area, where no utilization would be permitted, and buffer zones where controlled, compatible human activities (such as exploitation of forest products and tourism development) would be allowed.

The first phase of the project would also result in preparation of a resource management plan for the area and a proposal for a follow-on, implementation phase of the project. The details, including the specific rural development activities to be supported, would be determined through the needs assessment.

Institutional Structure

The current draft proposes to field a team composed of a project coordinator, an ecologist, a park/specialist/tourism planner, an anthropologist/social scientist and a community development specialist to carry out the needs assessment. The details for management of later phases of the project have not yet been determined, but would probably include oversight by a Management Committee which would include representation from the District Development Committee (and through this the District level Resistance Council).

Attitudes and Potential Conflicts

Preliminary surveys indicate that the attitudes and expectations of the local
communities regarding the proposed gazetting of the Ruwenzori Forest Reserve as a national park are mixed. The majority are opposed, as they see this as a move to alienate the reserve from them and put an end to their utilization of its resources. Some are in favor, as they envision this as an action which will bring money into the area and provide employment, thus improving living standards. The remainder apparently express no opinion, seeing this simply as another Government action about which they can do nothing.

Some of the opposition may be removed by a proposed alternative to establish the national park only above the treeline, with the lower elevation forest to remain as a reserve. To clarify the situation further, the Government has fielded a team to hold consultations with people in the three districts. The results of these consultations will contribute to the final proposal which will be submitted to the National Resistance Council (Parliament) on the establishment of new national parks.

There are several sources of conflict which could significantly affect the prospects and implementation of the proposed project:

1) Conflicts within the Bakonjo tribe: Part of the Ruwenzori Mountains area is afflicted by insecurity due to the active presence of a rebel group (the Ruwenzururu).

2) Conflicts between the Bakonjo and others: Traditional conflicts existing between the Bakonjo and other tribes in the country may raise conflicts at the level of the DDC should the project be successful and provide benefits only to the Bakonjo (who occupy the area).

3) Conflicts between Government agencies: There is also clear potential for conflict between the Forest Department and the Uganda National Parks over management of the protected area. In addition, should the project become actively involved in local development activities it must establish close links with other Government departments already active in the area (e.g. Agriculture, Cooperatives, Marketing, Community Development and Education).

4) Conflicts among international assistance agencies. The international community has begun to develop a considerable interest in the wildlife of the Ruwenzori area. This creates the potential for duplicative or even conflicting project initiatives. A case in point is the World Bank Forestry Rehabilitation Project, which has a component on protection and conservation of Forest Reserves (supported by the EEC).
II. Projects Not Centered on Protected Areas

ZAMBIA

Administrative Design for Game Management Areas (ADMADE) and
Luangwa Integrated Rural Development Project (LIRDP)

by Fedelius B. Lungu* **

Introduction

The ADMADE and the LIRDP, like the other programs described at this workshop, represent a trend toward the re-integration of rural communities into the process of sustainable use of natural resources including wildlife. This trend represents a return to the earlier conditions, before conventional wildlife management came to mean centralized and restrictive protection of animals against rural populations. It stems from the conviction that conventional conservation, characterized by alienation of land as protected areas and progressive restrictions placed on resource use by rural communities, has failed to provide a framework for the sustainable use of economically important species, and indeed has rendered the people and resources of Africa a serious disservice.

Zambia possesses an extensive and valuable wildlife estate, with National Parks amounting to 8% of the country's land area and Game Management Areas (GMAs) making up about another 22%. Zambia's GMAs were created in 1970 from controlled hunting areas, with the objective of providing a framework within which to integrate wildlife management into the rural economy. However, viewed from today's perspective, legislative provisions defining the GMAs were not really designed to support these intentions, in that they were highly centralised both with regard to control of access to wildlife and distribution of revenues and other benefits. Hunting licences could be obtained but the process was so cumbersome that most people were effectively excluded. The NPWS continued to see law enforcement as their principal duty, mostly directed at the local communities. The resulting friction was such that the villagers not only continued their own unauthorized hunting but generally sided with commercial poachers against the authorities. They were also hostile to safari hunters, whom they saw being permitted to hunt in the same game areas which were forbidden to them, and who (unlike the poachers) hired few locals.

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As a result, despite these attempts to protect wildlife resources, it is estimated that since the mid-1970’s not less than US$ 500 million worth of wildlife and wildlife products have been extracted illegally, that is, half the value of Zambia’s national debt to the IMF. This represents a major loss to the area’s wildlife populations, with little if any benefit to the area’s human populations.

Both before and after 1970, individual efforts have been made to develop systems of community involvement in sustainable wildlife utilization. Early examples in Zambia include the establishment of the Nsefu Game Reserve under the auspices of the local traditional authority, which received benefits from tourist revenues. However, such initiatives were out of step with government and conservation establishment thinking of the time, and it has only been within the last five years that these perceptions have changed to bring the community-based conservation approach into the mainstream.

This change in perception has led to the proliferation of programs with similar objectives. In Zambia these include the Lupande Development Project, the Wetlands Project, the ADMADE and the LIRDP. These programs and similar ones in other countries (eg. Zimbabwe, Botswana) are similar in objectives but differ in technical and institutional details. It is too early to tell which models will be most successful or most appropriate in any given situation.

Legislative Background

Wildlife utilization in Zambia’s Game Management Areas is controlled by the National Parks and Wildlife Act (Cap. 316 of the Laws of Zambia, Act. no. 58 of 1968). This Act makes provision for the control of hunting in the GMAs through a system of District, National, Safari and special licences. As noted above, the Act has until recently been interpreted through secondary legislation (regulations and statutory instruments) as a means of enforcing centralized control of access to wildlife and benefits and revenues from it. Prior to 1983, all public revenues earned from hunting were channelled directly to the Ministry of Finance and were not re-allocated to the wildlife sector, still less to the communities in the area from which the animals were taken. Similarly, all licences were issued by NPWS or Ministry headquarters, apart from District Game Licenses which were issued by District Councils in District headquarters.

However, since 1983, decentralization of control of wildlife has been initiated through two important pieces of subsidiary legislation:

1) In 1983 a new revolving fund (the Wildlife Conservation Revolving fund) was established under NPWS to manage all revenues from wildlife products other than those, such as license fees, directed to the treasury by various acts of parliament. In practice, revenues handled by the WCRF have been principally safari hunting concession fees and revenues from the sale of government trophies, particularly ivory. The revolving fund was used initially to strengthen the financial base of NPWS and more recently to channel revenues back to particular GMAs through the ADMADE program (see below).

2) In 1988, the allocation of National Licenses was also decentralised to GMA wildlife management authorities under the ADMADE program and to the LIRDP Local Leaders’ sub-committee in the LIRDP area.

History and Description of ADMADE

The ADMADE is a program concerned with the protection, utilization and management of wildlife in the GMAs. It grew out of a workshop organized in 1983 by the Department of National Parks and Wildlife Services (DNPWS) in conjunction with the Eastern Province Provincial Planning Unit, Soil Survey Department and other agriculture-oriented land use planners. The workshop was held in the village of Nyamaluma and attended by national and regional political figures, DNPWS officials and village dignitaries including one, Chief Malama, who had been a vociferous champion of the needs and rights
of villagers to benefit from wildlife resources. The workshop's purpose was to explore ways of re-integrating local communities with wildlife management, since the conventional approach of isolating them was clearly not working, either for the people or for the wildlife.

One concrete result of the workshop was a pilot project, the Lupande Development Project (1985-87) in the Lupande valley hunting block adjacent to the South Luangwa National Park.

The LDP aimed to involve the local community directly in the protection and management of the wildlife resource and to return a significant portion of wildlife revenues (particularly from safari hunting) to them. The first objective was achieved by instituting a Village Scout program, in which young men from the village were trained and paid to serve in an anti-poaching corps led and supervised by a DNPWS manager. In order to do this, the NPWS first had to secure permission to hire from outside the civil service. The Village Scout corps was primarily responsible for anti-poaching efforts in the GMA, while the DNPWS retained responsibility for the adjacent National Park. From the beginning, establishment of this corps included intensive training in animal identification and military drill as well as leadership training for the Unit Leaders. Employment as a village scout was very appealing to young rural men who previously had little opportunity to earn money (except by poaching), so appointment to the corps became a sought-after honor which was conferred by panels of village leaders.

The second objective of the LDP was tackled primarily through the establishment of a revolving fund to collect money from hunting and park admission fees, concession fees paid by safari companies and from sales of meat, hides and other products from culled game. This money was divided between national and local entities: 35% to local authorities for community development projects, 40% for management of the GMA (much of this going to local employment through the Village Scout program) and 25% to national tourism promotion and for the costs of managing wildlife in the adjacent national park. In addition to the revolving fund, the project set up a culling station to produce meat for local consumption and sale.

To steer the program and allocate the community's share of the proceeds, local Wildlife Management Authorities and subauthorities were established to work in concert with village chiefs and headmen as well as the NPWS.

The LDP was considered a significant success, demonstrating that wildlife utilization could bring in more revenue than other ways of using the same land. Elephant poaching in the GMA had also dropped by some 90% compared with 1985 levels. The Village Scout corps was so effective that the DNPWS began to use it to help combat professional poachers inside the South Luangwa National Park as well. Thus, at the end of 1987, DNPWS expanded the program to five additional GMAs (see case study on Zambia Wetlands Project), establishing the ADMADE program. This expansion was supported by the government and by the WWF and USAID through the Wildlands and Human Needs Program. As of 1989, the Village Scout program had grown to more than a dozen units and had trained 108 Scouts, not one of which had dropped out or been terminated.

History and Description of the LIRDP

The same 1983 workshop which led to the LDP also proposed a feasibility study for a larger scale project involving other forms of land use, including agriculture, forestry, fisheries and water development in addition to wildlife management. The study was funded by NORAD and carried out in 1985. The President of Zambia accepted the feasibility study report and nominated himself Chairman of the Steering Committee for the planned project to be developed based on the study's recommendations.

LIRDP was formally initiated in May, 1986. The project area covers the central part of the Luangwa Valley, comprising the South Luangwa National Park (9000 km sq.) and the Lupande Game Management Area (5000 km sq., containing about 35,000 people). Extension of the project to other GMAs is under examination.
The initial phase of program development involved discussions with sectoral departments, local representatives and potential donors to establish the outlines of the institutional structures to be developed and the work programs to be carried out. These plans were finalized at a major workshop involving all potential participants, held in June, 1987. Low level implementation began with funding from the Zambian government and assistance from NORAD and WWF. Full scale implementation began after an agreement was reached in October, 1988 between Zambia and NORAD for major bilateral funding to total $12.3 million for the 5-year period to 1992 (although an additional $11 million proposed in LIRDP was not secured, leading to cuts particularly in the road building program).

The LIRDP represents a means to implement the national policy of decentralisation, which has been hampered by the inability of District Councils to raise revenues on a scale with their development and maintenance needs and their inability to control the sectoral departments of government. This has been a common problem in many African countries, which eliminated local taxation schemes after independence, leaving local levels of government without direct revenues.

The stated primary objective of the project is to "improve the standard of living of the people of the project area through sustainable use of the full range of natural resources available to them." The emphasis is thus on the use of natural resources to benefit local rural communities rather than specifically on preservation of wildlife or other resources. However, the principle is that the project will create incentives for the community to conserve and manage these resources in a sustainable manner.

The project plan emphasizes use of the full range of natural resources available, including agriculture land, forests, fisheries, water and wildlife. It is thus unusual in explicitly putting wildlife on a par with forestry and fisheries or agriculture, which have been the focus of income-generation under most conventional rural development programs. The project also emphasizes the need for sustainable use of natural resources on the assumption that, at the present level of economic development in the area, revenues derived from unsustainable exploitation of these resources are unlikely to be converted into investments with long term economic returns to the area and its inhabitants. Ultimately, the goal as stated in project documents is to render the project area self-sustaining, with respect to environment, economic and human resources.

In addition to the resource development/utilization aspects, the project also operates a womens' program, a co-operatives program, a works and supply unit, an evaluation unit and a major road improvement program.

**Institutional Structure of the LIRDP**

The first phase of the LIRDP project focused on development of mechanisms for co-ordination, consultation and participation in decision making, that is to develop institutional structures designed to meet the project's objectives and to overcome the obstacles to decentralization and to involve not only provincial and local levels but also traditional authorities. As far as possible, activities are intended to be carried out by the communities themselves with the technical and administrative support of the project and with initial investement from it. Thus the emphasis has been on building self-sustaining capabilities, facilitated by a revolving fund to plough revenues generated in the area back to the area.

The institutional structures which have been developed may be summarized as follows:

1) A **Steering Committee**, chaired by His Excellency the President and comprising the Members of the Central Committee and Cabinet Ministers responsible for the sectors and the Provinces with which the project is associated. Official involvement and policy guidance at this, the highest, level are regarded as essential for a project of this nature since it addresses issues of national policy and constitutional significance, particularly
in relation to the direction of revenues to the project's revolving fund and to the re-allocation of powers from government departments to local communities.

2) an Executive Committee consisting of the Permanent Secretaries of the Ministries and Provinces involved; these officers are those empowered by the various sectoral acts of parliament to implement policies in their sectors and provinces through the departments under their control, or through delegation to community institutions. The Executive Committee also serves as the Board of the LIRDP Revolving fund.

3) Technical Sub-committees in the various sectors (agriculture, women's program, forestry, fisheries, water development, wildlife management, works and supply including roads, etc.) These sub-committees develop and supervise the work programs of the sectoral department staffs in the project area, funding for which is channelled through LIRDP. the LIRDP headquarters acts as the secretariat of these sub-committees, thus ensuring co-ordination and integration of the sectoral programs and compatibility with project objectives. Joint meetings between sectors are also held whenever necessary.

4) a Local Leaders' Sub-committee, consisting of the six chiefs, their indunas, the four ward chairmen, Member of Parliament and District Executive Secretary. This is a sub-committee of the Executive Committee, providing the primary avenue for local participation and decision-making in the project. Progressively, control over revenues earned in the project area and over decisions concerning land and resource use is being transferred to this group. Communications with, and inputs from, the grass roots levels are being encouraged by organizing communities at subsidiary levels to feed inputs to the Local Leaders’ sub-committee. These subsidiary levels include branches (10 in each ward) and sections (10 in each branch—equivalent to villages). This subsidiary level of organisation is in its early stages. It is important to realize that the Local Leaders' Sub-committee holds, through its traditional and political authority, the power to control settlement patterns and thereby to realize the intention of the project to serve as a land-use planning agency (an element which was missing in the pre-existing GMAs).

5) the LIRDP Revolving Fund: through decisions of the Steering Committee and the Executive Committee, LIRDP was authorised to establish a revolving fund (distinct from the Wildlife Conservation Revolving Fund described above under the ADMADE program) to receive and manage:

(i) funds allocated to the project by the Ministry of Finance;

(ii) donor funding; and

(iii) all public revenues raised within the project area and earnings of business operations managed by the project (see below).

Currently, earnings of the project are divided as follows:

- 60% retained by the project for project operations;

- 40% handed over to the Local Leaders’ sub-committee for use as it decides. To date, these funds have been allocated to construction of a rural health center and development of basic secondary schools.

Bank accounts have been opened for each chieftainship to manage the funds allocated to the Local Leaders' sub-committee (with the Chief, an advisor and the Ward Chairman and Vice-chairman as signatories), to facilitate implementation of community projects and to encourage development of
management skills among community representatives.

Example of Implementation

Administration of hunting in the project area provides an example of project implementation. The majority of the system described below has been put in place in 1989; the remaining components (safari hunting under the LIRDP- operated hunting company, Malambo Safaris), will be phased in in 1990.

Each sub-committee of the Executive Committee fulfills its own appropriate role. Thus, offtake quotas for each wildlife species (and for hardwoods) in the Lupande GMA are set by the Wildlife Management Technical Sub-committee on technical grounds, generally aiming to ensure a sustainable yield. Any illegal offtake which is recorded is subtracted from the quota. However, the decision as to the allocation of the quota for each species to the forms of use is in the hands of the Local Leaders' Sub-committee. Alternative forms of use include: District, National and Safari licences, special licenses for research, crop protection (elminating specific problem animals), celebrations or State visits, Wildlife Department rations and culling. Each form of use has its own consequences with respect to the amount of money, meat or other benefit derived and to the distribution of these benefits among private individuals, the community and the Revolving Fund (which covers LIRDP management and community projects). The Local Leaders' Sub-committee recognizes the need to maintain a balance between safari hunting (by far the greatest money earner for the community at large) and other individual and organisational structure to allow community needs in allocating the quota. The majority of the quotas go to culling, District licenses and safari licenses: National licenses and NPWS rations have been eliminated as offering no benefits to the local communities, and the quota for official visitors and other non-beneficial uses has been strictly curtailed and will also be phased out.

Two small village level culling schemes are in operation in two chieftainships (Nyamaluma and Kamwenje). These schemes have been built using local materials and are manned and managed by local residents under supervision of DNPWS staff attached to LIRDP. Meat is sold locally or to the tourist lodges, and skins are sold to commercial buyers in Zambia and elsewhere.

The quota allocated to District Game licenses was divided (through a decision by the Local Leaders' sub-committee) equally among the six chieftainships. Licenses were then allocated to applicants from those chieftainships by the Chief and Ward Chairmen, and issued by the NPWS Ranger as he toured the area. This arrangement made the logistics of obtaining licenses relatively easy (in contrast to the situation in some other projects where bureaucracy can be daunting to interested villagers).

The quota allocated to safari hunting in the project area is adequate for 30 "classical" 14-day hunts and is expected to generate about US$ 300,000 in 1989. In part of the area, professional hunters have been employed directly by LIRDP (under the auspices of the Wildlife Conservation Revolving Fund), preparatory to initiation in 1990 of a hunting company to be operated by LIRDP itself. The objective is to eliminate the outflow of revenues from the area in the form of operator profits and taxes as well as involving community representatives in the management of the lucrative safari industry.

The objective of the second phase of LIRDP is to put in place a self-sustaining system in terms of the environment, the use of resources, economic viability and skilled manpower. Specific activities are to include:

- strengthening and adjustment of the organisational structure to allow progressive delegation of control of resource use to local communities (possibly requiring new legislation)
- development (with community participation) of a land-use plan through the organizational mechanisms adopted, with emphasis on reducing conflict between landuses such as wildlife management and agriculture;
- improvement of infrastructure, particularly roads, which present
constraint to all development and conservation in the area;

- upgrading of agricultural research to allow increased productivity within the constraints presented by the environment and the land use plan;

- improvement or initiation of extension services for agriculture, forestry, fisheries, water development and wildlife management, aimed at promoting community participation in sustainable resource use;

- promoting future economic viability of resource use by coordinating supply of credit and inputs as well as marketing for the full range of resources;

- creation of a socio-economic environment in which illegal and unsustainable exploitation of resources will be unacceptable, so that communities will participate with upgraded law enforcement agencies in protecting their resources.

Comparison of LIRDP and ADMADE

The ADMADE and LIRDP are two parallel, major initiatives intended to test different models for involving local communities in sustainable use of wildlife resources in Game Management Areas. They differ in a number of important respects:

1) ADMADE is strictly a wildlife sector program operating in numerous GMAs. Wildlife revenues are used, among other things, to help maintain the wildlife and to fund community projects. LIRDP is intended as a multi-sectoral program for economic development in the central part of the Luangwa Valley and includes, in addition to wildlife management, programs aimed at development of agriculture, forestry, fisheries, water resources and infrastructure. Costs related to maintaining wildlife are considered to be intrinsic costs of development equivalent to building roads or irrigation systems (however, as noted above, wildlife utilization in fact remains the principle revenue source in LIRDP, with other activities showing negative returns or barely breaking even.);

2) ADMADE is operated by the Ministry of Tourism through the Department of
National Parks and Wildlife Services. LIRDP is directed by a Steering Committee headed by the President of the country and comprising the Members of the Central Committee and relevant Cabinet Ministers; it is managed by an inter-sectoral Executive Committee also involving several Ministries as well as local authorities;

3) The administrative structure of ADMADE is based on Wildlife Management Authorities responsible for wildlife management in each GMA. Control of wildlife utilization is in the hands of the ADMADE Authority which is chaired by the District Governor and contains a number of District level officials and civil servants as well as local representatives. In LIRDP, control of wildlife utilization (apart from actual quota setting) is being progressively transferred to the Local Leaders' subcommittee, which consists only of local representatives (ie chiefs, elders, ward chairmen and the Member of Parliament) although technical experts may be invited to give advice.

4) In the ADMADE system, revenues currently available to the GMA authorities are safari hunting fees and right-to-hunt fees, but not license fees which are directed to the treasury by act of Parliament. LIRDP has been specially authorised by the Ministry of Finance to collect all public revenues derived from wildlife including these license fees. This can represent a significant additional source of revenue.

5) A revolving fund for wildlife revenues is at the heart of both programs. However, under ADMADE, the allocation of revenues channelled through the revolving fund from wildlife use (as described in (4) above) is as follows:

35% to community projects within the GMA
40% to wildlife management programs within the GMA, such as Village Scout Programs
15% to National Park Management
10% to the Zambia National Tourist Bureau

In LIRDP, allocation of revenues from wildlife utilization is:

40% to community projects in the GMA, selected by the Local Leaders Sub-committee (LLS)
60% to LIRDP project management costs, including road improvement and Village Scout programs, with the LLS providing input into the planning.

Thus, the local community (through the LLS) has substantially greater flexibility and authority to determine how revenues are used in LIRDP than under ADMADE, and also has a potentially much larger source of funds to allocate as none of the revenues from wildlife utilization are returned to the central government. However, the long-term sustainability and the replicability of this approach are questionable as governments are not generally likely to be willing to give up all claim to revenues from a country's wildlife resources. Furthermore, there is no reason that they should, any more than they allow local communities to retain all revenues from exploitation of local mineral deposits or other natural resources.

As noted in the beginning, ADMADE and LIRDP represent two distinct alternative models designed to achieve similar ends, i.e. involvement of local communities in sustainable wildlife management. It is too early to tell which option will turn out to be best suited to any particular set of circumstances, or whether further modifications will be needed. Unfortunately, the fact that both programs are in effect in the same area (lower Lupande GMA) is likely to make the impact of either (eg. on reducing poaching) more difficult to judge.
ZIMBABWE:
WINDFALL AND CAMPFIRE

by
Felix Murindagomo*

Introduction

Zimbabwe's land area is about 38.7 million ha, supporting a population of well over 9 million inhabitants, 70 percent of whom reside in rural areas. Agriculture accounts for about 18 percent of the GDP and 36 percent of total wage employment. The commercial subsector comprises 4500 large scale farms and 9000 small-scale farms, which together occupy 17 million ha; the communal subsector comprises some 840,000 households occupying over 16 million ha. Zimbabwe has five natural regions: regions I, II, and III have good to moderate suitability for production of crops and livestock; region III is fit only for drought resistant crops and livestock; region IV is generally suited only to livestock and wildlife; and region V sustains only extensive livestock production and wildlife. Seventeen percent of the total land area falls into regions I and II, 18 percent into region III, 38 percent into region IV, and 27 percent into region V (see Figure 1).

The area occupied by national parks, safari areas, recreational parks and sanctuaries (collectively called the "Wildlife Estate") totals about 47,000 km sq., or 12.5 percent of the total land area. This area is the responsibility of the Ministry of Natural Resources and Tourism and managed by the Department of National Parks and Wildlife Management (DNPWLM), which is also responsible for wildlife resources throughout the country, including commercial and communal areas.

Wildlife populations include large herbivores such as elephant, rhinoceros and buffalos, as well as smaller species such as eland, zebra, waterbuck, kudu, and impala. The present distribution of wildlife is the result of past policies which made wildlife, inside and outside the parks, state property. Wildlife populations have decreased sharply in natural regions I and II but have generally increased in regions III, IV and V, particularly in protected areas and on commercial farms. This is in response to profitable safari hunting. Most of the Wildlife Estate is in remote or rugged terrain, is hot and dry, and has shallow, infertile soils of low agricultural potential. Nevertheless, population pressure is forcing settlers into these areas, where they try to introduce and maintain the type of agricultural practices which have been developed in less fragile regions. This immigration into marginal areas brings creates conflict between people and wildlife.

Wildlife contributes over $250 million (a quarter of the total contribution by agriculture) annually to the country's economy through safari hunting, game cropping, tourism, and live animal sales. Safari hunting generates substantial foreign exchange and provides direct employment for local populations. It also contributes to the development of secondary industries, such as skin and hide processing and ivory carving. Although subsistence hunting is still illegal in most of the country, game cropping provides animal protein to people in the communal lands.

Historically, the Wildlife Conservation Authority in Zimbabwe, like its counterparts in most African countries, was dedicated to protecting wildlife and preserving protected areas. Wildlife had the status of "King's

*Senior Ecologist, Department of National Parks and Wildlife Management, Zimbabwe.
Game" and was brought under state regulation so that legal exploitation and conservation were the exclusive domain of the state. The indigenous communities suffered, in effect, a double expropriation: they were forbidden to use indigenous wildlife resources and also progressively excluded from half of the country's landbase. Increasingly, they were confined to communal lands where human populations and agricultural pressure on the land reduced the economic potential of wildlife. Alienation of wildlife resources and reduced access to land changed the cultural perspectives of an earlier era when rural populations used wildlife resources on a sustainable basis. Except to be hunted illegally for meat, wildlife became a liability and nuisance.

A new, more successful wildlife philosophy based on economic incentives began in 1960 with the passing of the Wildlife Conservation Act, and culminated in 1975 with the Parks and Wildlife Act. The 1975 act gave landholders the right to manage wildlife for their own benefit, thus providing an economic rationale to reinforce the scientific, aesthetic, and moral justifications for wildlife conservation. The reasoning was that local proprietorship of wildlife resources was likely to promote investment (of land, money, and time) for their efficient and sustainable management.

Although the act was directed primarily at commercial farmers and ranchers, it contains a provision enabling district councils to be designated as "appropriate authorities" to manage wildlife within district boundaries on communal lands, provided the government (Ministry of Natural Resources and Tourism) is satisfied of the council's interest and capacity to manage these resources properly and with the full participation of and benefit to the people it represents.

A first attempt to enable rural communities to realize economic benefits from wildlife was Project Windfall (Wildlife Industries New Development for All), launched by the Department of National Parks and Wildlife Management (DNPWLM) in 1978. The objective of Project Windfall was to reduce conflicts between human populations and wildlife, and improve attitudes toward conservation in communal areas by returning revenues from wildlife use -- specifically, an elephant culling program -- from protected areas directly to neighboring district councils.

The local participation element in Windfall is limited. Based on wildlife occupying state lands, not communal lands, the communities, therefore, are not involved in decision making. In effect, profits and meat from animals killed by or under the auspices of DNPWLM are returned to the nearest community, by way of the district council. For example, the Chirisa Safari area is located in the Sebungwe Region of northwest Zimbabwe. As elephant populations exceeded the area's carrying capacity, DNPW undertook a culling operation in 1980 and 1981, shooting a total of 755 elephants. The hides and ivory were sold outside, and the bulk of the meat was sold locally. The operation provided short-term employment for over 200 laborers and netted Z$556,230 for the district council [Reference: Wasawo, 1987; Child, 1984].

Although Project Windfall is still in operation in most of the communal lands (pending the introduction of the CAMPFIRE Program described below), it has significant problems. First, little meat has found its way to the local communities and, so far, only a small proportion of the revenues have survived the multistaged route through the bureaucracy to the district councils. Furthermore, the district councils have not passed most of the money reaching them to the originating communities (i.e., those where the wildlife are actually located), using it instead in other parts of the districts. Because it fails to involve community land or resources, it develops neither local participation in decision making nor a sense of proprietorship at the local level. With these shortcomings, Windfall misses forging the link between wildlife resources and economic benefit which is necessary for the success of community-based wildlife development.

Aware of these problems and encouraged by the new government's commitment to localized planning and implementation, the DNPWLM developed the CAMPFIRE Program (Communal Areas Management Program for Indigenous Resources) to give full control of wildlife management to rural communities. The theory behind CAMPFIRE's is that communities will invest in environmental conservation if they can exploit these
resources on a sustainable basis for their own benefit.

