

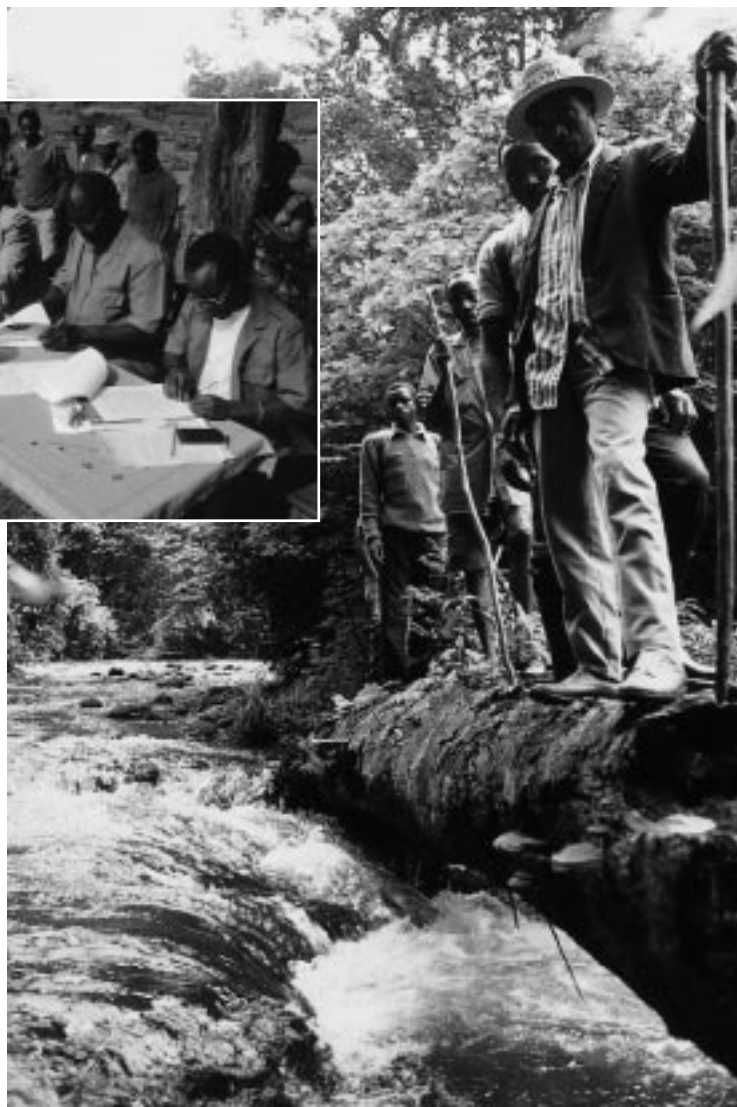
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Conservation through community use of plant resources

Establishing collaborative management at Bwindi Impenetrable
and Mgahinga Gorilla National Parks, Uganda

R.G. Wild and J. Mutebi



People
and
plants

*to
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This publication is based on a report prepared for CARE-DTC. CARE's Development Through Conservation (DTC) project, initiated in 1988 under an agreement between USAID, WWF and CARE, has supported environmental conservation in south-west Uganda with particular focus on the two national parks, Bwindi Impenetrable National Park and Mgahinga Gorilla National Park and the adjacent communities. DTC has supported Uganda Wildlife Authority in setting up the innovative multiple use programme in which communities harvest non-timber forest products from the two parks. The People and Plants Initiative of WWF, UNESCO, and the Royal Botanic Gardens, Kew, has supported CARE-DTC's work through sponsorship, research and information gathering, ethnobotany training, and publication of the project's experience in implementing multiple use.

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Conservation through community use of plant resources

ESTABLISHING COLLABORATIVE MANAGEMENT IN BWINDI IMPENETRABLE AND MGAHINGA GORILLA NATIONAL PARK, UGANDA

Abstract

Biodiversity conservation in Uganda has strengthened as the country has emerged from political instability. From 1991-1993, six new forest national parks were declared, adding to the four existing savanna parks. Facing the challenges of increased responsibilities in the changing political and social context of Uganda, Uganda National Parks (UNP; since 1996: Uganda Wildlife Authority, UWA) is actively exploring local participation and benefit sharing with communities for effective park management.