CAMPFIRE is based on creating appropriate institutions under which resources can be legitimately managed and exploited by the resident communities. Profits from the enterprise may be used for communal benefits or distributed to individual households, at the discretion of the community. To participate in the program, a community must obtain legal proprietorship ("appropriate authority") over the wildlife. To do this, the community must apply to the ministry, demonstrating that it has the endorsement of its membership, a wildlife management plan, and the institutional capacity to implement it.

As few rural communities are likely to have such plans or capacity, the CAMPFIRE Program was designed to include an implementing agency within the DNPWLM to provide the necessary technical and financial assistance. Unfortunately, while the program has been approved, it has not yet been funded by the treasury. This may be due to conflicts of interest and skepticism at high levels about wildlife development as an alternative to agriculture or livestock husbandry, even in regions ranked IV and V. Because of this impasse, the proposed implementing agency has not yet been formed. Instead, in the areas where CAMPFIRE is being implemented, this catalytic role is being filled by a local NGO, the Zimbabwe Trust (ZimTrust) and the Centre for Applied Social Sciences (CASS) at the University of Zimbabwe. Additional support comes from diverting DNPWLM research funds, as well as external agencies, such as the World Wide Fund for Nature (Multi-species Project).

Despite these problems, the CAMPFIRE Program is gaining in popularity. The demand from local authorities for development of wildlife programs in their areas has so escalated in the past two years that DNPWLM, in the absence of anticipated funding and new positions, has found itself unable to cope with the large number of requests. The first two district councils (Nyami and Guruve) were granted appropriate authority status in November 1988 and have launched wildlife management projects (in the Omay and the Kanyati/Gache Communal Lands in Nyami Nyami and in the Dande Communal Land in Guruve). Nine other district councils will probably receive approval this year, and several are developing programs.

Case Study: The Dande Communal Land

The Dande Communal Land is located in Guruve District in the extreme north of Zimbabwe in the Zambezi Valley bordering Mozambique (see map in Figure 1). The project area covers approximately 3000 sq. km., occupying the entire eastern and central block of the communal land bounded on the east by the Msengezi River and on the West by the Angwa River. The area between the Manyame and Msengezi Rivers is covered by the Mid-Zambezi Rural Development Project (MZVRDP), which was initiated by an FAO land use study in 1985 and begun in 1987 with African Development Bank co-financing. MZVRDP is an integrated land use project involving the resettlement of some 3000 farm families and supporting the essential social infrastructure for a community of 45,000 people.

The MZVRDP project area encompasses two zones with substantial differences in ecological conditions, making necessary different approaches to land use. The southern zone, classified as a Natural Region III area (moderate agricultural potential), is heavily settled and has low concentrations of wild animals and tsetse fly. In this area, the MZVRDP emphasizes agricultural production. In the northern zone, human settlement density is low, tsetse levels are high, and the ecology is fragile. Therefore, in the north, MZVRDP intervention is limited to wildlife management and securing self-sufficiency in food crops. The project also discourages any new settlement in the north. The wildlife scheme has incorporated the area between the Manyame and Angwa Rivers because wildlife is relatively abundant there while relatively scarce in the MZVRDP area itself. The northern part of the Dande Communal Land, including the Dande Safari Area, has been leased to a safari operator through DNPWLM until the end of 1990.
Objectives of the Wildlife Management Component of MZVRDP:

1) to conserve the fragile ecosystem and sustain the economic viability of the area through wildlife utilization;

2) to eliminate conflict between agricultural development and wildlife management (through improved crop and household protection);

3) to provide increased income to the local people and involve them in the sustained economic use of and benefits from their rich wildlife heritage;

4) to serve as a pilot demonstration for an alternative resettlement model for the drier areas of Zimbabwe, promoting wildlife management as an alternative land use from which communities may expect returns comparable to or better than those from conventional agriculture (which are, in general, uneconomic in this semi-arid environment);

5) to improve nutrition in the area by making game readily and lawfully available to the local population;

6) to improve the economic aspects of wildlife utilization in the area, encouraging more rural communities to adopt wildlife utilization on a commercial scale;

7) to improve and master management techniques for communal wildlife management;

8) to create local institutions, involving active local participation and communal decision making, for management and development of communally owned natural resources (thereby encouraging economic development of such resources).

The major constraint against generating local support and participation for the wildlife component was the restriction on expanding crops and livestock into communal resource areas. This represents an opportunity cost in terms of agricultural production, although the actual magnitude of that cost is difficult to determine. It was regarded as negligible for the first 10 years of the project since, at current growth levels, it would probably take more than 10 years before cattle would require the communal resource areas for domestic grazing. After that, local people might see that, although the opportunity cost is high, the project area has low potential for productive agriculture and livestock husbandry.

Another potential cost would be revenues lost through curtailing the marketing of livestock products. This is based on the belief that wildlife carry and transmit diseases to livestock, making the meat ineligible for export.

Project Design and Development

The project was designed by DNPWLM, based on principles identified by the FAO land use study. The target communities were not involved in project planning until the implementation stage, creating some problems in motivating local participation. However, the project was flexible enough to allow for changes desired by the community without compromising project viability. External financing, from the African Development Bank, was designated for infrastructure improvement, as well as equipment for project development, including electric fencing, watering points for game, staff housing and offices, vehicles, and weapons. The Government of Zimbabwe would contribute salaries and wages. Total project costs (capital and recurrent expenditure) for the wildlife scheme were calculated at Zimbabwe $882,500 (c. US $635,400[see Table 1]). The community would contribute labor and local building materials and participate in decision-making and project management.

Figure 1 illustrates the administrative structure that was developed; it is summarized below:

The Department of Agricultural, Technical and Extension Services was responsible for allocating and demarcating land for settlement, grazing, and wildlife. This was to be done in collaboration with DNPWLM and the district council as part of the overall land use planning for the project area. The Tsetse Control Department was
already involved in a tsetse eradication program in the project area (one of the wildlife project's objectives was to demonstrate that wildlife management could be economically preferable to cattle in the northern zone, even if the tsetse problem was successfully eliminated). The Department of Veterinary Services had the responsibility of controlling the introduction of cattle to both the southern and northern zones of the project area. Activities of all of these departments were coordinated by the Department of Rural Development under the auspices of the MZVRDP.

A natural resources management unit project team was designated from within DNPWLM to provide technical expertise in wildlife management, improvement, and marketing systems. The project team would also organize into management committees which would be trained to take over both the administrative and technical aspects of the project after five years.

Rather than create a new local institutional framework, it was proposed that the project could strengthen the managerial, planning, and development capabilities of the existing Village Development Committees (VIDCOs) and Ward Development Committees (WADCOs), which were instituted in 1984 to implement government's policy to decentralize decision-making, planning, and development.

Local participation was based on the establishment of a District Wildlife Committee (DWC), providing immediate representation for the chairmen of the WADCOs. The DWC was established to enable joint operations, as the individual wards had insufficient resources to carry out separate viable wildlife ventures. This arrangement also facilitated participation of the district council, which is legally the appropriate authority for communal land and the natural resources therein.

To strengthen grass-roots participation, it was decided that the chairman of the DWC should be elected from among the member chairmen of ward management committees. The other members of the DWC were ward councilors from wards which had opted to establish communal resource areas and from the district council, the chairman, chief executive officer and executive officers for finance and administration. The role of the district council members was to coordinate the administration of hunting and the disbursement of hunting revenues to ward management committees, based on the recommendations of the DWC.

Ward management committees are composed of elected members from the VIDCOs of the six villages which make up the ward.

Safari hunting became the base of the project because it provided the greatest earning capacity with the least prospect for environmental degradation (as it does not depend on high stocking levels). The potential for viewing tourism is low because the area is remote from the main tourist centers and routes. The DWC was designated to run safari operations on behalf of member wards, employing professional hunters and a project manager. In this way, marketing margins previously captured by private safari operators would accrue to the DWC and, through it, to the community. It was also intended as a way to provide training to some members of the community in the managerial and entrepreneurial skills needed for these ventures.

Distribution of revenues from safari hunting is an important aspect of the DWC's responsibility. In principle, each participating ward is to receive payments for animals shot in its communal resources area. This can be determined by hunting return forms filed by the professional hunters (and available to each ward committee). In addition, a member selected by the ward committee accompanies safari hunts in the ward's area.

The meat from animals shot is to be distributed to the villagers nearest to where the animal is taken (as the sport hunter himself generally does not want much of it). This may dissuade individuals from hunting illegally in this protein-deficient area. The management framework set by each ward can also provide for cropping or individual hunting by permits. These would be issued by the committee on the basis of quotas set by the DNPWLM in consultation with the DWC. The wards also have the responsibility to decide who should carry out hunts of problem animals, to decide how individuals should be compensated for crop
damage or livestock losses caused by wildlife, and to organize anti-poaching operations with the assistance of their locally trained rangers.

Results: Wildlife Offtake, Economic Returns

The only source of funds for development of the safari hunting initiative was the infrastructure development component of the MZVRDP. The ADB funds were allocated for staff housing, office buildings, field equipment and logistics. DNPWLM sought additional donor funds for capital development on behalf of the DWC, and received them as a grant from ZimTrust. ZimTrust also assisted with the management and accounting functions, an area of weakness at the local level.

The first project hunting season was 1989. Estimated populations (based on aerial censuses and other DNPWLM methods), sport hunting quotas, trophy fees, meat and skin values, and potential gross revenues from the commercially valuable species are provided in Table 2. Table 3 provides the projected income and expense statement for the 1989 hunting season. [Ed. note: Actual income, expenses, and revenue allocations for 1989 season are presented in Tables 4 and 5... courtesy of Zimtrust, April 1990.] Total projected revenues available for distribution through the Guruve District Council equal ZS334,645. Three of the seven wards received substantial income from sport hunting. In Kanyurira Ward, the majority of the ZS47,000 was earmarked for community projects, such as a clinic, but each household was also expected to receive ZS200 in cash. (The average household in the Kanyurira Ward earned Z$500.00 from cotton in the same year.) In the other two wards, the large number of households precluded individual cash payments, so all revenues were allocated to community projects.

The northern part of the Dande Communal Land, including the Dande Safari Area is leased to a safari operator until the end of 1990. In the area to the east of the Angwa river, the DWC is mounting its own safari operations and has employed a project manager/professional hunter for this purpose. Testing the two methods of using the safari hunting potential will indicate their strengths and weaknesses.

The hunting quotas were set relatively low to ensure a high trophy quality. Quotas are well below the maximum sustainable offtake from the existing populations, thus leaving room for an additional yield of non-trophy animals for meat and hides. It is estimated that the meat supplied would largely meet local needs, removing the need for "irregular" hunting outside the framework set by the management scheme. But given the relatively low species populations, cropping for meat has, so far, been uneconomic in the project area. Thus, until the protection strategies produce higher populations, cropping has been limited to problem animals (especially elephants and buffalo which damage crops).

Results: Institutional Development

One of the major benefits of the project has been the strengthening of the VIDCOs and WADCOs. Since their formation in 1984, these institutions have performed inadequately. Low educational levels and poor managerial abilities of members, as well as a weak economic base, curbed any meaningful decision making, planning or implementation of development plans.

The Wildlife Management Committees created under the project were incorporated into the VIDCOs and WADCOs as sub-committees. These subcommittees are the economic institutions responsible for the management, marketing and conservation of the Wards’ wildlife resources. As wildlife revenues (from safari hunting) have been substantial, the existence of these wildlife management committees have, for the first time, given VIDCOs and WADCOs a sound economic base from which to work. Exposure to the managerial and accounting functions of the project is also strengthening the planning capability of the wildlife committees and thus of the community structure.

Initially, coordination between organizations involved in project implementation in the Dande area was poor -- there was no forum to link activities. This confused the ward committees and caused an inconsistent presentation of project objectives to the target communities. The situation was exacerbated by low
educational levels of VIDCO and WADCO members, resulting in a top-down approach to decision making.

To overcome this problem, a Board of Management was created consisting of ward representatives, technical advisors from DNPWLM, ZimTrust, WWF and CASS. The board is responsible for coordinating the activities of all the participants and acts as a planning and management body of the DWC. It is purely advisory, and strives to ensure that ward committees make informed decisions about wildlife management and promote development of local entrepreneurial and managerial skills needed to run the project.

The use of the wildlife income is decided at the village level -- an important feature in generating interest in wildlife conservation among villagers. It is also the part of the project which generated intense conflict between the VIDCOs and the district council. The council argued that the wildlife resources belonged to the entire district, even though its distribution within the district is uneven. And, as the de facto appropriate authority over natural resources in the district, it is the council's right to decide on the conservation and exploitation of the resource and the distribution of the benefits. Representatives of the Dande communities argued that, since they are unable to keep cattle (because of the tsetse fly), wildlife comprises their major asset. The agricultural potential in their area is poor, they claimed, and they suffered most from the depredations of wildlife. Moreover, they pointed to the past history of wildlife exploitation in their areas which failed to provide them with direct benefits. They are convinced that the greater part of past revenues was used to benefit areas without wildlife.

In a sense, this conflict worked to the advantage of the project. The Dande communities became convinced that the projects' objectives coincided with theirs, i.e. to gain greater control over the wildlife resources which they considered their own. The conflict was raging at a time when the district council was seeking the status of appropriate authority for wildlife in the Dande Communal land. The council recognized wildlife as an increasing important source of revenue and thus wanted to capture it. Meanwhile, DNPWLM was convinced that natural resource conservation in Dande and other communities would succeed only if the resident communities became involved in a sustainable program of resource exploitation that benefited them directly.

The impasse was resolved administratively when DNPWLM, in granting appropriate authority status to the district council, stipulated that the council should administer the wildlife through the DWC and that the council should ensure that households in the Dande Communal Land receive the maximum direct benefits in proportion to the amount earned in each ward from the exploitation of wildlife. In fact, during the 1989 season, only 62 percent of the total revenue was allocated to wards on the basis of the locations where trophies were actually taken. The remainder was held, unallocated by the district councils. This was similar to the situation prevailing when the central government allocated revenues directly under the Windfall Program.

Contrast the Dande situation with that of the Omay Communal Land in the Nyami-nyami district in northwest Zimbabwe. The Nyami-nyami District Council formed its own Wildlife Trust in 1987 with the intention of taking over full management of its wildlife resources. In 1988, the Omay Land Use Plan (developed by a consultant team) confirmed that wildlife was the most valuable resource in the area. Working with ZimTrust, the Council evolved management plans and an institutional structure to ensure that all benefits from wildlife would be returned directly to the participating wards. On the basis of these proposals, the district council was granted appropriate authority status in 1988. While this program is also still very new, it appears that the distribution of benefits has created far less controversy here than in Dande, probably because the Nyami-nyami District is more homogeneous and its member villages share wildlife costs and benefits more evenly. The eight wards in Nyami-nyami were projected to receive Z$12,000 each from wildlife revenues during the 1989 season. [Ed. note: Actual surplus available for distribution was Z$16,500 per ward... data from Zimtrust, April 1990.] Even in Nyami-nyami, however, a significant amount of the total remains unallocated by the district council. Preliminary results of an ongoing socio-
economic survey suggest that the villagers want a greater degree of participation and opportunities to increase individual returns.

Conclusions and Lessons Learned

The experiences of the Dande project has shown the need to examine the socio-cultural and socio-economic perspectives of the target communities toward wildlife management as an alternative form of land use -- as well as the effect that different approaches of decentralization can have on local perceptions. This is particularly important in a heterogeneous area. These issues are being examined in research being done by CASS.

A major issue is the perception of individuals, the ultimate decision-makers, of the benefits they derive from wildlife management relative to the costs. Under this project, legal authority over wildlife resources has been passed from the central government to the ward level (assuming the district council proceeds as stipulated). Further decisions regarding tangible rights for individual households is the prerogative of the ward.

In livestock and crop production, the communal resource base (land, water and vegetation) provides individual production), whereas with wildlife communal assets are used for communal production. If wildlife utilization is to gain acceptance as a land use option, conditions must be created under which wildlife production systems can be evaluated by landholders in the same way as conventional agricultural alternatives. This means an appropriate system for distribution of benefits to affected communities and individuals, along with educating people about the value of wildlife and the reasonable expectations for economic benefit from it. Until such a distribution system has been developed, the project cannot promote wildlife management -- through restriction of access to arable and grazing lands -- as a replacement for traditional crop and livestock productions. Instead, it must be viewed as a complementary system which is compatible with the established system.

One element of this compatibility is to protect people, crops, and livestock from marauding wildlife by fencing the village areas off from game management areas. Another is to develop mechanisms by which individual families can increase their own returns through investment in wildlife related enterprises. Without such opportunities, wildlife management is unprofitable compared to other land uses, such as livestock.
Figure 1: Distribution of the Parks and Wildlife Estates in Zimbabwe
Communal Areas in Natural Regions IV and V
## Natural Agro-Ecological Regions and Land Classification in Zimbabwe

<table>
<thead>
<tr>
<th>Natural Region</th>
<th>Commercial Land</th>
<th>Communal Land</th>
<th>Parks and Wildlife</th>
<th>Forest Estate</th>
<th>Total km²</th>
<th>%</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>4 500</td>
<td>1 399</td>
<td>500</td>
<td>700</td>
<td>7 050</td>
<td>1.8</td>
<td>Mountainous, rainfall above 1 000 mm p.a. Low temperature favour free crops and intensive livestock production</td>
</tr>
<tr>
<td>II</td>
<td>45 600</td>
<td>12 700</td>
<td>500</td>
<td>200</td>
<td>58 750</td>
<td>15.0</td>
<td>Reliable rainfall, 750 to 1 000 mm p.a. Suitable for rainfed crops and livestock</td>
</tr>
<tr>
<td>III</td>
<td>37 800</td>
<td>28 200</td>
<td>5 450</td>
<td>1 450</td>
<td>72 900</td>
<td>10.0</td>
<td>Rainfall 650 to 750 mm p.a. - subject to mid-season drought. Suitable only for drought resistant crops and livestock</td>
</tr>
<tr>
<td>IV</td>
<td>43 000</td>
<td>73 400</td>
<td>25 100</td>
<td>6 200</td>
<td>147 700</td>
<td>37.8</td>
<td>Rainfall 450 to 650 mm p.a. Periodic seasonal droughts. Generally suited only to livestock and wildlife</td>
</tr>
<tr>
<td>V</td>
<td>37 500</td>
<td>47 900</td>
<td>18 400</td>
<td>700</td>
<td>104 500</td>
<td>26.7</td>
<td>Rainfall 900 mm, usually below 650 mm p.a. and erratic. Suited to extensive livestock production and wildlife</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>168 400</strong></td>
<td><strong>163 550</strong></td>
<td><strong>49 700</strong></td>
<td><strong>9 250</strong></td>
<td><strong>300 900</strong></td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
FIGURE 2. Communal Areas Management of Natural Resources in the Dande-Mid-Zambezi Valley -- Administrative Organization

DISTRICT WILDLIFE COMMITTEE

Chairman (elected)
Chairman of member wards
Councillor, Conservation
Senior Executive Officer
Executive Officer (Finance)
Treasurer (Elected from Chairmen)
Secretary of member wards

SANCTIONS OVER PROPOSALS COORDINATION

ACCOUNTABILITY SERVICES

NATURAL RESOURCE MGMT UNIT

Project Leader
Assistant Ecologist
Field Officer
Field Assistants
Secretary

SERVICES

MEMBER COMMUNITIES

Chairman (elected)
District Councillor for Ward
Secretary
Treasury
Security
Two Elected Members

VILLAGE

ELECTS ITS REPRESENTATIVE IN THE WARD WILDLIFE COMMITTEE
### TABLE 1

**Mid - Zambezi Valley Rural Development Project (Wildlife Scheme):**

Schedule of Capital and recurrent expenditure (Z$'000)

<table>
<thead>
<tr>
<th>Category</th>
<th>Item</th>
<th>ADB Provision</th>
<th>GOZ Contribution</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Capital Costs</td>
<td>Buildings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Project Staff Houses</td>
<td>159</td>
<td>-</td>
<td>159</td>
</tr>
<tr>
<td></td>
<td>Office</td>
<td>15</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Infrastructural works</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Game water pumps</td>
<td>35</td>
<td></td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Game water pumps</td>
<td>30</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Electric fencing</td>
<td>150</td>
<td></td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Vehicles and equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4WD vehicles</td>
<td>54</td>
<td></td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>Motor cycles</td>
<td>9</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Tractor and trailer</td>
<td>35</td>
<td></td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Water bowser</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mobile radio sets</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Office furniture &amp; equipment</td>
<td>2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Camp &amp; field equipment</td>
<td>15</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Weapons</td>
<td>6</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>2. Operating Costs</td>
<td>Salaries and wages</td>
<td>-</td>
<td>270</td>
<td>270</td>
</tr>
<tr>
<td></td>
<td>Vehicles costs</td>
<td>20</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Maintenance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Game water pumps</td>
<td>7.5</td>
<td></td>
<td>7.5</td>
</tr>
<tr>
<td></td>
<td>Weaponry</td>
<td>5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td><strong>TOTAL COSTS</strong></td>
<td></td>
<td>612.5</td>
<td>270</td>
<td>882.5</td>
</tr>
</tbody>
</table>
Table 2. Potential Gross Revenues From Commercial Hunting in Guruve District -- Available Wildlife Populations, Quotas and Fees

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>DENSITY</th>
<th>NOS</th>
<th>QUOTA</th>
<th>UNIT TOTAL TROPHY</th>
<th>BODY DRESSED MEAT</th>
<th>UNIT TOTAL TROPHY</th>
<th>BODY DRESSED MEAT</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>/50km</td>
<td>% Nos</td>
<td></td>
<td>TROPHY FEE</td>
<td>TROPHY FEES</td>
<td>WT</td>
<td>VALUE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$</td>
<td>$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elephant (M)</td>
<td>0.30</td>
<td>900</td>
<td>0.70</td>
<td>6</td>
<td>5,000</td>
<td>54,545</td>
<td>3,000</td>
</tr>
<tr>
<td>Elephant (F)</td>
<td>0.30</td>
<td>900</td>
<td>0.30</td>
<td>3</td>
<td>2,500</td>
<td>13,636</td>
<td>2,000</td>
</tr>
<tr>
<td>Elephant F (F)</td>
<td>0.20</td>
<td>600</td>
<td>No.</td>
<td>0</td>
<td>1,000</td>
<td>0</td>
<td>2,000</td>
</tr>
<tr>
<td>Zebra</td>
<td>0.05</td>
<td>150</td>
<td>2.00</td>
<td>3</td>
<td>500</td>
<td>2,727</td>
<td>200</td>
</tr>
<tr>
<td>Hippo</td>
<td>0.25</td>
<td>750</td>
<td>3.00</td>
<td>23</td>
<td>125</td>
<td>5,227</td>
<td>75</td>
</tr>
<tr>
<td>Warthog</td>
<td>0.10</td>
<td>300</td>
<td>2.00</td>
<td>6</td>
<td>125</td>
<td>1,364</td>
<td>12</td>
</tr>
<tr>
<td>Bushpig</td>
<td>0.05</td>
<td>150</td>
<td>2.00</td>
<td>3</td>
<td>250</td>
<td>1,364</td>
<td>12</td>
</tr>
<tr>
<td>Klipsoringer</td>
<td>0.05</td>
<td>150</td>
<td>2.00</td>
<td>3</td>
<td>250</td>
<td>1,364</td>
<td>12</td>
</tr>
<tr>
<td>Duiker</td>
<td>0.10</td>
<td>300</td>
<td>2.00</td>
<td>6</td>
<td>125</td>
<td>1,364</td>
<td>12</td>
</tr>
<tr>
<td>Gruibok</td>
<td>0.50</td>
<td>1500</td>
<td>0.50</td>
<td>8</td>
<td>100</td>
<td>1,455</td>
<td>8</td>
</tr>
<tr>
<td>Impala (M)</td>
<td>1.00</td>
<td>3000</td>
<td>2.00</td>
<td>60</td>
<td>125</td>
<td>13,636</td>
<td>45</td>
</tr>
<tr>
<td>Waterbuck (M)</td>
<td>0.05</td>
<td>150</td>
<td>2.00</td>
<td>3</td>
<td>750</td>
<td>4,091</td>
<td>180</td>
</tr>
<tr>
<td>Sable (M)</td>
<td>0.10</td>
<td>300</td>
<td>2.00</td>
<td>6</td>
<td>1,250</td>
<td>13,636</td>
<td>200</td>
</tr>
<tr>
<td>Kudu (M)</td>
<td>0.10</td>
<td>300</td>
<td>2.00</td>
<td>6</td>
<td>600</td>
<td>6,545</td>
<td>200</td>
</tr>
<tr>
<td>Bushbuck</td>
<td>0.10</td>
<td>300</td>
<td>3.00</td>
<td>9</td>
<td>300</td>
<td>4,900</td>
<td>40</td>
</tr>
<tr>
<td>Eland (M)</td>
<td>0.03</td>
<td>90</td>
<td>2.00</td>
<td>2</td>
<td>750</td>
<td>2,727</td>
<td>350</td>
</tr>
<tr>
<td>Buffalo (M)</td>
<td>0.40</td>
<td>1200</td>
<td>2.00</td>
<td>24</td>
<td>800</td>
<td>34,909</td>
<td>450</td>
</tr>
<tr>
<td>Buffalo (F)</td>
<td>0.40</td>
<td>1200</td>
<td>0.50</td>
<td>6</td>
<td>400</td>
<td>4,364</td>
<td>360</td>
</tr>
<tr>
<td>Hyena</td>
<td>0.05</td>
<td>150</td>
<td>2.00</td>
<td>3</td>
<td>200</td>
<td>1,091</td>
<td>60</td>
</tr>
<tr>
<td>Lion (M)</td>
<td>0.05</td>
<td>150</td>
<td>2.00</td>
<td>3</td>
<td>200</td>
<td>1,091</td>
<td>60</td>
</tr>
<tr>
<td>Lion (F)</td>
<td>0.05</td>
<td>150</td>
<td>1.00</td>
<td>2</td>
<td>1,000</td>
<td>3,636</td>
<td>120</td>
</tr>
<tr>
<td>Leopard</td>
<td>0.05</td>
<td>150</td>
<td>4.00</td>
<td>6</td>
<td>1,500</td>
<td>16,364</td>
<td>50</td>
</tr>
<tr>
<td>Baboon</td>
<td>0.50</td>
<td>1500</td>
<td>1.00</td>
<td>15</td>
<td>25</td>
<td>682</td>
<td>14</td>
</tr>
<tr>
<td>Crocodile</td>
<td>100</td>
<td>1.00</td>
<td></td>
<td>1</td>
<td>1,000</td>
<td>1,818</td>
<td>110</td>
</tr>
</tbody>
</table>

**TOTALS**

204,364 24,003 48,006 33,055 81,061

**DAILY RATE ANALYSIS**

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>Quota (Nos)</th>
<th>Net Quota</th>
<th>Unit Total</th>
<th>Daily Rate</th>
<th>Total RETURN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>US$</td>
</tr>
<tr>
<td>Elephant (M)</td>
<td>6</td>
<td>6</td>
<td>21</td>
<td>126</td>
<td>500</td>
</tr>
<tr>
<td>Cats</td>
<td>11</td>
<td>5</td>
<td>14</td>
<td>70</td>
<td>500</td>
</tr>
<tr>
<td>Buffalo</td>
<td>24</td>
<td>13</td>
<td>7</td>
<td>91</td>
<td>500</td>
</tr>
</tbody>
</table>

less 15% agents' fees 287

260,909 221,773

**TOTAL INCOME ANALYSIS**

24,003 48,006 33,055 81,061

**GROSS INCOME**

656,000

**EXCHANGE RATE:** 0.55 SUS/ZS
TABLE 3. (Projected) Expense and Income Statement, 1989 Hunting Season, Guruve District

COST ANALYSIS

CAPITAL OUTLAY

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>TOTAL Z$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>x 1000</td>
<td>x 1000</td>
</tr>
<tr>
<td>4WD Vehicles</td>
<td>2</td>
<td>80</td>
<td>160</td>
</tr>
<tr>
<td>5 Ton Truck</td>
<td>1</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Chalets (Clients)</td>
<td>3</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>Chalets (Staff)</td>
<td>2</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Junior Staff Accommodation</td>
<td>16</td>
<td>4</td>
<td>64</td>
</tr>
<tr>
<td>Bar/Dining Room</td>
<td>1</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Kitchen</td>
<td>1</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Bathrooms/Showers</td>
<td>2</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Toilets</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Tentage</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Water Pumps</td>
<td>2</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Lighting</td>
<td>1</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Furniture</td>
<td></td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Crockery/Cutlery</td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Kitchenware</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Linen</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Weapons</td>
<td>5</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Radios</td>
<td>5</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Tools/Implements</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>TOTAL CAPITAL OUTLAY</td>
<td></td>
<td></td>
<td>525</td>
</tr>
</tbody>
</table>