Since 1988, the Development-Through-Conservation (DTC) project undertaken by CARE International in collaboration with government institutions, local communities, other NGOs and donors has been attempting to reconcile local needs with forest conservation at Bwindi Impenetrable and Mgahinga Forests, which were declared National Parks in 1991 after previous protection as Forest Reserve and Animal Sanctuary, respectively. These two parks are Afromontane forest blocks, remnants of a forest which once extended over much of south-west Uganda and into Rwanda and Zaïre. There is an acute need for forest resources among the dense human populations surrounding the parks (200-400 people per km²) and virtually no forest now remains outside the park boundaries.

The decision was taken by UNP to allow the use of resources from within the protected areas as one way of benefit sharing. Implementation of this decision required a process of working with communities to plan and effect collaborative management of forest resources between UNP and civil parishes surrounding the forests. Allowing resource use from within the park boundaries is in part a recognition that local communities should not have to bear all the costs of conservation; at Bwindi and Mgahinga, the collaborative management process revealed that the designation as National Parks entailed considerable costs borne by the communities which needed to be addressed if forest conservation was to be effective.

In 1992 at Bwindi, staff from the park and the DTC project with residents of three of the civil parishes adjoining the park embarked on a

pilot process of planning and evaluating resource use. This process has resulted in written agreements being signed for collaborative management of forest resources. At Mgahinga Gorilla National Park, this process began in 1993.

Crucial to the process of collaborative management are community organizations which have the confidence of local people, such as the *abataka* (citizen's group), the *engozi* (stretcher groups) and the local Resistance Councils (RCs) as well as the knowledge of local resource users such as herbalists, basketmakers and beekeepers.

In working with communities, tools were drawn and adapted from Participatory Rural Appraisal and Logical Framework Analysis. A system for rapid assessment of the vulnerability of useful species was tested, which combines social and biological data drawn from scientific literature, the knowledge of local resource users and ecological principles, in order to identify species where the margin between sustainable use and over-exploitation is narrow. Through a series of village workshops and forest surveys, each parish established a Forest Society with management objectives and elected members. Parishes nominated people entitled to harvest specific resources from carefully selected areas of the forest known as multiple-use zones. For each resource, the list of nominated harvesters, quantities harvested and timing of harvesting were set out in Memoranda of Understanding between UNP and the individual parishes. These MoUs also make provision for implementation, enforcement, monitoring and modification.

Harvesting under these agreements began at Bwindi Impenetrable in late 1994. The resource users collect small quantities of resources and spend little time in the forest. Monitoring of each activity has been initiated and mechanisms have been put in place to minimize interaction with mountain gorillas. Relations between communities and park staff have begun to improve and move beyond conflict and hostility.

Although it is too early to evaluate the long-term impact of resource use within Bwindi Impenetrable National Park, the lengthy process of sharing information and negotiating agreements should improve the chances of success.

The relationships of designated resource users with the community as a whole, and the role of community leadership in collaborative management, are important factors affecting the success of the enterprise. To expand this approach to forest conservation beyond the pilot phase, Uganda Wildlife Authority (UWA) needs to continue building its capacity for resource assessment and community interaction. While community support for conservation should reduce the need for heavy law enforcement, UWA must still retain the capacity to enforce the park rules and agreements made.

Negotiating resource use from within these protected areas has returned a measure of equity to local people, and better relations between the parks and adjacent communities are likely to reduce the risk of deliberate forest destruction during times of political instability. Collaborative management of resource use is likely to prove a more sustainable long-term strategy than the previous “no use” approach.

While it is now accepted that local communities need buffering from the effects of biodiversity conservation, the term “buffer zone” carries the connotation of only buffering the protected area from the local community. It is recommended that the term “support zone” is used instead, couching the relationship between communities and protected areas in more forward-looking terms. A definition is offered.