Write-off over 5 years + 20% interest
Annual depreciation figure

RECURRENT EXPENDITURE

a) Staff

<table>
<thead>
<tr>
<th>Number</th>
<th>Salary /month</th>
<th>Salary /year</th>
<th>Profit</th>
<th>Bonus payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Manager</td>
<td>1</td>
<td>2,000</td>
<td>20,000</td>
<td>2.00</td>
</tr>
<tr>
<td>Trainee Prof. Hunters</td>
<td>2</td>
<td>250</td>
<td>2,500</td>
<td>0.25</td>
</tr>
<tr>
<td>Secretary (Harare)</td>
<td>1</td>
<td>750</td>
<td>7,500</td>
<td>0.75</td>
</tr>
<tr>
<td>Cooks</td>
<td>2</td>
<td>150</td>
<td>1,500</td>
<td>0.15</td>
</tr>
<tr>
<td>Waiters</td>
<td>2</td>
<td>100</td>
<td>1,000</td>
<td>0.10</td>
</tr>
<tr>
<td>Camp Attendants</td>
<td>3</td>
<td>100</td>
<td>1,000</td>
<td>0.10</td>
</tr>
<tr>
<td>Trackers</td>
<td>2</td>
<td>125</td>
<td>1,250</td>
<td>0.13</td>
</tr>
<tr>
<td>Skinners</td>
<td>2</td>
<td>110</td>
<td>1,100</td>
<td>0.11</td>
</tr>
<tr>
<td>General Hands</td>
<td>5</td>
<td>100</td>
<td>1,000</td>
<td>0.10</td>
</tr>
</tbody>
</table>

Sub-total

... 36,850

13,157

*Based on data available September 1989.*
b) Operating costs

<table>
<thead>
<tr>
<th>Category</th>
<th>/Month</th>
<th>/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petrol, Diesel, Oil, Gas</td>
<td>5,000</td>
<td>40,000</td>
</tr>
<tr>
<td>Vehicles Spares and Maintenance</td>
<td>2,000</td>
<td>15,000</td>
</tr>
<tr>
<td>Food</td>
<td>3,000</td>
<td>24,000</td>
</tr>
<tr>
<td>Booze</td>
<td>2,000</td>
<td>16,000</td>
</tr>
<tr>
<td>Cleaning Materials</td>
<td>250</td>
<td>2,000</td>
</tr>
<tr>
<td>Salt Chemicals</td>
<td>250</td>
<td>2,000</td>
</tr>
<tr>
<td>Medical Supplies</td>
<td>100</td>
<td>800</td>
</tr>
<tr>
<td>Ammunition</td>
<td>200</td>
<td>1,600</td>
</tr>
<tr>
<td>Insurance</td>
<td></td>
<td>10,000</td>
</tr>
<tr>
<td>Marketing</td>
<td></td>
<td>10,000</td>
</tr>
<tr>
<td>Advertising</td>
<td></td>
<td>5,000</td>
</tr>
<tr>
<td>Bookkeeping</td>
<td></td>
<td>5,000</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>500</td>
<td>4,000</td>
</tr>
</tbody>
</table>

Sub Total                      
136,400

TOTAL RECURRENT EXPENDITURE     
173,250

ANNUAL DEPRECIATION             
126,000

TOTAL ANNUAL COSTS              
299,000

GROSS ANNUAL INCOME             
656,000

less ANNUAL COSTS               
299,000

PROFIT BEFORE BONUS PAYMENTS    
357,000

less Bonus Payments             
13,000

PROFIT BEFORE TAX               
344,000

less Tax @ 40% 137,600

FINAL PROFIT TO INVESTORS       
296,000

INVESTMENT ANALYSIS

Capital required Jan 1989       
525,000

Recurrent costs required at start of 1989 @ 10% annual cost
17,000

Guruve District Wildlife Committee investment
542,000

Proportional share of profits:
Guruve District Wildlife Committee
242,000

Distribution of Wildlife Committee profits:
10% to District Council
24,000

Approximate balance to 7 wards (equal share)
30,000

<table>
<thead>
<tr>
<th>Approximate share to Households by Ward Ward</th>
<th>Estimated No Of Families</th>
<th>Share per Household ($)</th>
<th>Location in Project Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kanyurira</td>
<td>100</td>
<td>3,000</td>
<td>Western Zone</td>
</tr>
<tr>
<td>Chisungu</td>
<td>200</td>
<td>1,500</td>
<td>Western Zone</td>
</tr>
<tr>
<td>Chitsungo</td>
<td>800</td>
<td>40</td>
<td>Southern Zone</td>
</tr>
<tr>
<td>Chiriwo</td>
<td>200</td>
<td>1,500</td>
<td>Northern Zone</td>
</tr>
<tr>
<td>Neshangwe</td>
<td>800</td>
<td>40</td>
<td>Southern/Northern Zone</td>
</tr>
<tr>
<td>Matisiwo A</td>
<td>300</td>
<td>100</td>
<td>Northern Zone</td>
</tr>
<tr>
<td>Matisiwo B</td>
<td>600</td>
<td>50</td>
<td>Southern Zone</td>
</tr>
</tbody>
</table>

*From Table 2.
Table 4. Actual Income and Expense Statement
1989 Hunting Season, Guruve District [Zimbabwe $]

<table>
<thead>
<tr>
<th>No. Hunter Days</th>
<th>Guruve DC Wildlife Account</th>
<th>Guruve DC Safari Ops</th>
<th>Zambezi Hunters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value of Quotas: [Quota x Govt Z$ Fees]</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>DC Safari Op</td>
<td>94,690</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zambezi Hunters</td>
<td>128,975</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. **REVENUE**

1.1 Safari Charges

<table>
<thead>
<tr>
<th></th>
<th>Guruve DC Wildlife Account</th>
<th>Guruve DC Safari Ops</th>
<th>Zambezi Hunters</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Safari Ops</td>
<td>165,073</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zambezi Hunter Ops</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1.2 Trophy + Concession Fees

<table>
<thead>
<tr>
<th></th>
<th>Guruve DC Wildlife Account</th>
<th>Guruve DC Safari Ops</th>
<th>Zambezi Hunters</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Safari Ops</td>
<td>134,064</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zambezi Hunter Ops</td>
<td>168,600</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1.3 PAC meat & skins

|                     |                         |                     |                |

1.4 Other Income

|                     |     |                     |                |

| Donations           | 250 |                     |                |
| Other?              | ?   |                     |                |

**Total Revenue**

|                     | $467,987 | $299,387 | $1,126,766 |

2. **LESS RECURRENT EXPENDITURE 2/**

|                     | 231,774 | 231,774 | 888,070 |

3. **EQUALS NET REVENUE**

|                     | $236,213 | $67,613 | $238,696 |

4. **LESS CAPITAL COSTS**

|                     | 214,732 | 214,732 | 0        |

5. **EQUALS CASH AVAILABLE FROM WILDLIFE OPS:**

|                     | $21,481 | ($147,119) | $238,696 |

of which:

| From D.C. Safari Op | ($147,119) |                     |                |
| From Zambezi Hunters Op | $168,600 |                     |                |

6. **PLUS CONTRIBUTIONS FROM ZIMTRUST:**

|                         |                     |                     | $313,164 |

| Salary [1/3 Gifford management cost] | 10,490 |                     |                |
| Recurrent cost (Zimtrust overhead)  | 87,942 |                     |                |
| Motor vehicles & other capital inputs | 214,732 |                     |                |

7. **EQUALS SURPLUS AVAILABLE FOR DISTRIBUTION:**

|                         | $334,645 |                     |                |

**Memorandum items:**

| Revenue/hunter day: | $1,274 | $1,650 |
| Recurrent expd/hunter day: | $986 | $1,300 |
| Net revenue/hunter day: | $288 | $349 |
| Net revenue/quota value: | 71.4% | 185.1% |
Table 5. Source and Allocation of Funds From Wildlife, 1989 Hunting Season, Guruve District

**Sources of Funds:**

<table>
<thead>
<tr>
<th>Source of Funds</th>
<th>Amount</th>
<th>% Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>District Council Safari Operation [net revenue]</td>
<td>$67,613</td>
<td>12.3%</td>
</tr>
<tr>
<td>Zambezi Hunters [concession + trophy fees]</td>
<td>$168,600</td>
<td>30.7%</td>
</tr>
<tr>
<td>Zimtrust Contribution to DCSO (recurrent cost subsidy)</td>
<td>$98,432</td>
<td>17.9%</td>
</tr>
<tr>
<td>Zimtrust Provision of Capital Equipment</td>
<td>$214,732</td>
<td>39.1%</td>
</tr>
<tr>
<td>PAC hides &amp; skins</td>
<td>$0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Other income</td>
<td>$250</td>
<td>0.0%</td>
</tr>
<tr>
<td><strong>Total Revenues</strong></td>
<td><strong>$549,627</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

**Allocation of Funds:**

<table>
<thead>
<tr>
<th>Allocation of Funds</th>
<th>Amount</th>
<th>% Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase of Safari Equipment + Vehicles</td>
<td>$214,732</td>
<td>39%</td>
</tr>
<tr>
<td>Reserve Capital Fund</td>
<td>$33,209</td>
<td>6%</td>
</tr>
<tr>
<td>District Management Fund</td>
<td>$11,291</td>
<td>2%</td>
</tr>
<tr>
<td>District Council Levy</td>
<td>$19,925</td>
<td>4%</td>
</tr>
<tr>
<td>Dividends to Wards:</td>
<td>$61,340</td>
<td>11%</td>
</tr>
<tr>
<td>Kanyurira Ward</td>
<td>$47,310</td>
<td>14%</td>
</tr>
<tr>
<td>Chisunga Ward</td>
<td>$4,030</td>
<td>1%</td>
</tr>
<tr>
<td>Chitsungo Ward</td>
<td>$10,000</td>
<td>3%</td>
</tr>
<tr>
<td>Chapota Ward</td>
<td>$0</td>
<td>0%</td>
</tr>
<tr>
<td>Matisowo A</td>
<td>$0</td>
<td>0%</td>
</tr>
<tr>
<td>Matisowo B</td>
<td>$0</td>
<td>0%</td>
</tr>
<tr>
<td>Neshangwe</td>
<td>$0</td>
<td>0%</td>
</tr>
<tr>
<td>Chiriwo</td>
<td>$0</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Amount Unallocated:</strong></td>
<td><strong>$208,880</strong></td>
<td><strong>38%</strong></td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>$549,627</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Note: 1. Zambezi Hunter's 683 hunter days includes hunts outside Dande. Its revenue and costs therefore include amounts which do not relate to the Dande area.

2. It should be noted that included in Zambezi Hunter's recurrent costs is $50,000 paid in lease fees to the district council as well as $118,600 paid to council as trophy fees. This amounts to an additional cost per day of $247.00.

*All Dividends distributed to Wards are from DCSO revenues. Revenues from Zambezi hunters are presently all retained at the D.C. level.*
BURKINA FASO:

Pilot Nazinga Wildlife Utilization Project

by Clark Lungren*

History and Design of the Project

During the drought of 1972-74, the initiators of the Nazinga project observed that populations of ungulates native to the Sudan-Guinean savannahs of the area survived better than did introduced livestock and thus might prove to be a more stable food source. They also knew, however, that the authority of traditional tribal and village leaders had eroded and social values had changed, so that the traditional systems for production and management of natural resources which had been the basis for rural villagers' lifestyles had broken down. As a result, the delicate environmental equilibrium had been disrupted and the habitat, including wildlife and water resources severely depleted.

In an effort to restore the balance, the project organizers began a process of dialogue with rural villagers, government administrators, aid agencies and donors, researchers and technicians, aimed at developing a project proposal to improve the villagers' livelihood by restoring the natural resource base. The dialogue began in 1973, and the resulting pilot project proposal was adopted in January, 1979 by the Government Council of Burkina Faso (then called Upper Volta). The African Wildlife Husbandry Development Association (AWHDA), a Canadian non-profit agency, was incorporated in 1975 to help provide the structure needed for fund-raising and project implementation. The project officially began in October, 1979.

The Nazinga Forest Reserve and vicinity (see Figure 1) was selected for the pilot project, based on ecological and sociological factors. The lands around the Nazinga Reserve were unused except by organized hunting groups, collecting fish and smoked meat primarily for export southward to population Centers in Ghana. This exploitation had managed to reduce wildlife stocks to a small remnant of the reported historical dimensions. In addition, these groups consisted largely of outsiders who had displaced the communities which had traditionally used the project area. Thus, the local communities came to regard the proposed project as a means of not only rebuilding the area's natural resource base, but also re-capturing their own access and rights to it.

Objectives

The original objectives of the Nazinga pilot project were "...to research, design and develop rational utilization of the wildlife resources in the Nazainga area, in order to increase the resources for the profit of the local people..." This involved the establishment of a central meat-producing game ranch, eventually attaining an area of about 940 km² and the creation of a surrounding protective zone covering about 2000 km² for direct and exclusive use of the resource by the ranch and the inhabitants of

*Projects Director, African Wildlife Husbandry Development Association
some 50 villages located within that zone. (After some time it became apparent that human and financial resources were too limited to carry out the plans for the full "protected zone," so in 1985 this was modified to a 1 km belt outside the ranch and the nearest surrounding villages became the area of activity where village hunting zones were established.

A multiform land utilization scheme was agreed upon, involving the ranch, surrounding village zones and the nearby Sissili Forest Reserve (see Figure 1). The nucleus in the center of the ranch is completely protected from hunting but open to tourism. The three cropping blocks which make up the ranch's meat production scheme are used in a rotational system, so that animals in each block are harvested for two 5-week periods each year. The village zones support safari hunting, currently operated by the Ranch Management which pays trophy taxes to the village nearest to the point where a kill is made. In the future the aim is to transfer more management responsibility to the villages by allowing them to retain a quota for their own use or for sale directly to their own clients. Currently safari clients are also permitted to hunt on the ranch itself, but this is to be phased out as game populations in the village hunting zones grow as a result of improved anti-poaching measures. A proposal is also under consideration to operate the Sissili Forest Reserve as a village hunting concession, whereby villages could lease the area to a safari operator for bow hunting and collect annual and trophy fees.

During Phase 1 of the project (October, 1979–November, 1988) the main objectives were to develop the ranch (improve the habitat, increase wildlife populations, and build infrastructure) and to establish its potential for producing food and income. Phase 2 (December, 1988–November, 1989) was marked by a reorganization of the management structure to separate the education, training and research components (under a newly created Nazinga Ecology Center) from the ranch development and production aspect. The objective for the ranch in the second phase was to conduct a practical test of a production season to verify the ranch's potential for self-sufficiency based on safari hunting (in association with the village committees), game cropping, tourism, fishing and the sale of live animals. The Nazinga Ecology Center was composed of a Training Unit, for education and training of people in conservation of natural resources in general and in the management and utilization of wildlife in particular, and a Monitoring Unit to monitor the impact of ranch activities upon the vegetation, animals and local people in order to be able to refine the ranch management plan.

Project Components and Development

The first priority of the project was to establish an environment which would attract and support larger populations of wildlife and to set up the basic infrastructure. With no guaranteed permanent water points on the ranch, water development was essential to provide water and associated habitat for both animals and staff. The dams which were built also helped to increase fish resources. Some pasture areas were badly degraded, requiring pasture management, including a controlled burning program, to restore a suitable vegetative community. No roads existed, so perimeter and access roads had to be built, along with housing.

In the beginning, very little game was present due to heavy poaching, mostly from armed gangs of Ghanaian poachers who had staked out territories in the area. No roads existed at the ranch site, making definition of boundaries and access for control and management very difficult. Thus, mastery of the ranch area through establishment of boundary and access roads and establishing effective anti-poaching teams was another essential first step. Under the project agreement, all access to the Ranch was prohibited without authorization from the project management. A system was established whereby villagers could obtain permits for fishing and collection of honey and plant products. All livestock were also excluded from the Ranch, based on the government's concern about potential for disease transmission from wildlife to livestock. This required a major effort as nomadic herders had begun using the area on a season basis in the mid-1970's.
Extensive consultation and dialogue with local communities was an essential element from the beginning and throughout project design and development. The decision to proceed with the pilot project was made only after the local villages, through their Heads, agreed that they wanted the project and agreed to participate actively in it. In the beginning this dialogue took the form of fairly cumbersome consultations with many individual villagers. Later, it was institutionalized by the creation of a Village Advisory Committee and including village representatives on the Management Committee.

Local villagers agreed to contribute a certain amount of free labor (eventually amounting to 20,000 man/days) in addition to the paid employment that would be offered for construction of housing, road and dams, most of which was done by hand. They also provided information to project staff to reduce poaching and participated in anti-poaching patrols during the first five years. In general, the help of village authorities was sought to help solve thefts and contentious issues which arose periodically.

Results: Project Implementation and Financial Aspects

By the end of 1988, some 600 km of boundary and access road had been built, about 46 kms of permanent waterways had been created by the construction of 11 dams, about 43 buildings for housing, guest houses, office, storage rooms, workshops and garage complex, two landing strips, one well and one water tower had been completed.

Hunting and meat production

Wild ungulate populations had increased from an estimated less than 1000 animals in 1976 to about 6000 by 1981 and about 12,000 by 1988 (current estimates are based on head-counts on foot and from vehicles and on aerial censuses). Information gained in earlier years was used to set quotas for various species for 1989, with quotas allocated for cropping and safari hunting. In fact, for several species only a small proportion of the quotas were actually filled.
### Table: Approximate No. Harvested Species 1988 Population 1989 Quota Dec./88 -July 89

<table>
<thead>
<tr>
<th>Species</th>
<th>1988 Population</th>
<th>1989 Quota</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duiker</td>
<td>660</td>
<td>63</td>
</tr>
<tr>
<td>Ourebi</td>
<td>1610</td>
<td>152</td>
</tr>
<tr>
<td>Reedbuck</td>
<td>110</td>
<td>7</td>
</tr>
<tr>
<td>Bushbuck</td>
<td>940</td>
<td>59</td>
</tr>
<tr>
<td>Hartebeest</td>
<td>1010</td>
<td>38</td>
</tr>
<tr>
<td>Buffalo</td>
<td>510</td>
<td>16</td>
</tr>
<tr>
<td>Warthog</td>
<td>4740</td>
<td>687</td>
</tr>
<tr>
<td>Elephant</td>
<td>420</td>
<td>8</td>
</tr>
<tr>
<td>Waterbuck</td>
<td>230</td>
<td>10</td>
</tr>
<tr>
<td>Roan Ant.</td>
<td>1650 1</td>
<td>73</td>
</tr>
</tbody>
</table>

As game meat production is a key component of the Nazinga project, developing methods for harvesting, processing and marketing of meat has been an important aspect of project implementation. A 14-week trial cropping operation was carried out in 1988 involving 300 animals which yielded 10,000 kg of dressed meat. The trial also provided information on systems for cropping, meat processing and sales. This permitted analysis and projections for planning of the first full-scale production season, conducted between December 1, 1988 and November 30, 1989, aimed at verifying the ranch's potential for financial self-sufficiency.

The most recent cropping operation, lasting 30 weeks, involved harvesting of 655 animals and produced 20,220 kgs of meat for sale. Cropping of antelope species was carried out at night from vehicles, while buffalo, warthog and elephant were shot by day on foot. A time limit of 3 hours was set from shooting to delivery of carcasses to the abattoir. After inspection and sample collection, carcasses went into a large walk-in refrigerator to be kept cool until delivery to market. Meat was packaged in 1 kg plastic bags and delivered for sale to villages near the ranch, by moped. Once a week quarters were packed in isolated transport boxes and shipped to a nearby town and to the capital. In the local town meat was sold at US$ 1.60/kg. In the capital a wholesaler was engaged to handle the meat. Prices to the wholesaler were US$ 3.00/kg for a front quarter of venison and US$ 4.17/kg for a hindquarter. The wholesaler sold these to the public at US$ 4.00/kg and US$ 5.00/kg respectively. Skins and trophies from cropped animals were dried and stored for sale. Overall, about 10% of the meat was sold at the ranch and surrounding villages, 40% to hotels and restaurants in the capital and 50% through the central market in the capital to the urban population.

In addition to yielding meat and income, the cropping season of 1989 is providing data for evaluation of practical and economic aspects of the potential for game meat production from the ranch. Among the lessons learned was that the available market for antelope meat was larger than the ranch could supply that year (although offtake levels in 1989 were below projected sustainable rates), whereas sales of warthog meat were less than expected. However, when the price of warthog meat was reduced by 30%, demand increased dramatically.

A safari camp was constructed and equipped to serve the project area. Tariffs for 1989 were set at US$ 519/day ($7262 for a 14-day safari) for a single client accompanied by a professional hunter, and $414/day ($5790 for 14 days) each for two clients accompanied by a single professional hunter. In addition, separate trophy fees were established for different species, ranging from US$ 30 for a baboon and US$ 50 for a duiker to US$ 750 for a Western Roan Antelope. Although a quota of 8 elephants was set by the ranch...
management (based on census information), hunting of elephants was suspended by the government. Total revenues from the safari operation for 1989 were U.S. $47,847. The possibility of establishing a commercial company involving government, village councils and villagers as well as other financial partners is being explored.

**Other sources of income**

Sales of live animals represent another lucrative enterprise still to be developed. As a beginning, plans have been made to recapture and sell 26 Roan antelope inhabiting an area which has been used for carrying capacity studies over the past five years. A potential client has expressed interest but no sale has yet been made.

Spontaneous tourism for game viewing increased dramatically, from 350 guests recorded in 1985 to over 1500 visits in 1988.

This indicated that tourism represents an important potential source of income which must be incorporated in the project management plan. Currently gate fees are set at $US 1.60 for nationals, US$ 3.30 for expatriate residents of Burkina Faso and US$ 5.00 for foreign tourists.

Other sources of revenues for the project and/or community include taxes for use of project roads (US$ 4.50), guide fees set at US$ 3.30 (guests must be accompanied by a guide to travel within the ranch), hut fees at US$ 1.60 per night (guests provide own bedding) and bungalows (bedding included) at US$ 17.00. The private operator who leases a restaurant (built by ranch staff) overlooking an elephant watering hole pays 8% of gross receipts to the ranch.

Total production and revenues from the first seven months of the 1989 trial production season are summarized below (data for July not yet analyzed):

<table>
<thead>
<tr>
<th>Source of Revenues</th>
<th>Revenue (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial fishing licenses</td>
<td>288</td>
</tr>
<tr>
<td>Tourism (ca. 2500 visitors)</td>
<td>20,376</td>
</tr>
<tr>
<td>Meat sales from cropping</td>
<td>57,737</td>
</tr>
<tr>
<td>Some trophies from cropping sold</td>
<td>640</td>
</tr>
<tr>
<td>Safari operations (daily and trophy fees*)</td>
<td>47,847</td>
</tr>
<tr>
<td>Misc.</td>
<td>1,530</td>
</tr>
<tr>
<td>Total receipts through June, 1989</td>
<td>128,418</td>
</tr>
<tr>
<td>Project disbursements for ranch functioning</td>
<td>92,807</td>
</tr>
<tr>
<td>Financial Surplus, as of end June, 1989</td>
<td>35,611</td>
</tr>
</tbody>
</table>

*(Village portion amounting to $3,300 to be paid into village accounts)*

Outside funds were used for wages of expatriate personnel and on new investment projects, such as the restaurant, safari camp, vehicles for cropping, etc. AWHDA's total investment in the ranch component through 1989 was about U.S. $295,000. The government, in addition to personnel, contributed CFA 12,243,000 ($40,800) worth of firearms and free customs clearances on equipment and supplies.

**Results: Benefits to the Local Community**

The goods, services and cash income received by the local community in the past year are summarized below:
Goods and Services

<table>
<thead>
<tr>
<th>Item</th>
<th>Value (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish (ca. 5000 kg)</td>
<td>5,000</td>
</tr>
<tr>
<td>Meat donated to villagers (ca 3000 kg)</td>
<td>3,000</td>
</tr>
<tr>
<td>Medical services (consultations, evacuations)</td>
<td>1,100</td>
</tr>
<tr>
<td>Dam construction (one local village)</td>
<td>14,400</td>
</tr>
</tbody>
</table>

Cash Income

<table>
<thead>
<tr>
<th>Item</th>
<th>Value (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ca. 11,000 man-days employment for total 250 people</td>
<td>41,600</td>
</tr>
<tr>
<td>Local produce sold at Ranch site</td>
<td>3,000</td>
</tr>
<tr>
<td>Trophy taxes paid to village accounts</td>
<td>3,300</td>
</tr>
</tbody>
</table>

Total estimated benefit: 71,450

This does not include benefits such as collection of broom grasses, honey, fruit, wood, medicinal plants, etc. (by permit granted by the Ranch management) which the improved environment of the Ranch provided, or use of Ranch roads for travel about the area.

Fishing is one of the main productive enterprises on the ranch, and it is particularly important as an enterprise for women. Before the project, local women had become largely excluded from their traditional fishing areas by armed intruders who took over the sites. Fishing in the project area is now free for women's collectives and for sport fishing in designated areas; in addition commercial fishing is permitted in designated areas and with permission of Ranch management, upon payment of a fee of $US 1.66 per week. As outside poachers were eliminated and the habitat improved, the number of "fishing days" spent by a group of 600-700 men and women (mostly women) rose from 300 in 1980 to about 4500 currently. Annual fish harvest increased to approximately 5000 kg, with a market value of about US$ 1/kg.

On-ranch employment is mostly reserved for the 50 villages of the project area, with first priority given to the best workers whose villages are closest to the ranch. Some 600 men work regularly at the ranch for varying periods each year, depending upon their needs and the availability of work. This source of local employment has meant that the majority of young men in the area have ceased their annual exodus to Ghana or Cote D'Ivoire in search of cash earnings.

Medical facilities developed at the Ranch provided an important service both for on-site care and to enable the evacuation of sick or injured people to provincial hospitals about 55 km away. An additional, unquantified benefit is that the Ranch has become a social hub for villagers in the area. This has been encouraged as the Ranch management organized social functions and special activities (excursions, football matches, parties).

An unintended but notable result of the project is that remaining poachers (who sell poached meat locally at about $ 0.66, undercutting the Ranch's price of $ 1.00) are openly pleased that they can now poach successfully within 2-3 kilometers of their homes instead of having to travel 20+ kilometers away, as they did before the project. They credit the project with the improvement.

Evaluation of Local Participation Aspect--Phases 1 and 2

The original idea for the Nazinga project came from outside the community at large, from two resident expatriates who were very familiar with the area and the people. The period between 1973 and 1979 was largely spent discussing the idea with the government and with the local community, gaining their support and agreeing on the types of rules and regulations which would have to be imposed.
and respected in order to make the project work, as well as lining up external funding. To overcome initial scepticism on the part of village leaders and community members, the advocates stressed that the project aimed to help them regain access and control over the wildlife resources in their area, and would also mobilize funds and resources for development of the area which had so far received little attention from the government and donors. After they became convinced of the intentions, village leaders agreed to support the approach. They did caution, however, that the project management should be prepared to enforce any rules which they imposed as some community members might not respect them voluntarily.

The first phase of the project centered on the 940 km sq Ranch itself, and proved that it was possible to build up wildlife populations through protection and habitat improvement. It hosted a large number of research projects, carried out by scientists and students from Burkina Faso, other African countries, Europe and North America, which yielded a wealth of data on local ecology and wildlife management (e.g. carrying capacity, impact of wildlife populations on habitat and vegetation, impact of fire on plant life cycles, productivity of pastures). Its first full-fledged production season in 1989 also provided evidence that production of game meat, supplemented by other wildlife-related income earning activities, represents a viable economic alternative for the area.

Throughout the first phase the project was managed by a project management team consisting of the expatriate and national staff. There was a considerable amount of local employment, primarily for construction work and anti-poaching teams. Other tangible benefits for the local communities included improved fishing, health and social services, two schools, four wells, a village dam and a market for their produce among ranch staff and researchers.

The 10 closest villages also benefited from the safari hunting operation. The aim is for safari hunting to occur in village hunting zones, where a portion of the trophy tax and all of the meat will go to the village on whose land a kill takes place. However, as a first step in this year safari hunting took place mostly on the ranch, with portions of the trophy tax going to the village closest to the location of each kill. This is intended to help the villagers understand the process and begin to benefit immediately, while game populations inside the village hunting zones increase (thanks to improved protection by the villagers themselves) to a stage where tourist hunting becomes viable there as well. This arrangement is providing an incentive for village leaders and members to help protect the wildlife and wildlife habitat in their respective areas.

Thus, up to this point, the local communities were involved in the decision to have the project, by agreeing to accept the authority of the designated project management, and in the general design. This involvement and acceptance were won through some six years of on-site discussion and negotiation before the project began. Although more emphasized during the first two years, regular discussions with all surrounding villages has continued throughout the duration of the project to maintain positive relations and explain the goals, methods and expected benefits of the project. In later years the public relations/communication effort was extended to more distant villages. However, the local communities were not directly involved in project management or in implementation except as employees. As the benefits of the project became clear villagers helped the government and project anti-poaching forces by providing information, but except for isolated cases village leaders did not themselves take responsibility for enforcing hunting rules in the village zones. Infringement of other rules, such as encroachment of cattle herds on the ranch also had to be dealt with by the project management (e.g., by promising and then proceeding to shoot one cow each day that a herd was on Ranch land).

Increasing Local Participation: Proposals for Phase 3

In October, 1989, a major review by project participants and funders took place. Their purpose was to evaluate the results of the trial production season and determine the feasibility of creating some form of local
company involving the local people as much as possible.

Meanwhile, an IUCN program has begun to reorganize village-based wildlife management in a broad area around Nazinga and the nearby Po National Park in a "Po-Nazinga Management Zone." Under this proposed program, the area would be divided into different zones:

1) **The Nazinga Ranch:** which would serve as a nucleus for breeding wildlife species for restocking surrounding areas and meat production (through cropping). Initially it might also serve as a fall-back for safari hunting clients who failed to get their trophies outside, but eventually all sport hunting would be eliminated;

2) **Village Hunting Concessions:** several areas around the Ranch and Po Park, which would eventually become part of the surrounding village territories. In the short term, however, there could be a management committee comprised of representatives of the Ranch, the villages and the provincial government (MET). Hunting rights in these areas would be contracted to professional hunters who would be responsible for the protection, development and use of the areas and would pay a fee to the management committee. The size of the fee would be linked to hunting success.

3) **Village Hunting Zones:** (starting with the 10 villages immediately surrounding the Ranch, which have been most closely collaborating with the project so far, and which have already established their zones and proposed rules to be applied in each zone). Each village would establish a Village Hunting Committee responsible for anti-poaching work, designating hunting guides, distributing meat from hunts and allocating revenues for community development projects. There would be active coordination between the Ranch management and the VHCs to set quotas and plan other aspects of the program. Initially hunting in the village zones would probably be restricted to safari hunting, as an interim step for initiating protection and management and as the best short-term source of revenue. However, as game populations build up, legal subsistence hunting would be introduced.

Discussions are also underway concerning a regional office for wildlife production which would help to disseminate the experience and information developed by the Nazinga pilot project. The Burkina Faso National Conservation strategy includes proposals for five additional game ranches modeled on Nazinga. However, the AWHDA-supported project at Nazinga and the participation of AWHDA-associated staff has ended, raising some uncertainty regarding the future management and direction of the Ranch and the overall program.

1. Believed to be the largest population in West Africa
Figure 2. Organisation of the Project for the Development of the Nazinga Game Ranch, I Dec/88 - 30 Nov/89

MANAGEMENT COMMITTEE
I rep. MET, I rep. AWHDA, I rep. CIDA, I rep. Villagers
I rep. MET Masuri prov, I rep. MET Sissili prov.

Coordinator

RANCH DIRECTION
Administrative Services
Consultants

SCIENTIFIC CONSULTING COMMITTEE
MET AWHDA
CIDA IUCN FAO
CRTO ORSTOM
USAID IRBET

DIRECTION OF NAZINGA ECOLOGY CENTER
Monitoring Unit
Training Unit
The original proposal for development of Wildlife Management Areas (WMAs) in Botswana was made by Sherbourne et al. in 1974. This paper for the first time WMAs as areas directed primarily at wildlife utilization. The proposal was adopted in the context of the Government’s Tribal Grazing Lands Policy of 1975, which decreed that land would be zoned as (1) Commercial Farming Areas, (2) Communal Farming Areas and (3) Reserved Areas. The Reserved Areas were further divided into two categories: those reserved for people with a few cattle and those reserved for alternative uses. WMAs were foreseen as Reserved Areas where wildlife utilization would be the primary form of land use.

Further consultations followed among the Lands Boards, District Councils and government departments as the concept of WMAs was refined and proposed locations selected. As a result of these consultations, WMAs were included in the National Development Plans V and VI, and legislation (the Fauna Conservation Act of 1979) was enacted for establishment of WMAs.

The Government’s Wildlife Conservation Policy paper of 1986 emphasized the need for attaining increased economic returns from wildlife while at the same time ensuring the continuity of this resource. It stated the commitment of the government to the development of a wildlife industry, based on multiple uses of wildlife, to create economic opportunities, jobs and incomes for the rural population and increase the supply of game meat where possible (to supplement the objectives of the National Food Strategy). It also indicated that wildlife utilization would be largely a process of rural development with full citizen participation at all stages, with government control through legislation aimed at encouraging and facilitating development of the industry.

Twelve WMAs are currently planned in seven districts. The combined area of these WMAs represents some 21% of the land area of Botswana. None of these areas have yet been gazetted but the procedure for doing so has been clarified by discussions between the Ministries of Commerce and Industry and Local Government and Lands. Under this arrangement WMAs will be gazetted only as part of a district land use plan to be prepared by the District Land Use Planning Units (DPLUPUs) and approved by the government. The WMAs will also be gazetted under the Fauna Conservation Act. Inclusion of a WMA in the nine proposed WMAs in the respective district land use plans has been approved by Land Boards; the remaining three are still under discussion. District land use plans have been completed in six of the nine cases, but only one has reached the stage where approval by the Cabinet is pending.

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*David Larson is Senior Wildlife Management Officer with the Department of Wildlife and National Parks, Botswana.

**Poppy Mafela is a game warden with the Department of Wildlife and National Parks, Botswana.
The Process for Establishing and Developing WMAs

Approval by local and national authorities is not an end in itself but only another step in the process of development of WMAs. The Wildlife Conservation Policy of 1986 details the following steps to follow approval of a WMA by the appropriate Land Board and District Council:

- establishment of the legal status by publication of the boundaries in the Gazette;
- development and legislation of appropriate WMA regulations;
- drafting of a management plan for each area;
- implementation of a policy of sustained wildlife utilization appropriate to the area.

This precise order need not be followed. For example, preparation of a management plan and a demonstration of sustainable wildlife utilization projects may encourage the central government to gazette a WMA and counteract attempts to have areas re-zoned for other uses, such as livestock.

The management plans for WMAs are to provide information on the animal and other resources in the area as well as existing physical and other constraints such as water, fences and veterinary restrictions. They will also give details of proposed wildlife utilization projects, specifying the nature and costs of infrastructure requirements such as roads and boreholes, and describe any secondary forms of land use which are proposed along with the regulations for the use of the areas and protection of their resources. This will include details of all leases and rights of access to resources by resident communities. Wherever necessary information is lacking, research proposals will be prepared and executed.

District authorities will have overall responsibility for drawing up management plans for WMAs, just as they are responsible for planning and allocation of all land use within their respective districts. However, the Department of Wildlife and National Parks will generally take the lead in preparation of management plans, which will then be presented to the district authorities for review by the DLUPUs. These plans will include details of proposed wildlife utilization projects for the WMA. The final management plan will be developed on the basis of discussions and negotiations among the interested parties. Alternatively, a DLUPU may prepare the management plan and submit it for review by the DWNP, which will evaluate the suitability and viability of the proposed plan and report back to the district and offer alternatives if the proposal is judged to be flawed or not viable in the long term. Finally, the district authorities may invite either the DWNP or a private consultant to investigate possible wildlife utilization projects to be included in the management plan (this was done in the Southern District). Whichever option is chosen, the key element is negotiation between the DLUPU and DWNP to ensure that the proposed wildlife utilization projects are viable and do not lead to over-exploitation of the resource, and to ensure that the needs and aspirations of communities living within the WMAs are addressed.

Proposals for Pilot Projects in Wildlife Utilization

Wildlife utilization has been a primary source of food for human populations in Botswana since before recorded history. The San people, with their almost legendary hunting and gathering skills which allowed them to prosper in the harsh environment of the Kalahari Desert, were the country's earliest inhabitants. Their dependence on wildlife food continues and is well recognized today. However, other population groups in Botswana also have a history of intimate association and extensive use of wildlife resources for food, clothing and trading goods as well as for fostering group unity and individual prestige.

Wildlife populations are severely depleted in many areas of Botswana today, compared with their number and diversity in past centuries. Nevertheless, interest in wildlife utilization schemes remains high.
There is currently a small number of such schemes in operation. Examples are an improved subsistence hunting scheme in Southern District and a game cropping scheme in Central District. There is also a burgeoning tourist and safari industry, and game ranching is becoming popular, particularly among private land owners (approximately 5% of Botswana is freehold land).

While both consumptive and non-consumptive wildlife use thus remains an integral part of the economy of Botswana, wildlife authorities feel that the resource is generally poorly exploited and that, with proper management and direction, the wildlife industry could provide a major source of income and employment in the country.

In February, 1989 a team consisting of consultants from the Worldwide Fund for Nature (WWF) and officers of DWNP toured Botswana to meet with district officials and members of rural communities. Their objective was to identify possible pilot projects in wildlife utilization for the different districts. The report they produced proposed five potential types of projects:

1) **Improved Subsistence Hunting:** improving the hunting efficiency and utilization of animals by subsistence hunting groups. Offtake would be increased slightly but not enough to jeopardize the recover of populations following the recent drought. The projects would help organize hunting groups and village craft groups to involve other village members, particularly women. This would help spread the benefits throughout the community while increasing revenues through improved processing of skins offered for sale.

2) **Game Cropping:** taking a substantial crop of animals from large herds of game following careful analysis of herd structure to determine sustainable offtake rates. At the moment this is probably only suitable for game ranches as wildlife populations in Botswana were seriously depleted in the recent drought. In addition, cropping from large, free-ranging populations presents practical and biological problems.

3) **Game Ranching:** involving ostrich farming, crocodile farming and mixed game ranching. Game ranching has proved profitable in other areas of southern Africa, but infrastructure costs are high as are the levels of management skills necessary. Nevertheless, there are several such enterprises already in Botswana and the future for this type of project looks very promising, (particularly if support in the form of credit and extension is provided).

4) **Community Partnerships with Commercial Safari or Tourism Companies:** such arrangements would see the local community contributing its land area and wildlife resources and the commercial company contributing its management and marketing skills and investing start-up capital. Although the procedures to establish such partnerships will need to be investigated there are definite benefits to both sides. Communities would receive employment and revenue, and the commercial companies would have more secure leases and greater access to trophy animals than at present. This idea is new to Botswana but has met with great success in Zimbabwe.

As a first step toward implementation of such pilot projects, the WWF/DWNP report has been circulated to district authorities for their comments. The DWNP has initiated a program of developing such projects as they are approved by the district authorities. It should be emphasized that the DWNP is not directing which projects should be started, but is encouraging districts to come forward with their own ideas. A wildlife utilization unit has been established within the DWNP to aid and assist in the planning and implementation of wildlife projects.

There remain a number of important questions which must be answered by each district authority before wildlife projects can be started. First is the allocation of resources for community use. To enable any wildlife utilization project to succeed, the larger communities must be given exclusive access to the resources of a certain area. Only then will the local people develop a custodial interest and see the benefit in maintaining animals that can bring in money and generate employment.

A second, difficult question is how to define a community. Successful wildlife projects will generate revenue which will attract other people to the area who wish to
share in it. Care must be taken that an increase in people does not over-tax their resource that is the basis for that revenue. Thus, some limits must be set on the growth of the community involved.

The third issue is how to return revenue to the community. Any revenue created has certain demands put upon it by national and district authorities. Each has legitimate expenses to be covered: the national government pays for the DWNP who have to do aerial surveys to count game and determine safe cropping levels, and district authorities are largely responsible for local government which benefits everybody in the district.

However, it is important that some benefits go directly to local communities to promote the sense of custodianship of the wildlife.

This is the present stage of implementation of wildlife utilization plans in Botswana. Once questions such as these are resolved, the next step is to fully prepare a project plan before approaching the target community. Actual implementation may take different forms in different districts but is likely to involve government organizations and NGO's. Throughout the process, however, communities will be encouraged to participate in all decision making from the earliest stages.
PART 4.

Assessment of Wildlife Utilization as a Land Use Option in the Semi-arid Rangelands of Southern Africa

A. Introduction

The case studies in Part 3 include projects based on protected areas representing a range of ecosystems: savannas, coastal and inland wetlands, upland and lowland moist forests and near-desert. However, all of the non-protected area projects--those based on the premise of wildlife utilization as a competitive productive land use--are in the savannas, or semi-arid rangeland. It is primarily in the savanna ecosystem, particularly in southern and eastern Africa, that both conservationists and entrepreneurs have carried out ecological studies and pilot projects to show that wildlife can "pay its way." While the ecological arguments are often persuasive, they have been weakened by a lack of quantitave data, flawed economic analysis and disappointing results from most of the projects. For the most part, African landholders and decision makers have failed to be convinced of the potential of wildlife as an asset for economic development.

In several countries of southern Africa, however, the "wildlife industry" is well-established and growing, particularly on private lands. This section explores the reasons why many landholders in these countries are embracing wildlife management and why those in other countries, some of which are endowed with richer wildlife resources, are not. It focuses on the rangeland with its vegetation as the basic resource and examines the advantages and disadvantages and the returns to investment in wildlife as a production system compared with more conventional alternatives. These advantages and disadvantages include both environmental and economic factors: the environmental factors determine the potential productivity of different systems, while economic factors, including national and international economic policies, play a major role in determining the extent to which this potential can be realized.

The discussion also emphasizes sustainability as a major criterion for a desirable land use. The sustainability of a production system is often discounted in practice because users focus on short term returns, which are higher from extractive use of a resource than from regenerative use. This can change when returns from the extractive system begin to decrease due to exhaustion or deterioration of the resource base. This is now true over a significant part of the semi-arid rangeland where livestock ranching has been the principal economic activity for decades, and rangeland degradation from overgrazing is a widespread problem.

Many of the past efforts to evaluate or promote wildlife utilization were based on comparing the advantages of wildlife versus domestic livestock as a source of meat in the savanna habitat. While wildlife appears to have some comparative advantage over domestic animals as a meat production system in arid and semi-arid habitats, this advantage is apparently not sufficient to overcome existing technical, economic and policy obstacles. As a result, there are no successful, large-scale commercial
enterprises producing wild meat in Africa. This paper looks at a wider range of wildlife utilization options, particularly safari hunting and tourism which have been the driving forces behind the wildlife industry in southern Africa.

B. Rangelands as a Resource

The semi-arid rangelands occupy almost 2/3 of the total land area of Africa (World Resources Institute, 1989) and are home to a large and rapidly growing part of the population. In some countries the rangelands are used as a place to resettle excess populations from arable regions. Their attempts to pursue their traditional agricultural lifestyle in this unsuitable environment soon lead to degradation and abandonment of the land and colonization of new areas. It is clear that the semi-arid rangelands must play an important part in Africa's economic development, and equally clear that new solutions must be found for the economic use of this land.

A clear understanding of the structure and function of the rangeland and its production systems is necessary for evaluating alternative strategies for its use. The rangeland must be viewed as an ecosystem with defined physical and ecological characteristics and limitations. Humans do not harvest the primary productivity of the rangeland--its vegetation (primarily grasses)--directly; rather we allow it to be converted by herbivores into products such as meat, milk and skins, which we can use (secondary productivity--often measured in terms of herbivore biomass). Because there is relatively little that we can do to improve the efficiency of the conversion process, the great majority of inputs into the production process are local natural resources (specifically the grasses). In this respect it differs from industrial systems, and even from agricultural systems where labor and capital are more important. Unfortunately, there is little experience in managing systems to emphasize environmental capital flows or even in measuring levels of investment of environmental capital. The following sections make the argument that:

1) the ecological characteristics of the semi-arid rangelands makes them difficult to manage on a sustainable basis;

2) specifically, there are important limitations to meat production, and particularly livestock, as a means of exploiting the rangeland resource;

3) in many areas the maximum productivity of the rangeland for meat production has already been reached, or has been exceeded with resulting degradation of the resource;

4) under these circumstances wildlife may provide greater returns from the rangeland than do livestock or crop cultivation, because of the potential for high value uses, multiple uses, multiplier effects and sustainable production.

1. Ecological Characteristics of Rangelands

Africa may be divided into four main ecological regions based on the average annual rainfall:

deserts and semi-deserts <300 mm/yr
semi-arid rangelands 300-700 mm/yr
arable savannas 700-1500 mm/yr
tropical moist forest > 1500 mm/yr

The most spectacular and abundant wildlife are found in the semi-arid rangelands. Wild animals of the deserts and semi-deserts are of great scientific interest because of their ecological adaptations, but populations are generally too low to provide a significant resource base for economic development. The tropical moist forests still host a substantial and diverse wildlife resource, but the animals are generally smaller and much harder to reach and find than on the broad, open plains. In the arable savannas, most wildlife has already been eliminated except in limited areas that have been set aside as reserves or are inaccessible to human colonization.

The arable savannas and semi-arid rangelands differ in more than just the average annual rainfall. The latter are ecologically more heterogeneous, contain a higher proportion of palatable browse species (Owen-Smith, 1986), and have less
These differences in vegetation are reflected in differences in the herbivore communities they support. First, the more heterogeneous semi-arid rangelands support a greater diversity of herbivores because a variety of species partition the resource by having specialized diets (niche separation). The less diverse arable savannas offer fewer feeding niches that are dominated by one or two species which are primarily bulk-roughage feeders (Cumming, 1982). Cattle are also bulk-roughage feeders, so the arable savannas are relatively well-suited to support cattle monocultures while the semi-arid rangelands are not. Second, in the semi-arid rangeland it is the quantity of grass, rather than the quality that limits secondary productivity, while the opposite is true in the arable savannas. Large herbivores feeding on the high quality forage of the semi-arid rangeland increase in numbers to the point where they can damage the vegetation by over-grazing. This does not happen as readily in the arable savanna because the herbivores cannot grow and multiply as quickly on the low quality diet.

Because the primary productivity is relatively high in the arable savanna, inputs of labor, capital and technology (e.g., protein supplements, watering points) can be used to intensify meat production. The basic differences in ecological processes mean that this approach cannot be transferred to the semi-arid rangeland. In this ecosystem, secondary productivity is limited by primary productivity (grasses), which is in turn limited primarily by the amount of water available for plant growth although soil structure and fertility have some influence (Coe et al., 1976; Bell, 1982). Overgrazing does not only leave the remaining herbivores with too little forage. In addition, removing too much of the grass cover exposes the soil, leading to compaction and capping result which interfere with water infiltration. Reduced water infiltration means less water available to the grasses and therefore a reduction in primary productivity.

2. Assessing Returns to Alternative Rangeland Uses

Because grass is an important limiting factor in rangeland production systems, the use of this resource must be incorporated into an economic assessment of different options. This may be done by including the amount of grass consumed in an analysis of costs, along with other inputs. Measuring the total herbivore biomass per unit area can also provide an indirect measure of the grass if the efficiency of conversion from plant to animal biomass is known; however, it may be hard to determine whether a given biomass represents a sustainable level of consumption or "mining" of the resource. Standard financial records based on profits per unit area over a short period of time do not incorporate any measure of the grass consumption and may therefore favor an enterprise which degrades the resource base over one which preserves it.

Another difficulty which arises in comparison of land use options is that potential productivity may differ greatly between areas even when it appears similar. For example, on the Buffalo Range Ranch in Zimbabwe described below, disparate management regimes induced large differences in productivity on land that was inherently similar. Many of the existing studies of wildlife vs. livestock productivity in Africa fail to take factors such as this into account and therefore mistakenly seek to compare non-comparable situations.

3. Limitations of Livestock Systems in Semi-arid Rangelands

Ecological factors set a limit on the sustainable level of animal productivity (meat, milk and draft power) possible in the semi-arid rangelands, and increasingly that limit is below what is needed for financial viability. Growth in populations of humans and their livestock, together with declining terms of trade for beef production, is leading stockholders to overstock and over-utilize the rangeland vegetation in the attempt to meet their needs and remain profitable. This is equally true of commercial ranchers seeking to maximize profits and of nomadic pastoralists whose traditional extensive grazing areas are being reduced by agricultural settlers. Livestock systems are causing widespread ecological degradation in semi-arid ecosystems around the world. African rangelands, in common with those in many other areas around the world, are already suffering from suppressed primary plant production caused by overgrazing. Continued overstocking of these already affected lands initiates an
accelerating spiral of deterioration from which they cannot escape.

This argument that the productivity potential of livestock in the semi-arid rangeland is severely limited, and has in fact reached its limits in many areas, has not gained general acceptance, in part because environmental degradation is difficult to measure and its costs are difficult to quantify and there is little information on the current condition of most of the African rangeland area. The apparent existence of long-term climatic cycles in Africa also makes it difficult to distinguish between periodic drought and irreversible degradation (e.g., Nelson, 1988). In addition, some livestock specialists hold that the solution lies in fine-tuning or improving technology for livestock production systems, such as intensive rotational grazing systems (e.g., Savory, 1988). However, degradation related to over-grazing is a well known problem in the vicinity of water sources all over the rangeland and some pastoralist groups are being forced to abandon their nomadic lifestyle because they cannot find adequate seasonal grazing lands to meet their needs. While the cycles of drought and wet years make generalizations difficult, a study of Buffalo Range Ranch (see Annex 3) found severe rangeland deterioration over a period of exceptionally good rainfall. Finally, so far there is little evidence of practical application of improved livestock management systems or technologies which are effective in stopping or reversing rangeland degradation in Africa. One reason may be that the benefits of short-duration, intensive rotational grazing systems are based in large part on compensating for grazing selectivity, which is not a serious constraint in semi-arid rangelands.

The evidence is that the rangeland resource is being widely used at a level which exceeds its capacity to regenerate. This "mining" of the rangeland vegetation results in deterioration of the land itself, which further reduces the carrying capacity of the ecosystem. The result is an accelerating spiral of degradation and rural poverty.

4. Improving Long-term Returns Through Wildlife Utilization

Understanding the limits and constraints of a system helps to identify the solution. If the central problem with the present system of rangeland use is that income is directly dependent on secondary production, then the solution should be to find an economic system in which this is not the case. This would allow income to be raised without stressing the environment, a prerequisite for sustainability.

Wildlife vs. livestock meat production

There is considerable debate over the relative advantages of wildlife vs. livestock as a source of meat and durable products on the semi-arid rangeland. Wildlife proponents cite evidence from ecological studies to support the proposition that the indigenous species use the rangeland resource more efficiently than do introduced livestock species, and that the ecosystem can therefore support a higher total biomass of wild species sustainably. Specifically, it has been shown that:

(i) indigenous species exist in multi-species communities, which can utilize rangeland vegetation more fully than livestock which are raised in monocultures or in mixtures of just a few species. Because the different species utilize components more evenly, an ecological balance is maintained and the vegetation remains diverse. In addition, individual herbivore species have physiological adaptations which enable them to make the most efficient use of their specialized foods;

(ii) indigenous species are also better adapted to often harsh local conditions, particularly in requiring less water and being resistant to indigenous diseases;

(iii) wildlife have certain productivity advantages, such as higher fecundity, faster growth rates and better carcass quality.

An analysis of the evidence and arguments for and against the greater efficiency of wildlife meat production are beyond the scope of this paper. Overall, it would appear that wildlife can produce more meat on a sustainable basis on the semi-arid rangelands than can domestic livestock. However, this inherent productivity advantage is likely to be fairly small
(perhaps up to about 20%), because ultimately secondary production from wildlife is limited by primary production just as it is for livestock. The advantages of wildlife may also emerge only in the longer term as "mining" of the rangeland resource is more easily accomplished using livestock systems. Finally, any advantages of wildlife meat are currently overshadowed by a variety of technical and commercial factors. For example, wildlife censusing, harvesting and processing methods are poorly developed, and there are numerous regulations and direct and indirect subsidies (from such as research, extension and veterinary services, abattoirs and trek routes, and government price guarantees) which overwhelmingly favor the livestock industry. Thus, the emphasis to date on comparative yields is somewhat misplaced because the profitability of wildlife vs. livestock meat production enterprises will actually be decided by other factors such as costs of production, prices, uncertainty, farmers' and consumers' preferences and the availability of markets. As a result, none of the wildlife meat production pilot projects initiated in the 1960's and 1970's have led to large-scale commercial wildlife meat production schemes in southern or eastern Africa.

**Alternative wildlife utilization**

While wildlife meat production is thus currently not a competitive land use, wildlife does offer the possibility of increasing income without depleting environmental capital. The real advantage of wildlife, which allows a quantum improvement in efficiency, is its wide range values (recreational, aesthetic, cultural, scientific in addition to nutritional) and the variety of uses which these values support. In many cases several uses can be exploited simultaneously because some do not use up the wildlife. Because some of the highest-value uses are non-consumptive (tourism) or only lightly consumptive (safari hunting, live animal trade) they are largely independent of stocking rates and can also be additive to meat production (see Figure 1). Thus, landholders can make higher profits from wildlife than from a similar biomass of livestock, and can increase profits without increasing biomass. In fact, as discussed below, in wildlife utilization the greatest profits are associated with maintaining an unspoiled, naturalistic setting, which means keeping populations of different species at moderate levels.

**Multiple Use of Wildlife**

The various sources of income from wildlife utilization are discussed in more detail in Annex 1. The key points are that, first, the multiplicity of uses permit diversification (and thus broadening markets and spreading risk) and, second, that many of these uses do not consume animals, so that each animal or population can be exploited several times over. For example, a game ranch, like a livestock ranch, produces a specific and limited amount of meat (sustainably). However, some animals can be sold for substantially more as trophies, still providing meat (which the hunting client often does not want), while the rancher also charges for the safari services this entails. The landholder can also establish a game viewing enterprise and, since this does not require harvesting animals, it can support a large number of clients (and generally tapping a different pool of clientel than the safari hunting operation). The land thus supports three tiers: consumptive meat production, lightly consumptive use of animals for trophies, and non-consumptive tourism.

In addition to the multiple use of wildlife itself, multiple use of the rangeland to support both wildlife and livestock is generally possible (although there may be some limitations imposed by veterinary restrictions--e.g. separation of buffalo and cattle due to fear of transmission of Foot-and-Mouth disease). In fact, at moderate stocking levels, there is relatively little competition between wild herbivores and livestock so that wildlife utilization can be added to extensive ranching operations at little opportunity cost. In fact, combined wildlife and livestock operations are the most common form of wildlife utilization in southern Africa. Where wildlife are displacing livestock in such operations it is usually because the wildlife component is so much more profitable that allocating time and labor to the livestock component no longer makes sense.
Figure 1: A schematic representation of rangeland production systems showing the dependence of meat production on stocking rates and the ability of recreational uses to avoid this ecological limitation.

**OBJECTIVE:** Maximize human welfare using the environment

**CONVENTIONAL CATTLE MONOCULTURE**
- NIL
- NIL
- NIL
- DURABLES
- MEAT
- Hides
- Skins
- Curios
- Hunting
- Genetic
- Hides
- Skins
- Photo Safaris
- Curios
- Hunting
- Genetic

**DIVERSIFIED WILDLIFE SYSTEM**
- MEAT
- DURABLES
- Hides
- Skins
- Curios
- MARGINALM CONSUMPTIVE
- Safari Hunting
- NON-
- CONSUMPTIVE
- Photo Safaris Trails
- INTANGIBLES
- Genetic
- Conservation
- keep options open

**STOCKING RATE**
- Overstocking
- Rainfall efficiency
- Overstocking
- Reduce
- Reduce
- Reduce

**LIMITING FACTOR** (Moisture Availability)
- Ecologically limited system
- System avoids ecological limitations

- Income related directly to consumption of vegetation.
- Attempts to increase income reduce environmental productivity.

**BUT**
- These systems are not financially viable.
- Degradation is occurring.
- The relative value of beef is declining.
- LITTLE POTENTIAL FOR THE DEVELOPMENT OF SEMI-ARID SAVANNAHS.

- Income less related to consumption of vegetation.
- Can increase income without degrading environment.

- Little human effort has been put into developing system.
- Demand for outdoor recreation growing rapidly.
- Wildlife systems already appear to be more viable than conventional systems.
- MUCH POTENTIAL FOR THE DEVELOPMENT OF SEMI-ARID SAVANNAHS.
Value Added

The most lucrative wildlife uses at present are safari hunting and tourism. The "commodity" being sold in both cases is not the animal itself, but the experience of hunting it or seeing it in its natural setting. Thus, the enterprise benefits from a substantial "recreational value added." Both can be viewed as primarily export industries, bringing in hard currency. The demand for these recreational experiences is high, growing, income elastic and price inelastic, and eastern and southern Africa enjoys a privileged place within the market by virtue of being the last place on earth where it is still possible to see huge numbers of wild animals ranging freely on the vast, open plains. All of these elements make recreation-based wildlife utilization an attractive avenue for economic development. It also has negative aspects, particularly the vulnerability to factors, such as political instability or climatic catastrophes, that decrease visitors' interest or access and from which there may be a long recovery time. However, all economic activities are subject to fluctuations and risks.

The most important feature of recreational use of wildlife is its environmental sustainability. To increase income from a wildlife enterprise, the landholder does not need to increase the number of animals. Instead, he increases the number of hunters or tourists, the fees they are charged (within limits since it is an internationally competitive market), or the services for which they are charged. The increased income thus results not from extracting environmental capital at a higher rate, but from selling the commodities (animals) in a higher quality form, and from selling non-environmental inputs such as provision of services.

Wildlife provides good returns with respect to investment of land which is often not very suitable for alternative uses (see Table 1). Investment costs in terms of capital and labor are highly variable, depending on local circumstances (e.g. good transportation and communications infrastructure already in place or not) and on the types of visitors to be accommodated. In fact, some level of safari hunting or "adventure" tourism can generally be developed at relatively low cost if extensive advertising and marketing are not required, for example if the country or a nearby area is already established as a hunting or tourism destination. Safari hunters are generally less demanding with respect to accommodations and services and services than are tourists, but there are many complexities relating to attracting the clients, guiding hunts, setting fees, obtaining licenses and permits and preparing trophies, etc. which require specialized and experienced personnel.

Value added can be a feature of other types of wildlife utilization, for example through processing of skins and sale of curios. The overall returns are considerably less than from safari hunting or tourism, but well-regulated production of wildlife products does not compete with these higher value uses. It can also help to widen the distribution of income from wildlife utilization, as much of the value added through safari hunting and tourism is currently captured either by landholders or by outside commercial interests rather than by rural communities except in the few cases (see Zimbabwe case study in Part 3) where the community has legal rights to the commercial value of the wildlife resource.
Table 1: The relationship between rangeland products and the impact of increasing their supply on the ecosystem.

<table>
<thead>
<tr>
<th>Product</th>
<th>Inputs into production process</th>
<th>Relationship between income or output and pressure on environment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Environment</td>
<td>Other</td>
</tr>
<tr>
<td>Animal maintenance</td>
<td>all</td>
<td>minimal</td>
</tr>
<tr>
<td>Growth/offtake</td>
<td>all</td>
<td>minimal</td>
</tr>
<tr>
<td>Safari hunting</td>
<td>some</td>
<td>Trophy value Services</td>
</tr>
<tr>
<td>Game viewing</td>
<td>some</td>
<td>Aesthetics Services</td>
</tr>
<tr>
<td>Aesthetic, cultural etc.</td>
<td></td>
<td>Aesthetics Existence</td>
</tr>
</tbody>
</table>

5. Wildlife Utilization and Economic Development

The great benefit of wildlife utilization as an economic activity currently lies in tapping the lucrative recreational market. Under the right political and legal conditions it can represent a substantial source of cash income for some of the poorest segments of the African population, which occupy much of the land where the richest remaining wildlife resources are found. However, in comparing wildlife and alternative land uses it is important to take into account the value that rural Africans place on these competing activities.

The great majority of people living on the semi-arid rangeland are pastoralists, or small-scale farmers who are often resettled from traditionally agricultural areas. Increasingly nomadic pastoralists are becoming settled and incorporating crop cultivation into their lifestyle as their traditional grazing lands become constricted. Although rainfed cultivation over much of the area is a risky proposition, with regular crop failures due to inadequate and sporadic rains, the crops represent food self-sufficiency and thus an essential element of security and independence. Livestock have a variety of important economic and non-economic values to rural people. In addition to meat and milk (which is often more important than meat in household nutrition), draft power and manure are important inputs for crop production. For pastoralist peoples, livestock herds represent the ultimate form of financial security and source of social prestige.

Where agriculture and livestock husbandry are deeply entrenched in the local economy and culture it is unrealistic to propose that wildlife utilization should replace it completely on grounds of high income-earning potential or even long-term environmental sustainability. Instead, the income derived from wildlife can help to eliminate the need and incentive for overstocking the rangeland beyond its sustainable carrying capacity. The unsustainable intensification of rangeland
use is driven in part by the growing population, but also in part by a desire to earn money. Traditional subsistence farmers and pastoralists all over Africa are moving gradually into the cash economy. Generally they try to accomplish this by raising the productivity of their existing enterprises in order to sell the surplus. Most rural development programs supported by governments and external donors support this approach by providing irrigation systems, inputs, credit and technical assistance needed to increase and market crop and livestock production. This leads to environmental degradation because of overgrazing, insufficient fallow periods, and erosion of fragile soils. Mobilizing the income-earning potential of wildlife resources should be considered as an alternative approach because it can yield (possibly very high) income without environmental degradation.

Just as increasing agricultural productivity requires investment, some investment will be needed for wildlife management. In addition to the general technical, marketing and infrastructure elements discussed above, it may be necessary to introduce measures to ensure compatibility of wildlife use with ongoing agriculture and livestock operations. This may include fencing to keep wild animals away from crops, herds and homes, or compensation funds to reimburse individuals who suffer damage from wildlife depredation. Investment will also probably be needed in education, training and institutional strengthening to enable communities and their members to participate in these non-traditional productive enterprises.

C. The Wildlife Industry in Southern Africa

The semi-arid rangeland ecosystem is found in western, eastern and southern Africa. Kenya is by far the leader among sub-saharan African countries (excluding the Republic of South Africa) in mobilizing the tourism potential of the rangeland wildlife, capturing some 90% of total external tourist revenues. It is impossible to separate the role of Kenya's wildlife and beaches in attracting tourists to the country, but it is generally accepted that wildlife is a very important element in Kenya's attraction and many African countries are beginning to look to Kenya as a possible model for developing their own tourist industries.

Tourism is thus far less developed in southern Africa, as measured by total numbers of people visiting and total revenues earned. However, the wildlife industry in southern Africa is of particular interest because it is more diverse and because, unlike in Kenya, it is based primarily on individual initiatives on privately controlled land and wildlife resources. The industry is also growing, with respect to land area being voluntarily converted to wildlife utilization, either exclusively or as an auxiliary activity. Finally, there are some specific data available on the comparative environmental impacts and financial returns from wildlife versus cattle ranching in Zimbabwe which provide convincing evidence that wildlife is now a legitimate and profitable rural sector.

1. Overview of the Wildlife Sector

Zimbabwe

In broad terms, it has been calculated that Zimbabwe spends over $50 million annually in subsidies and services to generate $31 million in foreign exchange through beef sales to Europe, and less than $1 million to support a safari industry which is now earning $7 million/year (also in foreign currency) (Child, 1988; Rodriquez, 1988). Despite the imbalance in national-level support provided to these competing sectors and other important constraints and disincentives, wildlife utilization is rapidly expanding and is displacing livestock over a considerable part of the rangeland area. The trend is greatest among large-scale private ranchers, but is now beginning to take hold in the communal areas as well (see Case Study in Part 3.)

A Zimbabwean Wildlife Producers Association formed in 1986 had 450 members by 1987, representing about 10% of the total number of commercial farmers (Muir-Leresch, 1988). The same ranchers who previously were actively eliminating wildlife to make room for domestic stock are now replacing cattle with wildlife in large numbers. Even in the relatively wet
rangelands of the Midlands (700mm), by 1988 five out of 25 ranchers had replaced cattle completely with wildlife (compared to only one rancher in 1984). In the drier southeast lowveld (450–600 mm) the amount of land allocated to wildlife increased from one quarter in 1986, to half by 1989 and all ranchers were marketing safaris. In the Matetsi area most cattle have been removed over the last five years, in the Gwaai Valley the cattle herd has been cut from 12,000 to less than 4,000 head, and throughout Matabeleland’s traditional cattle country ranchers are initiating wildlife operations. Initially these were based largely on safari hunting, but viewing tourism has been added in recent years as this has been shown to greatly increase revenues.

South Africa

In the process of economic development, most wildlife was eliminated from South Africa by the 1950's. Since then, however wildlife has been reintroduced and remaining populations husbanded carefully. Game ranching involving mixed wildlife and livestock has been a well-established and profitable practice in southern Africa for over 30 years. In the Transvaal by 1964 there were 4,000 ranches involved in game production, with an annual output of over 3,500 kg of game meat per year (Asibey, 1974). Wildlife now earns at least R 70 million (US $ 35 million) each year.

Nonetheless, the primary motivation for keeping wildlife has frequently been for conservation and recreation, not commercial purposes. Game farming usually occurs as a sideline to agriculture on some 12–25% (10–20 million hectares) of private land.

Game meat production has not proved more profitable than domestic livestock. Most game is not used commercially, but excess animals are sold in the relatively (compared to other African markets) high priced South African or European markets. Recently there has been a surge in the amount of trophy hunting in South Africa. Although farms are generally small (less than 3,000 ha), hunting in South Africa represents some 42% of the African market. Clients travel long distances to collect a wide variety of trophy species, and the fact that safari hunting can be successful and competitive on small, well developed farms indicates the potential that other African countries have in their wilderness areas. Many game farms are also used exclusively for non-consumptive recreation, sometimes being run like hotels, and sometimes on the basis of shared-ownership. The market is largely domestic, from the large urban centers, and here again neighboring countries offer better experiences and could capture this market if they improved their marketing.

Large areas of former agricultural land in South Africa are being converted to wildlife for recreational purposes, suggesting this form of land use to be the most valuable in those regions. The success of game farming depended on the quasi-private ownership of wildlife, and the growing values associated with its recreational uses. These are mainly non-consumptive, and both commercial and non-commercial. However, safari hunting, supported by meat production, is important justification for keeping wildlife on those farms not having the variety or numbers to support game viewing.

In the Kruger National Park, technically efficient cropping operations including an abattoir, generate some 32% of the revenue used to run the Park. High returns derive from elephant, and because of the high priced market for biltong (i.e. dried, spiced meat). Tourism, nevertheless, is far more lucrative.

Namibia

Like the two other countries where game farming has been successful (South Africa and Zimbabwe), the most important single factor contributing to the healthy game ranching industry in Namibia was the 1967 legislation which gave landholders full ownership of game (apart from specially protected species) and allowed hunting rights to be leased (Joubert et al, 1983).

The most important component of Namibia's wildlife industry is tourism in protected areas. On agricultural land, wildlife was not used prior to the 1967 legislation and was consequently disappearing. The number of ranches using wildlife increased from 52 in 1976 to 411 (out of 5,000 stock farms) in 1979, with only
a few of these entirely dependent on wildlife. This caused the population of most game species to increase by 30% between 1973 and 1978, and if the Zimbabwean situation is general, most expansion occurred in the mid-1980's when prices rose rapidly.

Trophy hunting was the primary use (30% of income), practiced on 289 farms in the early 1980's compared to 96 in 1977, its value increasing from R 144,000 in 1974 to R 4.4 million by 1980. Safari charges are low because of the narrow range of species (kudu, warthog, gemsbok and springbok constituted 85% of trophies) and the lack of big-game, but this encourages ranchers to reintroduce species.

In the early 1980's four private game cropping units were operating, and by initiating exports to Europe significantly raised the value of game until the cropping industry was almost as large as the safari sector (R 4.2 million). Sport hunting by locals and South African's is traditional and generated a further R 2.4 million, while hartebeest, giraffe and eland were captured by helicopter for export to South Africa (worth R 1.2 million). As in South Africa and Zimbabwe, game ranching was growing rapidly as a commercial enterprise, helped by a diversity of uses, and this was providing incentives to conserve wildlife.

2. Financial Returns From Wildlife Utilization in Zimbabwe

The large-scale shift of private ranchers from cattle production to wildlife utilization in Zimbabwe represents a major change in land use practices, and the greater profits from wildlife have also raised the price of land significantly. It has been triggered by a recognition on the part of business-minded landholders that, despite the substantial support and incentives which the Government continues to provide to the cattle industry, wildlife utilization makes better economic and financial sense in these areas.

Financial assessments done between 1984 and 1986 (Child, 1988) showed that wildlife recreation used range resources twice as efficiently as either domestic or wild meat production systems, and quantum additions to income were possible when game-viewing was added to safari-hunting enterprises.

In the Midlands of Zimbabwe income from cattle is higher than from wildlife ($13.57/ha versus $3.36/ha), but the much higher costs of running cattle compared with those associated with wildlife as a secondary enterprise means that profits are much more similar ($4.52/ha vs. $2.93/ha). These data also fail to reflect changes in environmental condition and intrinsic productivity, which are critical as indicated by the intensive study on Buffalo Range (see Annex 3). Impacts on environmental condition are difficult and time consuming to measure directly, but may be expected to be negatively correlated with herbivore biomass because supporting a higher herbivore biomass should place a greater demand on the environmental resources. Therefore, comparing financial returns per unit of herbivore biomass is one indicator of the efficiency with which the rangeland resource is being used. This calculation showed that each kg. of wildlife yielded the same gross income as for cattle, but was much more profitable than cattle because of the lower costs:

**Table 3: Financial Returns from Midlands cattle and wildlife enterprises**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>Cattle</th>
<th>Wildlife</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross income</td>
<td>Z$/ha</td>
<td>13.57</td>
<td>3.36</td>
</tr>
<tr>
<td>Gross margin</td>
<td>Z$/ha</td>
<td>4.52</td>
<td>2.93</td>
</tr>
<tr>
<td>Gross income</td>
<td>Z$/kg</td>
<td>0.20</td>
<td>0.20</td>
</tr>
<tr>
<td>Gross margin</td>
<td>Z$/kg</td>
<td>0.07</td>
<td>0.17</td>
</tr>
</tbody>
</table>
Midlands ranchers began to switch to wildlife because their profits increased by ten cents for every kg. of cattle standing stock replaced by a kg. of wildlife. Similarly, in the southeast lowveld, cattle seem to be the major land use since they dominate the biomass. Closer inspection, however, shows that wildlife are the dominant economic force. In 1984 wildlife contributed 64% of profits, although they comprised only 32% of biomass:

Table 4: Income from cattle and wildlife in Zimbabwe's southeast lowveld

<table>
<thead>
<tr>
<th>Production System</th>
<th>Livemass kgx10^6 %</th>
<th>Gross income Z$x106 %</th>
<th>Gross margin Z$x106 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>10.1 68</td>
<td>2.0 60</td>
<td>0.7 36</td>
</tr>
<tr>
<td>Wildlife</td>
<td>4.7 32</td>
<td>1.4 40</td>
<td>1.2 64</td>
</tr>
<tr>
<td></td>
<td>14.8</td>
<td></td>
<td>1.9</td>
</tr>
</tbody>
</table>

Certain sectors of the cattle industry (very seldom the ranchers in dry areas) view competition from wildlife as a serious threat to this industry because they consider that the switch to wildlife will damage the beef industry and leave the country critically short of meat. However, the switch is actually beneficial. Not only does wildlife produce similar quantities of meat with similar profit margins to cattle (Child, 1988), but many lowveld cattle operations would become bankrupt without the contribution of wildlife utilization. Cattle earn only Z$ 665,000 profit from ten million kg of livemass, and ranch viability depends on an additional Z$ 1,235,000 profit from wildlife (produced almost four times as efficiently from less than 5 million kg):

Table 5: Financial returns of cattle and wildlife in Zimbabwe's southeast lowveld (source: Child, 1988)

<table>
<thead>
<tr>
<th>Source of income</th>
<th>Cattle &amp; Wildlife (239,559 ha)</th>
<th>Cattle (mainly) (131,484 ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ZS/ha</td>
<td>ZS/kg</td>
</tr>
<tr>
<td>Wildlife</td>
<td>4.47</td>
<td>0.32</td>
</tr>
<tr>
<td>Cattle</td>
<td>1.23</td>
<td>0.07</td>
</tr>
<tr>
<td>Both:</td>
<td>5.71</td>
<td>0.18</td>
</tr>
</tbody>
</table>
In fact, perhaps the greatest threat to the cattle industry in this area would be the removal of wildlife.

Wildlife utilization is twice as profitable as cattle ranching where only antelope are available, but four times as profitable where buffalo (a high-value trophy species) are present. This conclusion was confirmed by eight separate financial comparisons of cattle and wildlife production in Zimbabwe:

Table 6: Summary of profit assessments for ranch case studies and regional surveys (source: Child 1988).

<table>
<thead>
<tr>
<th>Area or ranch investigated</th>
<th>Wildlife Cents/kg</th>
<th>Cattle Cents/kg</th>
<th>W / C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Buffalo Range</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>* financial</td>
<td>0-3c</td>
<td>2c</td>
<td>?</td>
</tr>
<tr>
<td>* economic</td>
<td>13-18c</td>
<td>-4c</td>
<td>&gt;&gt;</td>
</tr>
<tr>
<td>* add environmental costs</td>
<td>$4.90-6.21/ha</td>
<td>-$8.00/ha</td>
<td>&gt;&gt;&gt;</td>
</tr>
<tr>
<td>2. Iwaba ranch (Midlands)</td>
<td>17-25c</td>
<td>7-10c</td>
<td>2+</td>
</tr>
<tr>
<td>3. Midlands region</td>
<td>17c</td>
<td>7c</td>
<td>2.4</td>
</tr>
<tr>
<td>4. Lowveld region</td>
<td>32c</td>
<td>7c</td>
<td>4.6</td>
</tr>
<tr>
<td>5. Nuanetsi ranch (Lowveld)</td>
<td>2.6c</td>
<td>1.7c</td>
<td>1.2</td>
</tr>
<tr>
<td>6. Rosslyn ranch (Matetsi)</td>
<td>$5.29/ha</td>
<td>loss</td>
<td>&gt;&gt;</td>
</tr>
<tr>
<td>7. Matetsi region</td>
<td>$4.18-8.93/ha</td>
<td>-$1.18/ha</td>
<td>&gt;&gt;</td>
</tr>
<tr>
<td>8. Matetsi Safari Area</td>
<td>$5.14-11.54/ha</td>
<td>loss</td>
<td>&gt;&gt;</td>
</tr>
</tbody>
</table>

Note: 1. > means greater than
2. Prices are in Z$ (1984=1.00) when Z$1 = US$ 0.72

The Matetsi area is an excellent example of the gains from shifting to wildlife enterprises. The Matetsi Safari Area (where much research on managing safari hunting has been done) was expropriated from cattle ranchers in 1973 when, after years of effort, it was concluded that agriculture would fail unless heavily subsidized. This is reflected in studies 6, 7 and 8 (Table 6), which shows that cattle ranching was not viable in Matetsi.

The area was designated for safari hunting, and generated gross and net margins of US$ 8 and US$ 5/hectare respectively in 1984 (using Z$1984 prices). Cattle ranching was a complete failure in Matetsi, but financial returns from the diverse wildlife that inhabits this inhospitable land are higher than from cattle ranches in productive areas of Zimbabwe because Matetsi supports a wide range of species including both big and plains game. Cattle ranches bordering the Safari Area were unprofitable in the process of degrading but, following the recent removal of all cattle, ranchers assert that they are making money for the first time. There is growing optimism, and a great demand for land in this formerly impoverished area, especially as some outfitters are showing that tourism can be added to safari operations with careful zonation.

The in-depth study of Buffalo Range ranch (Annex 3) shows the importance of shadow pricing foreign currency and environmental factors in this type of analysis. Detailed financial and ecological records, which allowed shadow pricing, demonstrated that wildlife's economic superiority is understated by financial
comparisons. Table 6 summarizes the resulting comparison of cattle and wildlife with shadow pricing and with costing of some environmental effects (including the loss of productivity on the cattle section but excluding the recovery on the game section).

In Zimbabwe, foreign currency is scarce and worth about twice its market rate. About 80 percent of the income from wildlife is foreign currency, whereas most inputs (e.g. trophies, food, labor, services) are produced locally. This contrasts with livestock production where most sales are local. Thus shadow-pricing of wildlife enterprises almost doubles gross income, but profits improve considerably more since costs need not be adjusted upwards. Steady devaluation is set to continue, improving the demand and profitability of wildlife commodities.

Wildlife's superiority is magnified even further when the environmental costs incurred by the cattle venture are accounted for. An inspection of trends (Child, 1988) shows that in 1975 cattle were much more profitable than wildlife on Buffalo Range, but only ten years later the situation was entirely reversed, illustrating the importance of shifts in the terms of trade and of range degradation. Over-grazing destroyed the viability of the cattle section, reducing profits from Z$ 8.00 per hectare in the mid-1970's to zero by the early 1980's as beef yields fell from 18 to 10 kg/ha/year. In addition, the cost of future productivity lost was estimated at eight dollars per hectare per year. The economic return from cattle was therefore negative. Wildlife, by contrast, allowed ecological recovery, but this is not costed into the comparison which is already clearly in favor of wildlife. The different effects of wildlife and livestock systems on environmental capital are of major economic significance.

Finally, the trends in prices augur well for continued expansion of the wildlife sector. Analyses of national hunting returns between 1984 and 1986, confirmed by discussions with marketing agents, showed that profits improved rapidly as prices rose at some 15 percent annually in US$ terms. Hunting is sold internationally so these improvements were amplified by the rapid softening of the Z$: in 1982 a hunt sold for S$ 10,000 earned Z$ 7,000, but by 1989 the same hunt earned Z$ 23,000 as exchange rates shifted. Thus the price of hunting improved steadily at some 25 percent per annum in real Z$. The government price for elephant bulls increased from Z$ 250 in 1978 to Z$ 7,500 by 1990 with some operators prepared to pay as much as Z$ 18,000. Few agricultural commodities have such buoyant markets.

The evidence presented above demonstrates that wildlife enterprises are financially superior to livestock systems for these areas of Zimbabwe since each unit of livemass earns about twice to four times the profit from safari hunting. Moreover, this efficiency advantage is growing as terms of trade for recreation improve, as those for livestock stagnate, and as exchange rates shift to favor "exports". When prices are adjusted to reflect economic values in a so-called "economic analysis", it is clear that financial values, good as they are, grossly understate the advantages that wildlife has. Wildlife's comparative advantage improves considerably when either the environmental costs inherent in livestock systems, or the propensity that wildlife has to earn foreign currency, are accounted for.

The growth of the industry is not constrained by demand but by supply, with hotels, safari lodges and transport filled to capacity and safari operators buying every trophy animal offered. An industry facing unfulfilled demand is healthy and can expect rising prices, contrasting with most over-supplied agricultural markets.

3. Conclusions

The detailed results from Zimbabwe show that wildlife has advantages in Africa's semi-arid savannas that, when reflected in market prices, rapidly alters land utilization towards wildlife. Similarly growing wildlife industries are found in South Africa and Namibia. Interestingly, the wildlife resources of these three countries are actually poorer than those of Tanzania and possibly Zambia, Kenya and some of the central African States. These countries would appear to have equal or greater potential for using wildlife, but a variety of constraints, the most important being resource tenure, prevent their inherent potential from being realized.
Wildlife's comparative advantage is also improving as the price of outdoor recreation increases (especially relative to agricultural produce and beef) and as this sector is diversified. Moreover, the industry's economic advantages are grossly under-stated by financial analyses due to pricing distortions resulting from open access or state ownership, over-valued domestic currencies, and the failure to account for environmental effects.

<table>
<thead>
<tr>
<th>US$/hectare</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tourism</strong></td>
</tr>
<tr>
<td>High intensity tourism (Tanzania, Manyara) (Kenya, Amboseli)</td>
</tr>
<tr>
<td>Medium intensity tourism (Serengeti)</td>
</tr>
<tr>
<td>Low intensity tourism (Tanzania, Ruaha)</td>
</tr>
<tr>
<td><strong>Safari hunting</strong></td>
</tr>
<tr>
<td>Sport hunting (Tanzania) (Matetsi, Zimbabwe) (Ranches, Zimbabwe - no big-game)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Marginal agricultural communal areas in Zimbabwe</td>
</tr>
<tr>
<td>Agriculture</td>
</tr>
<tr>
<td>Income to local community</td>
</tr>
<tr>
<td>Total income (including outfitter)</td>
</tr>
</tbody>
</table>

Safari hunting is generally more profitable than agriculture in the marginal zones where it takes place. It is also likely to be the major use in many remote areas for reasons discussed above. However, where situations present themselves, tourism can generate very large revenues and will easily displace safari hunting which, nevertheless, can continue to utilize the same wildlife populations although not in the prime viewing areas.

Wildlife is an industry which countries having limited infrastructure can enter. It is also applicable in communal areas, and has expanded rapidly here when improved incentive structures have been developed.

D. Wildlife Utilization and Developing Rural Communities

Economic development entails more than economic growth. So far this paper has argued that wildlife can use rangelands more profitably than livestock, generating economic growth. It may seem that implementation in peasant areas would be made difficult by several characteristics associated with wildlife, notably its fugitive nature and wide ranges, and the need for specialized marketing. However, in Zimbabwe where the most systematic effort has been made to date to develop wildlife management by rural communities, implementation has been unexpectedly easy. The key has been to treat wildlife like other resources and to allow the communities to receive the benefits and have the rights to manage it.
In the process of implementation of the Zimbabwe CAMPFIRE program (see case study, Part 3) it has become clear that there are important gains over and above rapid economic growth. Wildlife has proved to be a powerful agent for economic development -- not just growth -- with some of the institutional improvements perhaps being more significant than the large profits which made them possible. The experience of the CAMPFIRE program shows that community wildlife programs can help to build rural economies, beyond simply raising production.

Wildlife programmes were rapidly implemented in Zimbabwe’s communal areas once these communities were given "ownership" of their wildlife, advice on management, and the revenues from utilization. In the first year, projects in the Omay and Dande each earned Z$ 150,000 - Z$ 200,000, enough to raise household incomes by a third. Beyond this, the wealth and autonomy generated by wildlife programmes is encouraging further improvements. Rural communities are becoming more self-determining. They are evolving institutions which are reducing severe price distortions associated with natural resources, planning resource trade-offs, adding value to primary commodities, and cultivating the vital economic process of specialization and exchange.

The wildlife resource is exceptional for catalyzing rapid improvements in socio-economic institutions for two reasons. First, wildlife has a high value, benefits are immediate, and (as a recreational commodity) it is relatively easy to market in remote areas, so communities obtained large cash incomes which they have never had before. Second, wildlife must be managed as a community asset because of its fugitive nature and economies of size. Therefore communities find organizing themselves to manage wildlife more efficiently very worthwhile and they initiate meaningful economic institutions. For the first time, communities participating in the CAMPFIRE program have both the forum and economic power to manage their own affairs. This is generating management capacity within rural communities -- an ingredient missing in many government or donor development projects -- and they have already begun to implement their own land use plans and economic controls (e.g. mechanisms to allocate monies from wildlife). Other important gains from wildlife programmes are:

1) a sense of resource finiteness.

Open access to resources is replaced because delineation is necessary to manage and share benefits from wildlife. With this development of proprietorship, communities realized, often for the first time, that resources are scarce so that trade-offs and planning are essential.

2) resource delineation, prices, and efficiency of allocation

Resource delineation (with the drawing of boundaries and the allocation of the benefits from wildlife within these areas to the resident communities), coupled with the introduction of new markets (safari outfitters), improves pricing signals and thus economic efficiency. These critical economic improvements are well illustrated by the case of elephant. In the past, communities encouraged the large-scale destruction of elephants to protect crops and to obtain meat. The economic gains were very low but elephant had no other value to the community since the central government retained all proceeds from sales. Now, with safari outfitters prepared to pay $5,000 to $10,000 for a single bull, and with communities obtaining the right to retain these revenues, only persistent "crop-raiders" are destroyed since landholders perceive that destroying elephants is wasteful. Because the elephants are used more profitably, the number killed declines, especially as offtake must be reduced to 0.5 percent to maintain trophy quality. In the Omay, for instance, it is hoped that the twenty or so bulls formerly killed each year for crop protection will no longer killed as farmers are compensated for crop damage. Moreover, the trophy quota is being cut from 12 to 6 to regain quality. Thus, the introduction of a utilization policy has, in fact, reduced offtake from about 35 to 6 elephant. The revenue from selling elephant easily compensates the damage they cause,
and most of the money (e.g. about 90 percent in Omay) remains for other uses like community infrastructure or individual dividends.

3) development of management capacity and business acumen

Communities are learning how to perform certain functions and how to contract others out. This initiates the division of labor, with supporting business arrangements, that underpins the development of economic systems. The primary strength of the community is harnessing its own energy to produce wildlife by disciplining itself and policing its territory (e.g. controlling poaching, keeping water sources free from settlement). It is also more flexible and business-orientated than central governments. However, rural communities do not have the capital, skills, or risk-tolerance needed to market wildlife. The private sector does, and the complementarity between the attributes of these sectors means agreements are easily reached because the gains from co-operation are mutual and large. Indeed, the combination of private and communal sectors in Zimbabwe’s communal wildlife programmes is an important development in itself. It improves efficiency through a division of labor, it exposes communities to dealing with businesses, and it helps to break down, often surprisingly easily, the mistrust and cultural barriers that have separated these extreme groups of Zimbabwe’s dualistic economy.

The first community programmes under CAMPFIRE took several years of dialogue to establish. With experience, the process is accelerating rapidly, and some programmes have been implemented in only six months. Although very new, there is much cause for optimism. The programme has no high-flung aims. It merely serves to facilitate sensible land use, encouraging mechanisms that relate rewards to effort and improve resource allocation. Market prices are brought into line with social values, by, for instance, reducing open access to resources and other market distortions. More wealth is generated, and institutions are developed to share this pie equitably and to ensure that the source of this economic reward - the wildlife - is recognized as such and is properly utilized and conserved as a result. With a viable alternative, the encroachment of unsustainable agricultural activities onto marginal lands is being reversed. By maximizing profits from wildlife as a normal resource, rather than treating it as a non-resource to be protected for moral reasons, a mutually reinforcing situation transpires - wildlife is conserved because people benefit from it.

Wildlife programmes need not be difficult nor expensive to implement in areas having wildlife resources, which are often regions the development process has bypassed. A reasonable wildlife resource can usually cover even start-up costs so programmes can be implemented without financial support from donors as, indeed, several in Zimbabwe are7. Most of the energy is provided by the community itself. It builds economic and managerial institutions, molding the benefit channels that create accountability and, through this, an improved chance of sustainable development. In many cases such intangible developments are probably more valuable than the high financial returns that make them possible. The community also enters the business sphere and forms contracts with commercial firms for marketing and managing wildlife. This initiates a process of specialization, a process that improves economic efficiency.

Facilitation consists mainly of encouraging communication: two-way discussions about institutional structures, technical aspects of wildlife management, resource trade-offs, price and market conditions, or the acceptability of proposals submitted by private firms. Given sufficient information, communities are left to make their own informed decisions. No large donations are required since wildlife enterprises are immediately self-sustaining.

Wildlife has a comparative advantage in semi-arid rangelands, and has revitalized private ranches in Zimbabwe’s semi-arid regions, allowing profits to be raised at the same time as stocking rates are reduced and the veld recovers. The application of wildlife utilization is not restricted to private land. Following the development of appropriate institutions, it can also expanding rapidly in communal areas. Here,
wildlife may initiate a process whereby poor rural communities reap substantial benefits (i.e. growth), take control of their own affairs and finances (i.e. equity), manage natural resources more carefully (i.e. sustainability) and form strong links with the private sector (i.e. specialize and diversify). These four factors represent fundamental progress in the direction of economic development. This process could be duplicated in much of savanna Africa.

Africa, especially her poor, depends heavily on natural resources. Yet management of these reflects a history of plenty, and has not evolved in step with skyrocketing scarcity, with open-access to range resources being a major constraint to sustainable development. Resource management must adjust or wastage, degradation and poverty will worsen. Wildlife provides a tool to begin this adjustment process, adding value and wealth to semi-arid economies while simultaneously encouraging the evolution of economic and social institutions. This is the first step towards replacing inefficient simple extractive systems by a diverse, tiered, sustainable economy.

E. Restructuring to Benefit the Wildlife Sector

The foregoing discussion clearly indicates that wildlife resources have an enormous potential as a landuse for the semi-arid rangeland of Africa. However, the relative financial viability of wildlife enterprises and alternative land uses is much influenced by market distortions. The tendency to subsidize cattle and to tax, or remove the value from, wildlife production is so strong that wildlife utilization is seldom developed. Critical inputs are provide free to cattle producers, for instance veterinary and research support, market infrastructure, and producer prices that exceed world levels, but much of the income from wildlife is appropriated by central government (e.g. licence fees in Zambia and Botswana). This represents an indirect "tax" on wildlife enterprises. Added to this, cattle are privately owned resources depending on common (i.e. free) grazing whereas access to wildlife is often not delineated so these animals are not valued in the market place.

There are three basic requirements to rectify this unfavorable situation. First wildlife resources must be delineated so that use is controlled and prices can evolve. Second, government policies regarding subsidies and other supports must be modified so that wildlife can compete on an "even playing field" with alternatives such as crop agriculture and livestock. Third, markets for wildlife products need to be encouraged and developed. When these objectives are achieved, and they can be achieved reasonably cheaply given political commitment to do so, wildlife can soon become profitable.

Proprietorship of Wildlife

Of the many causes of the pricing distortions afflicting wildlife, ownership of resources is the most important because landholders must have an incentive to protect or invest in wildlife. Without this critical element, much less efficient land use practices are adopted because they yield private benefits while the costs, in the form of deteriorating rangelands and reduced wildlife populations, are shared.

Experience from southern Africa shows that when this problem is solved wildlife is often able to overcome the other disadvantages. Wildlife enterprises have been displacing livestock on semi-arid rangelands of South Africa, Namibia and Zimbabwe from the time that each of these countries granted landholders the proprietorship of wildlife on their land. This is in sharp contrast to the situation just across the border in Botswana, where wildlife is being replaced rapidly by cattle. Only 4% of the income from the wildlife industry is returned to the resource owners in Botswana, and most of this reverts to central government through income tax, licenses, duties and rents. Local landboards receive a derisory 0.02% of the gross value of hunting concessions, and landholders get nothing. Agriculture and cattle are also heavily subsidized.

The experience from Zimbabwe shows that when the principle of ownership is applied to communal areas the response is the same as with private landholders. Communities rapidly recognize the values of managing wildlife and develop the institutional mechanisms to do this. However, for this process to occur, it is not
sufficient to only return benefits, more especially just a portion of the benefits, to the source. Responsibility and authority must be devolved to local communities, so that they become involved in decisions about trade-offs, and develop the management capacity and the recognition of "prices" required to do this more efficiently.

Reforming Economic and Other Policies

Most countries provide, as a matter of national policy, some level of support for wildlife conservation in the form of maintaining protected areas and protecting endangered species. In some cases (e.g., Zimbabwe and Kenya), national commitment to wildlife conservation, and the growing difficulty and danger of fighting heavily armed poachers, has led to the institution of controversial "shoot to kill" anti-poaching policies, particularly aimed at protecting dwindling rhino and elephant populations. However, the attitude towards wildlife utilization is often negative, leading to policies that are disadvantageous not just to wildlife enterprises but to wildlife survival. One common example is campaigns to eliminate species such as buffalo from cattle areas in the (often unproven) belief that they harbor and transmit infectious diseases.

In many countries wildlife utilization is prejudiced by policies designed to support agricultural sectors. For example, in Botswana, support for the livestock industry includes:

"...the construction and maintenance of veterinary cordon fences and quarantine camps, free vaccination campaigns; avaccine production facility, artificial insemination facilities, an animal production reserach program, development of trek routes and transport facilities, construction and operation of an export abattoir, the arrangement and servicing of beef export facilities and extremely lenient taxation of cattle producers." (Williamson and Williamson, 1983)

In Zimbabwe the annual cost of subsidies and supports for the cattle industry has been estimated at over Z$ 100 million (Cumming 1988).

By contrast, the wildlife industry seldom receives any government investment. Furthermore, wildlife is treated differently than other resources -- a result of state ownership -- with wildlife programs being "taxed" by government retention of licence fees. This taxing undermines the competitiveness of wildlife and also unfairly targets what are generally the poorest rural areas.

Macro-economic problems and policies also often work against wildlife use. The most important among these are over-valued exchange rates which handicap "exports" (in this case, discouraging tourists and sport hunters from coming in), and shortages of foreign currency that outfitters need to maintain vehicles and equipment. In closed African economies there is also a strong incentive for tourist firms to leave payments outside the country, reducing the gains to both the country and landholders. The incentive to invest in permanent facilities is also diminished. The result is that firms tend to operate under extractive rather than long term policies.

General economic restructuring is required to overcome these problems, but negative effects can be mitigated by a positive investment climate (investment code), and "export" incentive schemes. However, tourism is sometimes not recognized as an "export" industry, and mechanisms to manage this industry are more complicated, so it does not receive the recognition nor incentives that other, more traditional exports, do. For example, investments in infrastructure may bypass the remote wildlife areas in favor of urban or industrial areas which have more powerful political constituencies.

The negative or indifferent attitude of many governments towards wildlife and tourism, compared to industries that produce more tangible commodities like grain, needs to be redressed. This may be achieved by evaluating wildlife industries, and publicizing the results. Until decision-makers recognize the value of wildlife and tourism, the infrastructural developments (e.g. tourist routes; facilities and management of protected areas) needed to support these will not occur, and they will
continue to take second place relative to other sectors.

Wildlife-tourism industries are also restrained by bureaucracy, with large numbers of permits often necessary to undertake safaris. Some controls are necessary to manage wildlife, or maintain exclusivity, but systems could easily be simplified and focussed. Returns to investment in such restructuring are likely to be very high with opportunities, for instance, to greatly improve the value of safari hunting or to reduce the leakages of foreign currency. Such changes should also aim to increase open competition, raising prices and reducing the opportunities for corruption to which, given the associated licencing systems, wildlife industries are prone. In many cases, improvements in incentives, direction and discipline regarding civil servants in wildlife departments would also improve the management of protected areas, with advantages to the country and neighboring communities.

Support for Development of the Wildlife Industry

Aside from ownership issues and economic policies which introduce price distortions, the main constraints to development of the wildlife sector are a lack of technology and poorly developed markets. If wildlife utilization is to become a competitive alternative, national governments and international development agencies must provide the support and investment needed to put it on a more equal footing with competing landuses. Among the critical areas for investment are:

(i) research and extension in wildlife management, including ecological and biological studies to determine carrying capacities and sustainable offtake rates, and ecological and nutritional requirements for optimal growth and fecundity;

(ii) research and development for wildlife products, including meat processing and preservation to meet veterinary requirements for domestic and export markets;

(iii) wildlife-oriented veterinary research and veterinary services (particularly for development of game farming under semi-confined conditions);

(iv) research and development for improved and more efficient harvesting techniques for game cropping operations;

(v) expanded survey and monitoring to track changes in wildlife populations at national and local levels;

(vi) infrastructure, including specialized abattoirs, transportation facilities and inspection services for fresh meat (to meet EEC requirements), as well as improved facilities and services for tourism and hunting;

(vii) market analysis and marketing services for all aspects of the wildlife sector, including tourism, safari hunting and meat and durable products;

(viii) country-specific economic analyses to determine the role and potential of wildlife resources in national and local economies and the specific factors which constrain their development;

(ix) financial assistance (credit) for wildlife enterprises; and

(x) human resource development to support all of the above (training of wildlife researchers, managers, scouts, veterinarians, extensionists, hunters, butchers, tanners, etc.).

While there has been some support from national or international sources for many of these elements, this support has often been inadequate or misdirected. Research on wildlife ecology and management has often been carried out by expatriate scientists who carried the knowledge home with them. There is also a tendency for wildlife-related research to be restricted to specialized wildlife or ecology departments of universities or government research services, which prevents wildlife from being recognized as an integral component of natural resource management and land use. It also tends to exclude the
important sociological and socio-economic perspective from wildlife research.

Wildlife extension has generally been limited to assisting farmers with control of problem animals. More recently there has been a move in some countries (such as Kenya) to develop wildlife extension in the sense of improving communication between wildlife authorities and local communities in wildlife areas, particularly in the vicinity of national parks. There remains a critical need for extensionists who can assist landholders (private and communal) in the technical, financial and institutional aspects of wildlife management enterprises.

Formal training in wildlife management has been available in Africa for many years. Perhaps the best known institution is the College of African Wildlife Management in Tanzania. Between 1963 and 1982, the CAWM trained 924 graduates, of which 590 came from Tanzania and Kenya and the remainder came from 12 African countries and Egypt. The emphasis in the CAWM program, as in other wildlife training institutions in other countries, has been on training senior field officials and wardens and assistant wardens for posts in national parks. This reflects the general policy of regarding wildlife as a national heritage to be protected in national parks, as opposed to a natural resource to be utilized and developed.

International attitudes

Trade controls which aim to conserve endangered wildlife can also represent an important constraint to wildlife programs. The ivory trade is a good example, showing the complexity of the trade-offs involved. Elephants and rhinoceros are the most valuable animals on the semi-arid rangelands in commercial terms, a distinction which has led to dramatic reductions in their numbers over the past few decades. Their increasing rarity in turn adds to their value, both as a source of wildlife and as safari trophies. The recent ban on trade in elephant products is likely to have a major effect on some wildlife utilization schemes, making those that rely on ivory financially marginal, and on manufacturing and curio industries and the employment associated with them. Perhaps even more significant is the U.S. ban on ivory trophies (European countries have not adopted this measure), as these have been a major item in the revenues of the safari industry. The banning of products and trophies greatly reduces the commercial value of elephants to private and community landholders, except as a tourist attraction. However, the great majority of signatories to CITES supported the total ban on ivory trade in the belief that it is the only way to stop or significantly reduce the devastating harvest of elephants.

The same type of dilemma applies to other valuable species such as the spotted cats and many birds and reptiles: the same commercial value that can stimulate rural people to help conserve them can also lead to over-exploitation and consequently create international resistance to their use.

In addition, the great majority of wildlife management programs in developing countries are dependent on financial support from western-based conservation organizations which in turn receive their support from contributions of private citizens. Many of these organizations have traditionally been opposed to killing of wildlife and use of wildlife products, but now find themselves supporting projects involving limited consumptive use of wildlife as the best means to promote conservation. There is a possibility that this shift in strategy may eventually erode their support base, or alternatively that their memberships will force them to abandon or modify this approach.

F. Conclusions

Wildlife utilization can provide much higher sustainable financial returns than domestic livestock or crop cultivation on semi-arid rangelands. This advantage is improving steadily due to changing terms of trade and spreading environmental degradation. Wildlife is able to make these higher profits, while maintaining the environmental resource base, because it supports multiple uses, some of them very high value, and depends on selling recreation rather than secondary production. Income can therefore be increased without increasing animal biomass.

The potential of wildlife utilization has so far been realized only to a limited extent, and primarily by private landholders. Communities living in semi-arid rangelands
Wildlife and tourism will be an important sector in the development of sub-Saharan Africa, and is particularly appropriate for developing marginal agricultural areas and for earning foreign currency. Before it is initiated in many rural areas, however, institutional changes need to be made. The first steps should be granting proprietorship of wildlife to landholders, and developing institutions to control management of the resource and benefit flows, because this is the skeleton on which pricing mechanisms and resource allocation depend. Following this, specific bottlenecks should be identified and redressed to "get prices right," generally by facilitating the action of markets. This may include a wide range of interventions relating to macro-economic factors, the administration and control of wildlife, technical research and development, the facilitation and development of marketing etc.

1. This is demonstrated in the analysis of Buffalo Range Ranch in Annex 3.

2. Will be addressed in a future World Bank Technical Paper on the Economics of Wildlife Utilization

3. see the upcoming Technical Paper on Economics of Wildlife Utilization for a detailed discussion of the economic costs and benefits of tourism and safari hunting from the national and local community perspectives.

4. For example, a kudu provides about 150 kg of meat (dressed carcass) worth US $ 150 in Zimbabwe, but yields a minimum of $1,000 if shot as a trophy--$450 for the trophy fee and 1-2 days of hunting at a charge ranging from $250-$750/day.

5. Because safari hunting is proposed as a good possible source of revenues for community-based wildlife projects, a discussion of the safari hunting industry is provided in Annex 3.

6. of the remainder, 40% had mixed cattle and wildlife, 25% cattle alone and 10% irrigated agriculture

7. It should be noted that in the case of the Zimbabwe CAMPFIRE program the presence of agencies with strong links to local communities, the existence of well-organized and respected local government institutions, and the precedent set by successful wildlife safari enterprises on private ranches eliminated many of the preliminary preparation and implementation costs which have faced wildlife initiatives in other countries.

8. Convention on International Trade in Endangered Species
PART 5

Conclusions

A. The Aim of Community-oriented Wildlife Management Projects

The survival of Africa's wildlife is essentially a land use issue. Over half of the original wildlife habitat in Africa has already been lost to logging, charcoal, and conversion to agriculture and livestock grazing, and the remainder is under growing pressure to meet the needs of stressed national economies and a rapidly growing human population. The international community puts a high value on the biodiversity of Africa and wants to see it preserved, but this will only happen if that value is translated into concrete benefits which lead African policy makers and people to allocate the land to preserve the species and their natural habitats. In particular, the rural people of Africa, who bear the direct costs of living with wildlife, must receive sufficient benefits from it to compensate for those costs, which include both wildlife attacks on crops, livestock and people and income foregone from alternative uses of the land. This is the objective of a growing number of projects which seek to motivate and organize local communities to conserve wildlife, and to mobilize wildlife resources for the benefit of local communities.

To ensure acceptance and long-term commitment on their part, wildlife management projects should ideally be initiated and executed by the rural communities themselves. However, there are many reasons why this is unlikely to occur:

1) The people frequently do not regard wildlife as a resource which they can use, conserve and develop for their own benefit as they can do with timber, crops or livestock. This is largely the result of political policies and social changes which have eroded the traditional rights of local communities to use the resource and their ability to control access to it. In general, wildlife has become a legally protected but effectively open-access resource from which an individual can best benefit by taking as much as he can get as quickly as possible. This leads both to over-exploitation and to a strong preference for other land uses, such as crops or livestock, from which the individual can be assured of capturing a greater part of the benefit. Economic policies which subsidize alternative land uses and penalize wildlife-related enterprises also mitigate against wildlife management as an option. Wildlife can become a competitive option only if the unfavorable policy environment is changed, and this requires political influence and power which rural people usually do not have.

2) Accepting wildlife as a land use also requires that the benefit to be derived from wildlife-related activities is valued by local people at least as much as any benefits they may lose. This is an issue both for wild meat (which is less preferred than domestic, except in western Africa) and for cash income, which may not be as important to some rural people as food security or the range of economic and non-economic values of livestock. For this reason, wildlife management is more likely to be accepted as an alternative to cattle by commercial ranchers than by pastoralists.

3) Wildlife management and utilization (beyond informal hunting) may require various types of knowledge, skills and capabilities which the people do not have, and investments which they cannot make. Rural people often have an intimate
knowledge of the ecology and habits of wild animals, gained from many centuries of close association and dependence, but this knowledge dates from a time when wildlife was plentiful, human populations were relatively small and traditional authority systems were strong. It does not necessarily provide them with the skills and institutional mechanisms necessary for management and sustainable use of wildlife populations in the modern era. They also may not be aware of the real value of wildlife resources, particularly the recreational value, which may be an alien concept (why would people pay a great deal of money simply to see, or even to shoot, these animals?). Even if they recognize the potential value, it lies primarily in the international market, to which they do not have access. Gaining that access requires advertising, market research and development, and levels of infrastructure, facilities and services which tend to be lacking in the remote and generally underdeveloped areas where the richest wildlife resources are found.

4) In addition to these economic and technical constraints, there is an issue of general environmental knowledge. The intact ecosystems which harbor wildlife also often provide essential environmental services for surrounding communities, such as a wide range of forest products, water catchment, moderating seasonal flooding, and serving as resource reserves for times of drought or other climatic stress. Local communities often are not aware of the full range of these environmental services or the direct negative effects that losing them would have on their livelihood. They also may not know the limits of these ecosystems, for example that the soil under tropical moist forests is shallow and infertile and not good farmland. This is particularly true in the case of immigrants, who may come from areas with very different ecological conditions. Over-estimating the benefits from converting natural areas to agriculture or other uses, and failing to recognize the full costs, can make wildlife management less attractive than other options even where it would actually provide higher overall returns.

For all of these reasons, there are very few cases where local communities have initiated or sought assistance for wildlife management projects, except after seeing them in operation in neighboring areas. For the same reasons, a project initiated by an outside agency, such as an international conservation group, may fail to gain the participation or support of the local people. Therefore, the aim of such a project should be to address these problems, creating an environment where local people appreciate the value of and derive significant benefits from wildlife resources.

B. Essential Issues and Elements

Specifically, the following elements should be taken into account in planning a wildlife management project involving local participation:

1) Proprietorship of the resource and access to revenues from wildlife-based activities.

The issue of distribution of responsibilities and benefits relates both to national vs. local governments and to local governments vs. individual community members. Capturing some benefits at the local level may require changes in national policy, for example instituting revenue sharing arrangements with local communities or, as a next step, transferring some authority over wildlife to local authorities. First, however, it is important to be very clear on the objectives of the project and the limits of the authority which is to devolve to the local people, whose interests may not in fact be identical to those of the international organizations or government agencies supporting the project. Specifically, if the ultimate objective is to preserve one or more species or a protected area, it must be clear to the local people that they do not have the option to decide not to preserve it. If the project aims to develop sustainable harvesting of non-endangered species, the local community must know whether or not it has the authority to set cropping quotas and allocate them to different uses.
Directing revenues or other benefits to local authorities is only the first step. Ultimately it is the members of the communities living closest to wildlife areas whose behavior and choices are most important to wildlife survival. If these communities and individuals do not feel that intermediate levels of government, such as District Councils, really represent them, they may have little interest in revenues that accrue to those levels. The project area must therefore be large enough to encompass an adequate part of the wildlife habitat, yet small enough to have some degree of social and political homogeneity. Even within a small community, however, different individuals may differ in the share of community benefits they receive, or have different priorities, and may therefore fail to cooperate with decisions made by the group (e.g. ignoring hunting restrictions). In this case, traditional authorities may need to be backed up by modern law enforcement. In general it is best to leave distribution of responsibilities and benefits to the community's own decision making process; however because equity is generally an important objective in externally supported development projects, it may be necessary to negotiate with community authorities to ensure that certain groups (e.g. women or ethnic minorities) are not systematically excluded from decision making and benefits.

For projects which aim for sustainable consumptive use of wildlife, the types and numbers of animals available and the carrying capacity of the environment are very important. Safari hunting is the most lucrative form of wildlife utilization and the most easily implemented if desirable trophy species are present (or can be re-introduced). Attaining high revenues depends upon maintaining good populations so that there are a number of trophy-quality animals (usually mature males), aggressive marketing, and management practices such as packaging hunts so clients must pay a great deal to take the rarer species. Particularly in the early stages of a project it is likely to be most effective to contract with the private sector for these aspects.

Meat production schemes on the savanna rely mostly on antelopes, particularly relatively small species with high fecundity (e.g. impala). Overheads for cropping operations are high (vehicles, trained staff, firearms and ammunition) so populations must be large enough to support a fairly high annual offtake (e.g. one estimate from southern Africa suggests a minimum of 500 impala per operation). There has been much less work on wild meat production from forest ecosystems, in part because the animals tend to be smaller and more elusive, and population densities lower. Some forest species (e.g. duikers, rodents, some invertebrates) may lend themselves to captive rearing, but sustainable harvesting from natural populations of forest species is not likely to be a financially viable option.

Surveying existing wildlife populations is an essential first step. If they are low compared to what might be expected in that ecosystem, the next step is to determine
whether this is due to over-hunting, competition or disruption by human activities, or to environmental degradation resulting in decreased carrying capacity. This will help to determine whether it will be possible to raise population densities to support the type of production (including tourism) proposed, and the best measures (anti-poaching enforcement, habitat rehabilitation) to accomplish this. The population dynamics of key species must also be understood to know how quickly the populations can build and to determine sustainable offtake levels. With proper protection and good quality habitat, wildlife populations can often rebuild quite rapidly (even elephants, a relatively low-fecundity species, can increase at 4 percent per year).

In addition to the types and numbers of animals, the value of the local wildlife resource depends greatly on the availability of markets. A lack of reliable markets has probably been the most important constraint to development of wildlife meat production schemes in eastern and southern Africa. Market research and development is equally important element to be included in projects promoting other types of wildlife use, such as tourism, safari hunting or durable products. Project planners must identify the investments (e.g. transportation and communications infrastructure, accommodations, meat processing facilities, etc.) needed to meet market demands.

3) Local technical and institutional capacity.

The types of local capacity required depends to a large extent on the level of local participation envisioned. In the majority of projects involving protected areas, local participation so far has meant participation in benefits derived from wildlife resources, while planning and actual management of the project, use of the area, or wildlife-based activities remains the responsibility of the government authorities or an externally recruited project management team. For this level of participation the primary requirement is for a mechanism to allocate benefits within the community and to help ensure that rules are respected by community members. The benefits may be in the form of support for community development projects, cash compensation for wildlife damage to property, distribution of revenues among individual households, etc. In any case there must be a distribution process which is accepted by community members. Benefits to the local community also often include preferential employment opportunities (e.g. as guards or hunters or guides or in tourist service industries); this will require training to qualify local people to fill these jobs. Similarly, training and financial assistance may be needed to help local entrepreneurs develop small-scale enterprises (e.g. handicrafts, taxidermy, etc.) to take advantage of new commercial opportunities.

The next level of participation is for local people to be actively involved in management decision making, for example in deciding what areas to set aside for wildlife use or how to allocate wildlife quotas. This requires a different type of community organization, in particular a body to serve as a liaison between the community at large and technical specialists (who identify the possibilities and the limits within which management decisions can be made) as well as government officials and policy-makers who generally retain ultimate authority. These intermediaries (e.g. Wildlife Committees) must be able to understand and convey the reasons for management decisions to community members, and must be able to identify, articulate and defend the community’s interests in providing input into the decision-making process. To do this, individuals selected or elected to serve in this capacity may need training in technical aspects of wildlife ecology and management, as well training in communication, community organization and motivation methods.

Finally, local communities might participate in some or all aspects of the actual management and execution of wildlife projects, from technical aspects such as monitoring populations and setting quotas, to business aspects such as running safari and tourist operations, to policy aspects such as deciding whether to invest community assets in development of wildlife enterprises or other activities. This clearly requires the highest levels of training and preparation, and it seems to have not been achieved in any project in Africa. Nevertheless, it is implicitly the ultimate objective of most projects, although it is not always clear whether transferring responsibility and
authority to "local" hands refers to passing it from expatriate project managers to country nationals or actually to members of the local community. Either may be made more difficult by donors' requirements with respect to accounting for the funds they provide, and the latter may also be constrained by government policies which retain final authority over wildlife for the central government.

(4) Community relations and education.

The greatest obstacle to local participation in externally-initiated projects is often a lack of communication between project supporters and the community, and each party's lack of understanding of the others' interests and objectives. In the case of wildlife management projects this may be aggravated by mutual suspicion and a history of conflict over access to wildlife resources, particularly when protected areas have been established by the government without community consent. Under such circumstances it may be difficult to even initiate a dialogue unless an intermediary can be found who has the confidence of, and ability to communicate with, both parties. Often this is an expatriate who has spent considerable time in the area and interacted extensively and positively with the local community. However, it may also be someone from within the local community who has had previous opportunity to interact with government officials and foreigners. These discussions must be arranged with an understanding of sociology and community dynamics: for example, in many cases local people are reluctant to express opinions which conflict with those of more influential community members or government officials, or may consider it discourteous to disagree with visitors.

Clearly the first objective is to identify areas of mutual interest, such as preventing outsiders from co-opting the resource at the expense of the local community, or preserving a resource which the local people value but recognize is disappearing. If the underlying objective of the proposed project is preserving an area primarily for its international biodiversity value, this objective must either coincide with the community's direct interests or the supporters of the project must be prepared to offer the community compensation for their perceived losses. At the same time, areas of disagreement or conflict must be brought out so that they can be negotiated, rather than ignored only to surface later.

Close communication is necessary not only in the planning stages of a project but also throughout implementation, because changing conditions may raise new problems to be resolved. Mechanisms for communication and interaction between project managers, government officials and community representatives must be planned and developed by people with appropriate training, and institutionalized as a project component rather than being left on an ad hoc basis.

Government officials such as national park wardens are often not accustomed to this type of communication and interaction, possibly regarding local people as adversaries and poachers and possibly as inferiors because of educational differences. They may need specific sensitization and training in communications and community relations to participate effectively.

Environmental education is a very important part of communication, and should be made a high priority in any wildlife management project. Appropriate messages and educational methods should be developed for the different target groups: government decision makers, the public at large, rural communities, school children, etc. Effective media include seminars, magazine articles, textbooks and school curricula, television and radio programs and wildlife clubs. Education programs should aim to awaken and encourage interest in the natural environment for its own sake, as well as educating people about the environmental services and potential for long-term economic development that natural areas provide.

C. Evaluation

Community-oriented wildlife management is a relatively recent development, particularly in Africa. As a whole the group of projects discussed here are at too early a stage and too small a scale to evaluate the success of this approach, either with respect to conservation or to rural economic development. They may best be regarded as pilot projects testing the
approach. As such, their success should be measured by three criteria: (1) do they advance our knowledge of how to implement community-based wildlife management, thus leading to better designed projects in the future, and (2) have they, or will they stimulate the development of additional projects? Beyond their merits as models or learning experiences, the individual projects may also be evaluated on the basis of how well they are achieving their stated objectives.

All of the projects have contributed to our understanding of how to pursue wildlife management with local participation. They have identified the key elements of policy and problems which can arise in implementation, and generated a variety of possible solutions, particularly with respect to institutional mechanisms to promote community participation. Many have demonstrated the value of wildlife resources and the possibility of rebuilding depleted populations. Most significantly, they have demonstrated the critical importance of understanding the sociological and economic factors that motivate rural people and govern their behavior, and of maintaining good channels of communication.

Several of the projects have also directly stimulated follow-up activities, in some cases initiated by local communities seeking to participate in programs from which they saw their neighbors benefiting. This has been most notable in the case of projects based on local people gaining or regaining access to the benefits of utilization of wildlife, or in projects where wildlife revenues and/or external donations supported desired community development projects. Conservation organizations are also increasingly adopting the local participation approach to preserving protected areas and species, but this is based as much on the fact that the alternative (policing and enforcement) is generally not working as a long-term solution, as on empirical results of existing community-oriented conservation projects.

The direct objectives of these projects generally include: wildlife conservation, project self-sufficiency, economic development based on sustainable wildlife utilization, and involvement of local communities in the management of wildlife resources.

Conservation

The majority of wildlife management projects have primarily conservation objectives, so important measures of their success include decreased poaching, increased wildlife populations and decreased rates of habitat loss. The lesson to date seems to be that partnership with local communities can be an effective method to control poaching (of animals and plants) by members of the local community, and to keep their cattle out of wildlife areas, as long as a stream of benefits is maintained. Controlled cropping schemes can be successful in reducing uncontrolled, illegal hunting as long as the offtake levels are sufficiently high and the community authority structure is strong enough to prevent individuals from maximizing their own benefit at community expense. When the poaching pressure comes primarily from outside the community, community members may not be able to control directly but they can and do provide information to help officials intervene. Local involvement and benefit is not necessarily a solution to the problem of overall management and maintenance of protected areas, as demonstrated by the case of the Maasai Mara Reserve in Kenya, where the local community has been entirely responsible for management and administration and has received consistently high revenues, but is allegedly failing to re-invest a sufficient portion to maintain the Reserve.

Many community-linked wildlife conservation projects are actually rural development projects in which local communities receive development assistance in return for their cooperation in respecting the boundaries of the protected area or restrictions on hunting. The funds to support this development may come wholly or in part from revenues generated by tourism in the protected area, or wholly or in part from external donors. Again, this approach can work as long as benefits continue to flow to the people directly involved, and as long as they are clearly linked to the conservation objectives. Conservation groups are increasingly coming to the belief that this is the only way that protected areas and species can be preserved over the long term, in the face of ever-growing population pressures and competition for land and water. The real question is whether it will be possible to
pursue this approach on a large enough scale to conserve a significant portion of Africa's (and the world's) increasingly threatened biodiversity. However, this is a test of the international community's overall commitment to conservation as much as it is a test of the local participation approach.

One of the great challenges for the future will be finding ways to encourage and assist African governments in cooperating among themselves to preserve key wildlife areas which span national borders. An emphasis by international donors in providing assistance to such regional projects would undoubtedly help to stimulate their development.

Economic Development

For projects which aim to mobilize wildlife resources as an economic asset for rural development, success should ultimately be measured in terms of returns on total investment (of land, capital and labor). However, the data to carry out this type of evaluation are not available for any of the projects examined. Instead, evaluations focus on cash flows and revenues earned by financial enterprises in relation to direct project costs. The high revenue-earning potential of wildlife, particularly for safari hunting, means that financial returns can sometimes be quite high. So far only one project (the Dande Communal Lands in Zimbabwe) has generated sufficient revenues from wildlife to contribute substantially to individual household income, but several have supported community development projects such as schools, clinics and micro-irrigation schemes. Although not directly measured in most cases, the positive environmental impacts of using wildlife instead of agriculture or livestock in marginal lands is often clear, adding environmental sustainability to the benefit side of the equation.

The main question is one of cost, which is often not adequately addressed. Where overheads are low, as in the case of projects based on communities leasing safari hunting rights to private operators, it is fairly clear that the balance is positive (with the result that rural communities in Zimbabwe are responding by swamping the government with proposals to be designated as "Appropriate Authorities" over wildlife on their lands, and private operators are competing to enter into contracts with them). The problem arises with more complex projects, where revenues from wildlife utilization may be required to support large bureaucracies or subsidize other, less profitable project activities. In this case, the economic and financial costs and benefits will have to be examined more closely to determine whether the operation is or can be made self-sufficient or whether the wildlife-related activities can be sustained at a lower cost.

Local Participation

While effective local participation is a stated important objective for all of the projects examined, the level of participation intended and the criteria for success in obtaining this objective are usually not clearly defined. Most projects aimed to involve local people in project planning and design, but only a few have actually devoted a significant period of time prior to project initiation to achieve this; in most cases the basic outlines of the project have been decided by others (donors, government officials, project managers) and then discussed with community representatives. However, local communities have been involved in planning project components which relate directly to them, such as what types of micro-development projects or other benefits they want, or who will serve on Wildlife councils.

Many (but not all) projects have been successful in channeling a significant portion of wildlife revenues from the national to the local level, but not always to the individuals and communities most directly affected by the costs of living with wildlife. In part because revenues or other benefits relating to wildlife have usually been directed toward community development projects rather than to individual households, the connection between the wildlife and the benefits is not always clear.

Only a few projects have reached the point of transferring a significant degree of management decision making or implementation to local hands. It has been fairly successful in the Zimbabwe CAMPFIRE Program, where the communities have been able to obtain large returns with little management input or investment by leasing safari hunting rights to private contractors. The other notable
The case is the Maasai Mara Reserve in Kenya, where the District Council, representing the local Maasai community, was wholly responsible for administration of the reserve for several decades, including providing wardens (trained by the national Game Department), maintaining roads and facilities and collecting entry fees. However, the government has now taken it over again, claiming that this arrangement has resulted in mismanagement and deterioration of the reserve. Overall, it would seem that there has been considerable progress in increasing the role and interest of local communities in conservation of wildlife resources, but the goal of actual local management of wildlife resources remains elusive.

**Sustainability**

There are three important aspects to the question of sustainability: (1) environmental (ecological and physical), (2) economic, and (3) institutional, political and social. From an environmental perspective, there is considerable evidence that wildlife is a more sustainable use of marginal lands (where most of the remaining wildlife are found) than alternatives such as logging, agriculture and livestock ranching. The evidence to date indicates that it is not possible to carry out commercial logging of moist tropical forests on a sustainable basis—to date, all such efforts appear to have resulted in destruction of the forest ecosystem and significant loss of forest cover. Agricultural productivity in moist forest and semi-arid rangeland areas is limited by shallow, infertile soils, and livestock productivity is limited by the grassland vegetation as well as water and diseases. Attempts to pursue these alternatives in unsuitable areas amounts to mining of the forest, soil or rangeland resources and cannot be sustained over the long term. Wildlife are better adapted to local conditions, use the vegetation more efficiently and cause less environmental damage at natural population densities.

However, environmental sustainability is closely linked with economic factors. Pursued at a low level of productivity, timber extraction, agriculture (shifting cultivation with long fallow periods) and livestock husbandry (nomadic pastoralism) can be environmentally sustainable even in marginal lands. The problem is the pressure to increase current productivity to meet the needs of the rapidly growing population and for financial viability of commercial enterprises. This is done at the expense of long-term sustainability because the investment of environmental capital is not given sufficient weight. The main advantage of wildlife is the possibility of increasing income without increasing animal biomass, and therefore pressure on the environment. This possibility arises primarily from its recreational uses (tourism, safari hunting), where value is high to begin with and is increased by adding better facilities, services and marketing rather than more animals. It is possible that wildlife meat production could be more environmentally sustainable that domestic meat production in some environments, but only if market conditions improve and harvesting costs decrease.

**Environment and economic sustainability** issues pertain to wildlife utilization regardless of the institutional framework. In respect to wildlife management with local participation, as with the broader objective of rural development, the question of institutional sustainability becomes paramount. Many of the problems identified in the 1988 OED report reviewing the World Bank's experience in rural development relate to two basic themes: (1) the pursuit of short-term returns and rapid physical implementation at the expense of the participatory planning and the institutional and human resource development required for long-term sustainability, and (2) the tendency to proceed with projects despite an unfavorable policy environment and lack of real commitment on the part of the government.

The same issues can often arise in community-oriented wildlife management projects. This is partly because of the sense of urgency over rapidly dwindling wildlife populations and wilderness habitats and the need to provide immediate incentives to local communities to stop over-exploitation of the resource and the environment. However, as also noted in that report on rural development, it is essential to emphasize positive, not just negative, lessons from past and existing projects and show what to do as well as what not to do.
### Annex 1

**WORKSHOP ON WILDLIFE RESOURCE MANAGEMENT WITH LOCAL PARTICIPATION IN AFRICA**

Hwange National Park, Zimbabwe  
September 19–24, 1989

**PARTICIPANTS**

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1/Includes only those participating in the full workshop. Many others participated in one-day special sessions.
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Annex 2

WILDLIFE UTILIZATION AND MANAGEMENT

This paper does not aim to provide an analysis of the technical or economic aspects of wildlife utilization and management. However, some basic information on the practical aspects of wildlife management is important in order to understand the potential value of wildlife as an economic asset, the types of factors which may limit or prevent that value from being realized and the characteristics of different wildlife management systems which may be proposed for community-based programs.

1. Sources of income from wildlife

Wildlife utilization is commonly divided into two categories: (1) non-consumptive utilization, which refers largely to tourism based on wildlife viewing, and (2) consumptive, which includes harvesting for meat or durable products, safari (trophy) hunting and the live animal trade. There is a tendency to believe that non-consumptive utilization is environmentally and ecologically benign while consumptive utilization represents a threat to wildlife populations. In fact, both have their positive and negative aspects.

Environmental Aspects

Environmental tourism is positive in that it encourages the maintenance of the habitat in a fairly natural state (although not completely natural, as the tourists' comfort and convenience is an important consideration). However, poorly managed tourism can have serious negative impacts. High populations of wildlife may be encouraged to enhance the attraction, but this can result in environmental damage as the carrying capacity is exceeded. In addition, a large number of tourists and vehicles, particularly if they are undisciplined and inclined to drive off the roads, can damage vegetation and disrupt animal feeding and behavior. In dry areas, water may be channeled to tourist facilities at the expense of the wildlife (and local communities). Poorly planned infrastructure can also cause problems, such as erosion caused by roads, or water contamination from sewage and garbage disposal.

Of all types of wildlife utilization, safari hunting probably has the least environmental impact. Hunters demand a truly natural landscape, they generally require and cause less modification of the habitat than do tourists and they are content with much lower animal population densities. They kill and remove only a small proportion of animals from the population. Marketing of safari hunting depends on the quality of trophies (mostly mature males) offered, and this in turn requires that the population is not over-harvested. In fact, offtake rates from safari hunting are often so low that populations must be controlled by cropping non-trophy animals. The main negative ecological impact is on species with social systems in which removal of certain individuals can be very disruptive, such as eliminating "lone bulls" which are in fact territorial males, or threatening the survival of family troops if the mature adults are killed (e.g. among elephants and some primates).

The major hazard in using wildlife for meat and durable products is obvious: non-selective harvesting and over-exploitation of the population are difficult to control. In addition, hunters may set brush fires to drive the game or make it easier to find. On the positive side is the proposal that promoting the use of meat from wildlife may in some cases provide at least a partial alternative to livestock, whose grazing leads to deterioration of marginal, semi-arid rangelands; it is frequently argued that a natural community of wild species can produce a higher level of biomass without degrading the environment.
The live animal trade represents a wide range of environmental impacts. If well controlled, it can support an effective wildlife management system by providing a relatively high-value market for excess animals (e.g. for zoos or for stocking game ranches). Unfortunately, it is difficult to control except on private lands and the demand for some species (particularly birds, reptiles and some primates) has greatly contributed to over-exploitation and sometimes led to the brink of extinction. In addition, "free-lance" collectors tend to be very unselective and many additional animals also die in capture and transport, or in defending infants from capture.

Whatever the negative environmental impacts of various types of wildlife use, they must be evaluated in comparison to those of whatever alternative land uses are most likely to be put in place if wildlife management is excluded.

Economic Aspects

The different types of wildlife utilization differ with respect to economic potential, particularly on a per-animal or per-area basis. Safari hunting is generally regarded as the highest-value use, as an animal sold as a hunter's trophy can be worth many times more than the same animal sold for its meat and hide. In Zimbabwe, for example, the fee for shooting a male elephant is Z$ 7,500 (US $ 5400), and fees for other species such as hippos, giraffes, buffaloes, etc. are generally in the Z$ 1000-15000 range. Equally important, the safari hunter must book a several-week hunt and pay a high daily fee for the privilege, regardless of whether the hunt is successful. Thus, a hunter who takes a buffalo, a lion and an elephant in Zimbabwe will pay $Z 36,050. The market for safari hunting is very large, apparently far from being saturated, and price inelastic. Trophy fees are fairly uniform throughout Africa, but the management of hunting operations can have a great impact on the income actually attained.

Viewing tourism is also a potentially very high-value use. Tourism overall is one of the world's fastest growing industries, already ranking second to oil in terms of revenue generation. Furthermore, Africa's share of the world tourism market has increased steadily since the mid 1960's. Eltringham (1984) estimated that, in terms of tourist revenue, a lion in Amboseli National Park in Kenya was worth $27,000/year and a herd of elephants was worth $610,000/year. Tourism is also known for generating significant multiplier effects, and is likely to distribute the economic benefits more widely in the community than safari hunting. However, while the lucrative safari hunting market is relatively accessible, no other country has yet developed wildlife tourism on a scale approaching Kenya's, which accounts for some 90% of total tourism receipts for subsaharan Africa exclusive of the Republic of South Africa. Even within Kenya many parks are much less visited and thus bring in much less revenue than Amboseli.

Little information is available about the economic aspects of other wildlife uses. Wild meat is very important as a source of income in many parts of rural Africa but aside from the work of Asibey in Ghana (e.g. Asibey, 1980, 1988, 1989) few studies have addressed market demand or prices. The importance of wild meat in the informal sector is also well recognized but little quantified except through dietary surveys of various tribes or communities. The trade in animal products and live animals is very lucrative in some cases, but it is well known that available data on legitimate trade (e.g. World Resources Institute, 1989) greatly underestimate the total commerce. Crocodile and ostrich skins have emerged as important commodities around which relatively small but successful industries have emerged. Some projects involving other relatively high-value items such as zebra or elephant skins have shown some profit, but most such schemes have failed financially because of management problems and high harvesting costs. For abundant species, such as most antelopes, the hides and horns are of relatively little commercial value and unlikely to cover production costs. Live specimens of some species are in great demand for re-stocking game ranches, but specific market data are not available.

When evaluating wildlife as an economic resource it is important to bear two important facts in mind: (1) the potential income from wildlife may be
multiplied by the fact that it is often possible to accommodate multiple uses from a single population (e.g., tourism, safari hunting and meat/hide production); and (2) the highest value uses of wildlife (safari hunting and viewing tourism) are relatively independent of total biomass, so that the potential income is limited not by the environmental carrying capacity (as is the case for meat production, whether from domestic or wild animals) but by other types of inputs such as investment of labor and capital for infrastructure, services and marketing.

2. Wildlife management systems

Wildlife management systems relate mainly to consumptive use because the only direct management of wildlife usually required for safari hunting or tourism is occasional culling of some species for population control. They may best be categorized based on their management intensity and inputs involved. Each approach has different requirements for management and infrastructure and different implications for economic returns, environmental protection and local participation.

Subsistence and informal hunting

Hunting and gathering is the traditional system of wildlife exploitation and is still a fundamental element of rural African life both for home consumption and for sale in urban areas (see, e.g., Adeola and Decker, 1988; Asibey, 1988; Murindagamo, 1988; Bell, 1984). A wide range of species is used, including insects and other invertebrates as well as the fish, birds and mammals which westerners tend to associate with hunting. "Bushmeat" is generally preferred to domestic meat in many west African countries, although it tends to be less favored in eastern and southern Africa. This type of system does not involve overt management of the wildlife resource, in terms of systematically monitoring populations, setting quotas or investing resources to increase productivity. However, traditionally informal hunting was regulated by local chiefs, who could specify which animals could be taken, how many and by whom, often collecting a portion of each carcass in payment. These traditional systems have now largely broken down due to many factors including human population growth, a general erosion in the coherence of local communities and the power of traditional authorities and a great increase in the availability of firearms.

In addition to the economic value, informal hunting continues to play a very important social role in many African societies and hunters often enjoy high prestige. Thus, while it may be necessary to prohibit or restrict informal hunting in some areas, and of some species, as a conservation measure, it should generally be accommodated in wildlife management programs, for example by setting aside a certain portion of species off-take quotas for this purpose (e.g., see case study on Zambia LIRDP in Part 3).

Game cropping and game ranching

"Game cropping" refers to a more systematic harvesting of free-ranging animals, but still with little or no direct management to concentrate them or increase populations. Aside from subsistence hunting, game cropping is currently the primary commercial system for producing game meat. "Culling" is basically the same thing, but is generally used in reference to an action carried out for population control (e.g. in management of protected areas), rather than commercial gain. The term "game ranching" has been used to describe a variety of systems from safari and game cropping operations carried out on private, fenced land from which cattle are excluded, to systematic exploitation of wildlife naturally found on cattle ranches. In general, game ranching may be regarded as any operation involving more active management of populations than game cropping, but less active management (and usually in a smaller area) than the game farming described below.

The main inputs for game cropping are simply for protection against poaching and for harvesting. These can represent significant costs which may be difficult to recoup as markets for wild meat are still quite limited outside western Africa. However, game cropping can be a profitable
sideline to an operation which is primarily based on safari hunting or tourism (some game ranchers in Zimbabwe derive up to 30% of their income from game cropping) and it can also be very important in generating good relations with local communities to whom the meat may be sold at low cost.

Game ranches represent a slightly higher level of management and may involve additional costs for habitat improvement to attract animals and increase populations (e.g. water spots, salt licks) or for stocking of high value species. It sometimes includes fencing, but this is very expensive on the scale of a ranch. More often, fencing is used to protect cultivated areas or to cordon off separate areas for livestock. Rapid development of technology in electric fencing promises to make this practice more practical in the future. In areas where quarantine regulations are not a barrier, wildlife are often combined with cattle on the grounds that they provide added income without adding significant costs to a cattle ranching operation. It has been reported that adding wild species to domestic stock can improve financial performance, perhaps due largely to the possibility of increasing total stocking rates by adding species which can eat previously under-utilized components of the vegetation (Child, 1988).

Game ranching can be readily applied to communal conditions, assuming that the communities are given the same degree of control over access to the land and wildlife that private game ranchers enjoy. The best strategy for a community is likely to be to collaborate or contract with the private sector for the technically specialized aspects of production, such as setting off-take quotas, finding and handling safari clients, large-scale cropping operations, etc. The critical role of the community, as the landholder, is to maintain the resource by restricting expansion of croplands and livestock into critical wildlife habitat and protecting populations against poaching, and to manage the revenues.

**Game Farming**

Game farming involves the management of one or a few species (usually antelope) within fenced areas usually not larger than 2,000 hectares. Game farms in southern Africa often began with farmers re-introducing wild animals onto their farms for aesthetic reasons, and then starting to do some culling to prevent over-population. Meat production is often the primary output, although there is a shift toward utilizing these areas as well for safari hunting and tourism (sometimes in rotation with crops, or on parts of large farms which are unsuitable for crops). Game farming also encompasses attempts to domesticate various wildlife species (e.g. eland, zebra, buffalo).

Although existing farm operations may sometimes be able to add a wildlife component at little cost, it seems unlikely that farming of large wild species is a viable enterprise in most of Africa at present. Wildlife kept under confined conditions require much of the same sort of management as domestic stock (e.g. supplementary feeding, veterinary treatment, handling) but the technology for wild species is very poorly developed. Farming thus involves higher inputs than game ranching, which must be justified by higher production of meat and durable products since safari hunting and tourism are just as well, if not better, suited to less intensive management systems. Currently, however, game meat brings a lower price than domestic meat in most markets. Game farming has been successful in South Africa, Namibia and on the Hopcraft Ranch in Kenya because of exceptional marketing conditions and because cropping costs are low due to relatively productive and open vegetation. In addition, South Africa and Namibia have been able to penetrate the lucrative European venison market, which will be difficult for most African countries to do because of the prevalence of foot-and-mouth disease and poor infrastructure for communications, transport and meat harvesting and processing.

"Battery production"

This term refers to the very intensive, high-input, closely confined production of selected species, similar to stall-or cage-rearing of livestock. This can be profitable if the animals are relatively simple to rear (e.g. pilot projects with grass cutters (cane rats) and giant land snails in West Africa), or
if the products are very high value (e.g. crocodile and ostrich skins). This system is even more capital-intensive and more demanding of entrepreneurial skills, management and technical capability and reliable access to external inputs than is game farming. The existing crocodile and ostrich farms in southern Africa are privately run, commercial ventures with professional management and generally a fairly high degree of automation (e.g. for maintaining temperature in water tanks or incubators). However, it is possible that a lower-technology, higher-labor approach can be developed which would allow the development of a cottage industry if adequate support is available (e.g. supply of inputs, technical and veterinary assistance, marketing). While there is undoubtedly some potential for individual community initiatives, this type of management system does not represent a major opportunity for economic development in rural Africa.

1. This will be the subject of another World Bank Technical Paper.

2. This issue will be examined in detail in the upcoming Technical Paper on the economics of wildlife utilization.

3. See Annex 4 for a more detailed discussion of the safari hunting industry.
Annex 3

ECONOMIC ANALYSIS OF BUFFALO RANGE RANCH

Intensive ecological and financial studies on Buffalo Range ranch in semi-arid south eastern Zimbabwe demonstrate the importance of ecological degradation and production ceilings. They also validate the theoretical argument that wildlife utilization can overcome these problems.

Incorporation of environmental effects

Evidence from Buffalo Range ranch is crucial because it allows the effects of overgrazing to be related to ecological change and to productivity trends, thus dispelling the uncomfortable attitude that the lack of quantitative evidence for range degradation means it does not happen and can be ignored. The relationship between secondary and primary production, the constraints imposed by it on livestock enterprises, and the propensity of rangeland systems to degrade, lie behind the theoretical rationale for wildlife utilization. This is sometimes disputed and needs to be substantiated. Moreover, degradation is severe and rapid, yet is largely ignored when planning or managing rangelands, so the use of this evidence to emphasize its economic costs is very useful. Furthermore, wildlife has environmental advantages that need to be incorporated into the economic analysis.

It has been argued that cattle stocking rates can be raised through holistic resource management or intensive rotational grazing (e.g. Savory, 1988). These arguments that better management can induce higher, less damaging production are logical but not borne out by real experience, with rangeland problems being common to traditional and modern sectors, to advanced and developing nations, and to systems with or without high levels of technical and financial inputs. The key variable is still stocking rates. Intensive management cannot overcome this limitation, nor would it be economic in semi-arid rangelands: returns from paddocking, short-duration grazing etc. are low since grazing selectivity is not a serious problem; the driving variable is stocking rates which these do not address; and the low productivity of these rangelands does not warrant the investment in capital (e.g. fencing) and management. There is, indeed, little evidence to support claims for holistic management of cattle monocultures, with trials in southern Africa giving disappointing results and even protangists like Savory being unable to provide quantitative support for advantages claimed. Refinements of rangeland systems, in any case, are insufficient to overcome their predicament. Restructuring systems is necessary.

Trends in range condition

When the ranch was divided into a cattle and game section in 1960 (figure 1), the cattle section (12,000 ha) was in good condition whereas the game section (8,000 ha) was degraded. The game section along the Chiredzi river had been abused for many years since it had the only permanent water in the district. The cattle section, being away from the river, was protected because it had no permanent dry-season water.

Intensive ecological surveys of the ranch were done in 1973 and 1986 (Taylor and Walker, 1978; Child 1988). The results are summarized in figure 2, showing that both sections were in similar condition in 1973 but that, by 1986, the cattle section was considerably worse than the game section. Unlike game, cattle were overstocked and reduced grass and litter cover by over-grazing. Since these act to protect...
the soil and encourage water infiltration, so this caused a loss of potential moisture for plants and represents man-induced drought conditions. Effects were exacerbated further by raindrop compaction and soil capping, with run-off and soil erosion accelerating. Plant production is limited by water availability so these changes would be expected to reflect in decreased availability of fodder and declining cattle productivity. On the game section, by contrast, grass conditions improving and it would be expected to become more productive. Measures of animal production, true to expectation, confirmed these relative changes in productivity.

Figure 4 (see under meat production in Part 4) describes the productivity trends deduced from these surveys and earlier accounts of the area. In 1960 the cattle section was in much better condition; by 1973 both sections were similar; and by 1986 the cattle section had degraded relative to the game section which was similar or improved compared to 1973. The average meat yields for the three periods are also given, suggesting that they are closely related to veld condition, being high when veld is healthy and low when it is degraded.

**Effect on productivity**

Figure 3 describes the change in grass availability on the two sections and the effects of this on grazing intensity. This has important implications for the sustainability of the two systems. The amount of the two palatable and abundant grasses that constituted the majority of livestock diets in 1973 (i.e. *Digitaria pentzii* and *Eurocloa mossambicensis*) declined from 23.8% to 10.8% of theoretical maximum on the cattle section, forcing cattle to utilize grazing more intensively, consuming 39% of the grass in 1986 compared to 28% in 1973. A degradation spiral had been induced: cattle were eating more and more of a progressively smaller grazing supply. The game section had more grass than the cattle section (15% of theoretical maximum), and as much was available late in the dry season (October) in 1986 as much earlier (June) in 1973. The greater amount of grass allowed a reduction in grazing intensity from 43 to 31 percent, and it explains why the game section was able to recover some productivity and why it became more productive than the cattle section.

Rainfall on Buffalo Range is highly variable, but was consistently good between 1975 and 1982 (Figure 5). Cattle were normally stocked at about carrying capacity (figure 6), but since this varies according to rainfall (predicted using Coe et al's relationship between herbivore biomass and rainfall), cattle were stocked at three times carrying capacity in drought years, it being difficult to dispose of them onto over-supplied drought markets. This, especially with three alternate drought years around 1970, induced heavy over-grazing and initiated a degradation spiral. This degradation meant that although stocked at the correct 'recommended' rate, the range was being over-grazed and could not recover. This is illustrated by figure 7 which plots cumulative over-stocking (an indicator of deteriorating range condition), showing a rapid deterioration from 1970, a levelling out during the following eight wet seasons, and further deterioration with the 1980's droughts.

The importance of figure 7 is that it illustrates the direct causal relationship between over-grazing, degradation, and declining animal productivity. Calving rates, a good indicator of cattle nutritional status, fell rapidly, mirroring the declining health of the veld (as predicted by cumulative over-stocking). As the veld degraded, calving rates fell from seven calves from ten breeding females to four, with the rate of this decline slowing only during the good rainfall years when the cattle section was not over-stocked nor therefore degrading. This confirms that over-grazing is the primary cause of lost productivity on the Buffalo Range cattle section.

As over-grazing reduced range productivity, cattle were forced to graze more intensively, so range condition continued to decline. Calving rates and herd productivity were considerably reduced by the resulting nutritional stress. Whereas cattle performance improved steadily as the ranch was developed (with water-points, paddocks, dips, roads etc.), peaking at about 18 kg/ha in the mid-1970's, veld degradation then caused a very rapid decline to about 10 kg/ha by the early 1980's (figure 8). This 60 percent loss of productivity
occurred although rainfall was exceptionally good (figure 7). During this period productivity should have improved, as it did on the game section (by 60 percent), but damage to the grass and litter cover greatly reduced the availability of this rainfall for plant growth.

Degradation destroyed the viability of the cattle section. Having been very profitable in the mid-1970's, it only broke even in the early 1980's (figure 9) and price and cost trends, if anything, should have improved profitability.

Cattle ranching imposes heavy, rather inflexible stocking regimes because of the intro of safari hunting. The introduction of safari hunting gave the game section a decided financial advantage and simultaneously allowed the range to recover. Clients pay between US$ 250 and US$ 750 a day for outfitting services, thereby raising revenue without affecting the resource base, and high fees are charged for each trophy animal shot. Soon after being introduced, the wildlife enterprise was performing as profitably as cattle had done at their (unsustainable) best, yet discussions subsequent to this analysis suggest profits improved steadily as Zimbabwe's political situation stabilized, as prices improve at some 25 percent annually (see below), and as the owners became more experienced at marketing.

Differences in veld trends between the game and cattle sections were determined largely by stocking rates, but the greater diversity of the wildlife may have helped this section by maintaining some balance between, particularly, the woody and grass components of these savannas (Walker 1979) as Taylor and Walker's (1978) measurements showed. These effects were important because meat yields from cattle and wildlife mirrored veld condition, cattle initially being superior, but losing this advantage as veld productivity declined rapidly, and as wildlife yields improved in response to partial veld recovery.

Thus medium-term ecological changes had a marked affect on financial performance, affirming the priority given to them when describing the economic use of rangelands. Degradation destroyed the productivity of the cattle section, turning it from a profitable enterprise into one that barely broke even, even without including the discounted costs of lost future production. Implications for cattle production are bad since output cannot be raised and world prices are stagnating. A wildlife enterprise selling only meat and products would have been unlikely to perform much better than cattle, especially as markets are under-developed.

Safari hunting

The introduction of safari hunting gave the game section a decided financial advantage and simultaneously allowed the range to recover. Clients pay between US$ 250 and US$ 750 a day for outfitting services, thereby raising revenue without affecting the resource base, and high fees are charged for each trophy animal shot. Soon after being introduced, the wildlife enterprise was performing as profitably as cattle had done at their (unsustainable) best, yet discussions subsequent to this analysis suggest profits improved steadily as Zimbabwe's political situation stabilized, as prices improve at some 25 percent annually (see below), and as the owners became more experienced at marketing.

Conclusions from Buffalo Range

The Buffalo Range study demonstrates the importance of ecological factors in rangeland economics, and that wildlife is both more profitable and environmentally sound than livestock systems. Less detailed surveys showed this was true of Zimbabwe's rangelands in general.
Figure 1: Map of Buffalo Range ranch showing the situation of the game and cattle sections relative to the Chiredzi River.
Figure 2: Changes in the main indicators of veld conditions, showing the general deterioration of the cattle section and the recovery of the game section between surveys done in 1973 and 1986.

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<td>Grass Height</td>
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CHANGES IN MAIN INDICATORS OF VELD CONDITION 1973 - 1986

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Figure 3: Changes in grass availability, and the effects of this on Buffalo Range game and cattle sections between 1973 and 1986.
Figure 4: A comparison of cattle and wildlife systems on Buffalo Range Ranch showing trends in range condition, the effects of this on meat production, and the effects of the two systems on their productivity.

Trends in Range Condition

Trends in Cattle and Game Production

(kg meat per hectare)

Note how the improving condition of the game section results in improving meat yields. The reverse is true of the cattle section.
Figure 5: Rainfall on Buffalo Range Ranch
Figure 6: Stocking intensity on Buffalo Range Ranch
Figure 7: Relationship between range condition (i.e. cumulative overstocking) and cattle herd performance (i.e. calving rates), showing that declining range condition caused by over-grazing resulted in rapidly declining herd performance on Buffalo Range cattle section.
Figure 8: Trends in cattle productivity (kg livemass gain per hectare) on Buffalo Range, showing the steady improvement until the mid-1970’s, then the dramatic decline caused by the degradation spiral sparked off by the heavy over-grazing during the 1970 droughts.

Cattle Productivity Changes
Livemass Gain per Hectare
Figure 9: Cattle profitability on Buffalo Range, showing a steady improvement until 1975, then a disastrous declines because costs remained constant (there were the same number of cattle) but income declines rapidly (as cattle productivity declined rapidly in response to deteriorating range condition).
Annex 4

NOTES ON THE SAFARI HUNTING INDUSTRY

Introduction

Safari hunting is a lightly consumptive use of wildlife, killing and removing a small proportion of animals from the population. The 'product' sold is really the experience of tracking and killing animals, the services that go with this, and the prestige of taking home the trophy. This high value means that a trophy-quality animal is worth a great deal more if sold to a sport hunter than if harvested for its meat and hide.

In terms of impact on the environment, safari hunting may be less disruptive than game viewing because it involves far fewer people and vehicles and the quality of the environment has to be maintained both for aesthetic reasons and to ensure that a wide range of high quality trophy animals is available. Safari clients each pay some ten times what foreign game viewers do, but the smaller number of clients reduces economic multipliers since larger numbers of tourists create more and wider-spread employment, both directly, and indirectly through the sale of curios. However, safari hunting usually uses areas where the density of animals is too low for game-viewing, or remoteness makes low-paying game-viewing safaris non-viable.

Safari hunting is one of the most profitable ways of using wildlife. It is especially important to local communities because it can generate large revenues quickly, and because this is the most lucrative way of using most wildlife populations, the exception being areas that can support intensive or expensive tourism. It is also easily managed by local communities, since benefits are easily extracted and controlled. However, the ability to package animal into hunts, and the way in which hunting is managed has an important influence on financial returns and needs to be explained, with Tanzania, for instance, earning only one fifth of the income that Zimbabwe would from a similar resource (Tanzania Government, 1988). Safari hunting has been the catalyst for most wildlife programmes in southern Africa, and could play this role throughout eastern Africa and even the forested zones where reasonable numbers of animals are present.

Quotas

It is often felt that trophy hunting depletes wildlife populations. In fact the reverse is true. The marketing of safari hunting depends very much on the quality of trophies offered, and this in turn requires that the population is not over-harvested. Most trophies are mature males, rather than old males where horn wear begins to exceed growth. To ensure that clients obtain mature males, it is essential that the population is managed so that young males can mature into this class, therefore dictating that offtake rates are kept to 3% for small antelope, 2% percent for larger ones, and 0.5 percent for elephant. Predators can be hunted more heavily (5%) because they have litters and breed faster. These low harvest rates ensure that populations increase, and, if the ultimate objective is a game-viewing enterprise, is a useful means of maintaining positive cash flows for the ten to fifteen years it takes wildlife populations to become sufficiently numerous to support these. Since safari hunting utilizes far less than the maximum sustainable yield of populations, it is often necessary to control populations by cropping game.

In many proposals for wildlife utilization programmes, much emphasis is put on ecological surveys to establish and manage wildlife populations. This is useful, but expensive, and have high margins of
uncertainty for most species, except the large, easily seen animals like elephant. More important than intensive surveying, is a system of records that permits adaptive management. Booth and Jones (pers. comms.) developed a useful system from which the initial estimates of sustainable trophy harvesting rates were derived. If the following records are kept and plotted, trends will soon be apparent and offtake can be adjusted accordingly:

1) average size of trophy for each species using standard Rowland Ward or S.C.I. measurements;
2) average age of trophies for each species. This is easily done by comparing lower jaws with a board on which a full series of aged jaws is affixed;
3) indices of abundance from formal surveys (aerial or road), or well kept records of animals seen per distance travelled.

Such recording systems greatly improve the efficiency of management, and allow quotas to be set such that trophy quality is maintained. It is more difficult to prevent a disruption of social structures with hunters, for instance, often shooting 'lone bulls' which, in fact, are territorial males. Guidelines to advise hunters on the repercussions of such actions are not available and would be useful since many factors are species specific.

Allocating quotas into "hunts"

Booth and Jones (1984) were also instrumental in raising the value of safari hunting, by recognizing the importance of 'bag' composition, and therefore of constructing quotas (perhaps from different areas) to provide 'balanced hunts'.

Trophy hunting is marketed internationally, and the concepts and prices described below are applicable throughout Africa. This makes it simple, given the wildlife populations in an area, to predict income levels that can be attained, and to know whether hunting should be complemented by species from elsewhere. An understanding of the management and revenues from hunting is essential in bargaining with safari outfitters, and therefore in maximizing revenues to landholders. In general, landholders have sold trophies to outfitters for far less than they could have, with the added negative effect that the country loses foreign exchange since outfitters usually only repatriate sufficient funds to cover local costs.

There are four main categories of game:

a) big-game

The 'big five' include elephant, lion, leopard, rhino and buffalo, but rhino are no longer hunted. Each such trophy supports about five days of hunting (leopard slightly less and elephant more), and elicits high daily charges. Buffalo are important because they can be produced in large numbers, whereas cats are predators and therefore not abundant, while elephants and rhinos breed slowly.

b) large plains-game

Includes species like sable, roan, waterbuck, eland, kudu, nyala, tsessebe, hartebeest, topi and zebra. These each support one to two days of hunting, but on their own are sold as plains-game safaris for $300 or less per day. The plains-game portion of a bag should include four to five large animals for a ten day safari, or three for seven days, the hunt being completed with other animals.

c) small plains-game

Include impala, gazelle, springbok, warthog, bushpig etc. These are useful for filling in hunts.

d) "rats and mice"

Includes small antelope (duiker), small carnivores (jackals, genets) etc., again useful as fillers.

Hunts are generally categorized according to a key species, with common categories being:

- 28-day big-four hunt (no rhino, thus no big five hunts)
- 21-day elephant hunt
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A 10-day plains-game hunt earns $2,500 daily rate. A buffalo sold on its own would support five days of hunting at $500/day, thus earning $2,500. Selling these hunts separately earns a daily rate of $5,000, whereas combining them into a 14-day buffalo hunt (not 15-days because most Americans have two weeks leave) earns $7,000, or 40 percent more. It also lowers transport and administrative expenses, makes for easier marketing because buffalo hunts are in great demand, and the number of animals shot per day tends to decline as the quality of the hunt increases thus allowing the same quota to support more hunting days -- on a big-game safari about 0.7 animals are shot each day but this increases to 1-1.5

Trophy fees for any species are fairly uniform. However, the way in which species are combined greatly affects the daily rate and the length of hunt, both of which have a huge bearing on the overall price of a hunt. Charges, and the length of the hunt, increase stepwise with the addition of dangerous game (i.e. elephant, lion, leopard, buffalo). Thus a ten-day plains-game hunt (about ten animals) at US$250/day switches to a 14-day big-game hunt at US$500/day with the addition of a buffalo, to a 21-day hunt at US$750/day when adding a lion or elephant, or 28 days when adding both. An example, extracted from a brochure, shows the value of combining plains-game with big-game.

Foreign hunting clients pay two basic charges:

a) a "daily rate" to cover safari services; and
b) a "trophy fee" for each animal shot.

While there are enumerable permutations, an example explains the importance of packaging hunts carefully.

### Species Trophy fee

<table>
<thead>
<tr>
<th>A 'bag' of plains-game:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sable</td>
</tr>
<tr>
<td>Bushpig</td>
</tr>
<tr>
<td>Duiker</td>
</tr>
<tr>
<td>Eland</td>
</tr>
<tr>
<td>Grysbok</td>
</tr>
<tr>
<td>Impala</td>
</tr>
<tr>
<td>Kudu</td>
</tr>
<tr>
<td>Steenbuck</td>
</tr>
<tr>
<td>Warthog</td>
</tr>
<tr>
<td>Wildebeest</td>
</tr>
<tr>
<td>Zebra</td>
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<tr>
<td>add:</td>
</tr>
<tr>
<td>Buffalo</td>
</tr>
<tr>
<td>Lion</td>
</tr>
<tr>
<td>Elephant</td>
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</table>

<table>
<thead>
<tr>
<th>Bag Trophy fee</th>
<th>Daily Rate</th>
<th>Total D-rate</th>
<th>Value of hunt</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,150</td>
<td>10</td>
<td>250</td>
<td>2,500</td>
</tr>
<tr>
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<tr>
<td>7,550</td>
<td>21</td>
<td>750</td>
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<tr>
<td>15,050</td>
<td>28</td>
<td>750</td>
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</table>

A 10-day plains-game hunt earns $2,500 daily rate. A buffalo sold on its own would support five days of hunting at $500/day, thus earning $2,500. Selling these hunts separately earns a daily rate of $5,000, whereas combining them into a 14-day buffalo hunt (not 15-days because most Americans have two weeks leave) earns $7,000, or 40 percent more. It also lowers transport and administrative expenses, makes for easier marketing because buffalo hunts are in great demand, and the number of animals shot per day tends to decline as the quality of the hunt increases thus allowing the same quota to support more hunting days -- on a big-game safari about 0.7 animals are shot each day but this increases to 1-1.5
Table 2: Value of wildlife trophies and products in Zimbabwe (1989).

Data used to derive the value of wildlife products October 1989

<table>
<thead>
<tr>
<th>Species</th>
<th>Body Wt</th>
<th>Dressed Wt</th>
<th>Total Wt</th>
<th>Total Meat Value</th>
<th>Total Skin Value</th>
<th>Total Meat &amp; Skin Value</th>
<th>Trophy Fee /</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>kg</td>
<td>kg</td>
<td></td>
<td>$</td>
<td>$</td>
<td>$</td>
<td></td>
<td>$</td>
</tr>
<tr>
<td>Elephant (M)</td>
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<td>1,200</td>
<td>2,400</td>
<td>2,400</td>
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<td>21,900 **/</td>
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<tr>
<td>Elephant (F)</td>
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<td>800</td>
<td>1,600</td>
<td>1,500</td>
<td>1,500</td>
<td>3,100</td>
<td>2,500</td>
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<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
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</tr>
</tbody>
</table>

*/Many ranchers charge safari operators much more per animal than this official unit trophy fee.

**/Grand total is based on recent auction prices and is therefore greater than sum of skin, meat, ivory and official trophy fee.
on plains-game safaris. Animals are used more efficiently by adding valuable trophies to raise the daily rate, and lesser species to lengthen the hunt.

For these reasons, the situation where a client takes a large number of big-game animals is inefficient and should be avoided, while the combination of big-game and plains-game should be facilitated. Inflexible marketing systems in Tanzania, for instance, entitle a client to take an elephant, lion, leopard and two buffalo on a 21-day hunt. If the operator could negotiate this quota, he could offer an elephant plus buffalo on a 15-18 day safari, a lion and buffalo on a 10-15 day safari, and a leopard on a 7-10 day safari, thereby generating 42-58 days of hunting instead of 21 using the same animals supplemented by plains-game (Tanzania Government, 1988).

Animal values and trophy fees

Table 2 gives the value of animals and animal products in Zimbabwe. The prices of products only apply to countries that have markets for these, namely Botswana, Namibia, South Africa and Zimbabwe, but the government trophy fees are a fair indication of values to landholders throughout Africa. Landholders should aim to get 50 to 100 percent more than this fee from outfitters, whether this comes from setting higher fees for each animal or from charging for the use of an area. The markup will depend on how easily the quota can be 'balanced'; the quality of hunting, including the size of trophies and the likelihood of finding them during any hunt; and the logistical cost of organizing hunting in the area. Logistics depends on access, and the size of the quota since the unit overhead of establishing an operation where the quota is large is lower. Thus, in an area with plentiful elephants (quota of six or more) and the chance of, say a sixty-seventy pounder, the landholder might charge an operator $9,000 for a trophy bull elephant, but where the quota is four or less, he might only get $5,000.

One of the most valuable inputs into developing community wildlife programmes, therefore, is advice regarding charge structures. By understanding the mechanism and financial margins associated with safari hunting, the Zimbabwe government greatly increases the value of wildlife to landholders through a price leading policy. Detailed work is continuing, including assessments of economic costs etc., and these results will be invaluable for improving landholder's returns from wildlife ventures.

In addition to the income earned by the landholder, the outfitter has to cover costs and make a profit. Thus the client pays considerably more for animals than the figures just given. To take the example of an elephant hunt, a client will pay $7,500 to $10,000 plus a levy of $50-100 per kg for any ivory over, say, 30 kg. He will also have to buy 21 days of hunting at $750 before he is permitted to shoot an elephant, seven days of which can be attributed directly to the elephant, as can the incremental daily rate on the other animals sold. Each elephant therefore earns him some $15,000 - 20,000, twice as much as he pays the landholder. For this reason, landholder communities have been encouraged to capture this extra value but, for the reasons explained below, this may not be sensible.

Animals needed to initiate communal programmes

The very high value of elephant hunting makes it an important catalyst for communal wildlife programmes, quickly changing community attitudes from wanting to eliminate 'troublesome' elephant to perceiving them as an important development asset. Buffalo can play the same role, having a high value because they can convert hunting from the cheaper plains-game to expensive big-game category and are present in high numbers. Lion and leopard cannot fulfill this role, since their densities are lower and they conflict seriously with humans and domestic livestock. Most communal schemes initiated in Zimbabwe so far have, indeed, depended on hunting elephant and buffalo.

There is no experience of developing community programmes using only plains-game. Plains-game operations are less profitable and require more effort to develop since a wide-spectrum of species (three large animals and several smaller ones is the very minimum) is required and these animals are more prone to poaching than big-game. Moreover, the lower value of a
plains-game hunt means that it cannot cover the costs of transporting clients into remote areas, capital costs, or initiating new enterprises, in the same way that big-game operations can. Nonetheless, most game ranching operations were founded on plains-game hunting, aided by a slow phasing out of cattle, reasonable communications, and experience gained from neighbors. Furthermore, the improving profitability of such operations is accelerating the switch from cattle to wildlife, and it may be that communal programmes could now be initiated with plains-game, particularly if diverse populations are already present or valuable species like sable are available.

Investment and costs of outfitting safaris

A safari operator requires a camp, which may vary from luxury permanent accommodation to tents. An average semi-permanent camp will cost some $50,000 to $100,000 to establish including living quarters, camp equipment, water supplies and butchery facilities. Reliable vehicles are also essential: a quota that supports 250 days of hunting annually, requires two hunters and a minimum of three 4x4 hunting vehicles.

The main variable costs are transport of 60 - 100 km per day plus arrivals and departures; hire of professional hunters for about $75-100 per day; wages for staff including cooks, skinners and trackers, and some unskilled labor; food, beverages and accommodation which are relatively cheap; and administration. Safaris thus cost between $100 and $400 in daily variable costs, a reasonable average for big-game safaris being $300.

Economies of size

A single hunter can guide clients for about 150 days a year. Economies of scale suggest the most efficient operations have two to three hunters, with two to three clients (preferably in the same party) in camp at any one time. This reduces overheads, including labor, camp facilities, transport to and from international airports etc. Larger camps might have more scale economies, but clients pay for exclusivity and parties of more than three, while common, are not the norm. Thus not only is the breakdown of the quota into individual hunts important, but the size of quota given to each operator greatly affects profit levels. If it is too small costs will rise, and an operator may have to seek additional hunting elsewhere if less than 150 hunting days are available. The optimum breakdown is probably somewhere around 300 days per camp, so large quotas can be split between competing operators (creates competition) or given to one company that splits its operations (may have scale advantages). Booth (in Tanzania Government, 1988) explains the methodology for assessing the number of days any particular quota will support.

Marketing

Personal reputations are important, and hunting is sold by word of mouth and using agents. Over half of clients are Americans, with Europeans also comprising a large share, but an outfitter’s clientele depends very much on his preferences. In February, most outfitters travel to hunting conventions in the U.S.A. and Europe, visiting past and potential clients and any programmes must include these marketing trips.

Marketing options for rural communities

The production of safari hunting comprises two separate activities, although these are often done by a single concern:

a) the production of animals (and wilderness);

b) the marketing of these animals.

A communities’ strength lies in producing animals, and its primary role is to regulate the use of habitats and wildlife by, for instance, controlling poaching or ensuring that settlement does not surround water so that animals have access to it. To achieve this, the community leaders must make people aware of the benefits from wildlife, in part through communication and in part by building appropriate incentive structures.

Marketing, however, requires capital, it entails risk, and it needs skills (and perhaps cultural connections with clients)
which rural communities do not have. Unlike many private landholders, who prefer to market their own safaris to capture the added value, rural communities are better advised to obtain marketing requirements from outside. There are several ways that a community can acquire these, and the strengths and weaknesses of alternative systems will be appraised.

**Marketing hunting concessions**

A common method of selling hunting is as a concession. This may be auctioned or sold as part of a management agreement as mentioned below, but fixed charges are the more usual, though a less efficient, method of sale. In Zimbabwe, prices rose enormously once competition was introduced.

Tenure is an important aspect when selling a concession. Outfitters can obviously afford to pay more the longer their tenure because this reduces the overhead costs of establishing camps; reduces costs and improves hunting as hunters become familiar with their areas; and reduces marketing uncertainty by allowing hunts to be booked several years in advance. Whatever the case, concessions and quotas should be allocated at least six months in advance of the hunting season to facilitate marketing.

Against the advantages of long term tenure are the problems of acquiring an unsatisfactory operator for a long period. The industry is also developing rapidly, so long term agreements reduce flexibility and the ability to capitalize on new developments. The Zimbabwean Parks authority, for instance, declined to entrench a hunting system or define hunting policy in the mid-1980s because of the flux in the rapidly growing and evolving industry. When selling hunting for more than a year in advance, a costly mistake is to ignore inflation, or the rising value of hunting, and these must be built into charge structures using profit sharing, payments related to gross income or client throughput, etc.

Concession, or quotas, can be sold in several ways, which are briefly appraised:

*a) Auctions*

Auctioning is probably the most lucrative option for selling hunting, since the supply of animals in most countries is limiting the expansion of the industry and there are enough safari outfitters to generate intense competition. An important characteristic of auctions is that they are resilient to corruption. Their disadvantage is that communities cannot choose suitable operators.

Animals can be auctioned after being split into hunts, with the important disadvantage that there is no continuity of hunters and the result that hunters invest little effort in management. Alternatively the entire quota can be auctioned, with various degrees of tenure (1-5 years). While this is lucrative, the community cannot select an operator of its preference, and good relationships between outfitter and community are essential when initiating wildlife programmes. Therefore auctions are not recommended for initiating programmes, but may be an option once communities gain management experience.

Tenders are similar to auctions, but are less lucrative than auctions and more prone to corruption.

*b) "Tender a proposal"*

Community wildlife programmes that are being initiated often have twin aims: the development of facilities and the resource, in addition to acquiring the income that encourages the acceptance of the programme. To achieve these twin objectives, and also to have some say in choosing the outfitter, a community can ask interested outfitters to 'tender proposals' that include payments for the quota as well as a management contract to develop or maintain roads, water-points, fences etc. Some income is lost, but the overall result is often savings from more efficient, and more rapid, development.

*c) Personal agreements*

Most game ranchers sell animals through personal contacts. This may not be an option for rural communities who have little contact with safari outfitters, hence the need to ask for proposals or to auction. However, many some communities will have
outfitters with whom they can work well and stable relations often result from such agreements. In Zimbabwe, for instance, such agreements are made with neighbors who see the success of community wildlife programmes as essential to their own survival. There is potential for such cooperation throughout southern Africa, indeed most successful schemes have depended on it. Safari outfitters are present throughout Africa, and their skills should be harnessed to develop community wildlife programmes.

Raising landholder incomes

A body (government or private) to advise communities and the pros and cons of various deals, and to ensure that contracts are water-tight (but with appropriate escape clauses) is important and can significantly raise the value of wildlife to rural communities. This body must be well appraised of the industry, prices, trends etc.

Landholders have tended to be exploited, and many still are, because they are unaware of the value of animals. Competition may overcome these problems, but hunting industries need to be monitored as a check. In Zimbabwe, this was to some extent achieved by auctioning animals in one Safari Area. This was complemented by

1) monitoring the gross returns from hunting (payments are certified by banks) relative to the number and value of animals shot, using legally required post-hunt return forms submitted for every client entering the country and necessary before trophies can be exported. The system was initiated to ensure that payments entered the country, but leakages still occur though they are considerably lower than in many other countries. Leakage is a common problem afflicting Africa's closed economies. A better way of ensuring monies enter the country, instead of checking on the legality of each post hunt return form which is difficult and time consuming, is to use the same forms with bank certified payments, simply closing down the operation that earns the lowest return per unit value of animals shot each year.

2) monitoring outfitter's charges using brochures (a legal requirement is to produce and submit a brochure) and inspecting international hunting magazines. Care must be exercised since outfitters may produce a brochure they submit locally, and the real brochure that they use for marketing.

3) cooperating with outfitters in the analysis of their accounts. This is an improvement on the above measures since it includes costs. Fortunately, many operators using communal area wildlife are very concerned about ensuring the survival of this, and of creating good-will between themselves and the community, and run an open book policy. Work done by the WWF Multi-Species Project in Zimbabwe began monitoring several operators in this way in 1989, and this is greatly improving the understanding of the operation of this industry, the roles of community and outfitter, and the best ways of combining these.

Joint ventures

About half the income from wildlife programmes is captured by the outfitter, so 'joint ventures' whereby communities gradually assume this function are often proposed. This process has gone as far as communities hiring their own professional hunters and acting as outfitters themselves (e.g. Dande Communal Area, Zimbabwe). Financially, communities gain little from taking over outfitter functions, and in fact are likely to lose through reduced efficiency and reduced competition between outfitters bidding for their quotas. It also does little to generate management capacity since, while they might be running their own operations, they still have to hire in expertise. They also then have to carry risk and capital expenses, and although these may be picked up by donors, wildlife programmes can be self-generating and should remain self-contained where possible.

Communities are probably better advised to contract marketing, and capital development functions (e.g. fence construction) to private firms. This avoids risk, capital expenditure etc., but leaves the community fully in control since they
dictate policy and terms. They need to
develop the capacity to direct activities, not
necessarily to manage them all themselves. An
important spinoff of some community
programmes, in fact has been the initiation
of business deals between the community
and private firms.

The combination of private and
communal sectors improves efficiency
through a division of labor, it exposes
communities to dealing with businesses, and
it helps to break down, often surprisingly
easily, the mistrust and cultural barriers that
have separated these extreme groups. The
reason it works so well with wildlife is that
the capital and skills of the commercial
operators complement the wildlife resource
and the long term tenure and land use
control that the peasant communities can
offer to substantial mutual advantage. These
agreements are easily made.

There are several reasons why co-
operation between private operators and
communal areas is mutually beneficial.
First, they can combine plains-game with
big-game, since few areas contain large
numbers of both. These are best sold in
combination because of the large increment
in daily rate associated with the addition of
big-game. Second, communal area wildlife
is worth little unless combined with the
capital and marketing expertise of the
private sector. Third, the economies
associated with long-term tenure, and the
shortage of trophy animals, encourages
private operators to develop good
relationships with rural communities. The
result is a synergistic welding of private
capital and skill with community wildlife
and human resources.
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