The lessons learned from applying this collaborative management approach at Bwindi Impenetrable and Mgahinga Gorilla National Parks contribute to the ongoing debate about what is effective and appropriate conservation. This experience suggests that co-management has great potential for effectively including local communities in the management of protected areas in Uganda and elsewhere in Africa, and can also be of value for resolving natural resource use conflicts beyond those engendered by protected areas.

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The international debate over conservation strategies has often become an opposition between nature and people orientated conservation (Peres, 1994). A response to alarming habitat and species losses has been a tripling in both, surface area and numbers of protected areas. Communities adjacent to parks have suffered from protectionist measures (West & Brechin, 1991; Colchester, 1994). Local communities have often been hostile to conservation efforts, particularly when such activities result in reduced access to resources, employment and income. In many cases they have been evicted from their own lands with considerable social disruption. Gradually conservation organizations are acknowledging these problems and trying to become more socially responsive (Kamstra, 1994). It is now generally recognized that local communities should not have to pay for national or global conservation.

A general worldwide trend during this century has been increasing control over land by the state. In Uganda the first forestry and wildlife legislation was enacted in the 1890s. This began a process of state environmental control which, over the following fifty years, established a system of forest and game reserves (Kayanja & Douglas-Hamilton, 1984). Resource rights were thereby taken away from indigenous communities (Kamugisha, 1993) and it has been argued that this process may have, in some countries, led to the loss of biodiversity (Alcorn, 1993). Many biologists have, therefore, called for an alliance between indigenous peoples, conservation organizations and governments in an attempt to stem the destruction of natural areas in general, and of forests in particular.

Integrated Conservation and Development (ICD) has been proposed as a model, and Buffer Zone or ICD projects are testing the model in response to the following questions: (1) Can the burden of conservation on local communities be reduced? (2) Can ways be found to work better with communities? (3) Can land be managed so as to reconcile conservation with development?

Suggested ways of reducing the burden of conservation on local communities include: tourism-revenue sharing, tourism-related enterprises, agroforestry, improved agricultural practices, rural development, conservation education and the use of state-owned resources. The latter is the focus of this paper.

The best known African initiative involving resource use is the Zimbabwe CAMPFIRE programme, which has allowed communities to use, or benefit from the use of, state-owned wild mammals found on communal land (Child,

1996). Early examples of resource use within conservation areas come from the cutting of wetland plant species in Umfolozi Game Reserve and the Greater St. Lucia Wetland Park in South Africa, which began in the 1970s (Cunningham, pers. comm.). Identifying resource use as conservation strategy for forests has led to a revived interest in non-timber forest products (FAO, 1991; Plotkin & Famolare, 1992; Godoy & Bawa, 1993). Also recognized is the role that non-timber forest products can play in community development (Falconer & Koppel, 1990). In acknowledging the great interest in the sustainable use of wild species as a conservation tool, IUCN has developed draft guidelines on the ecological sustainability of the use of wild species (IUCN, 1993), which are now being tested (IUCN, 1994).

Recently, approaches to community involvement have evolved which encourage community participation and valuing indigenous knowledge (FAO, 1989; Chambers, 1992). Though local participation in conservation is now part of most conservation plans, the actual methods for achieving this are not well developed (Kamstra, 1994). Indigenous knowledge has been undervalued in the past, particularly by governments and scientific researchers. Protected areas in regions of high population density are often referred to as islands in a sea of rural farmers; in terms of local knowledge the opposite image is apt – young graduate managers with inadequate training, no experience and precious little support can be thought of as islands of ignorance in a sea of knowledge, as local resource users often have extensive and detailed knowledge of the area and the species.

The development of ICD has not been without problems - questions have been raised over resource use, sustainability, buffer zones and the definition of "the community". Controlled harvesting from within protected areas is one of the most obvious ways to reduce cost to local communities of conservation measures, as loss of access to these resources is the main cost communities bear. Conservationists, however, have mixed feelings about resource use as they have been fighting uncontrolled resource use for many years. It is seen as a double-edged sword, and an immediate question asked is "*Is it sustainable?*". Sustainability itself is a hotly debated word (see for example Noss, 1991; Costanza, 1993; Erlich & Daily, 1993; Helfman, 1993; Holling, 1993; Lee, 1993; Ludwig *et al.*, 1993; Meyer & Rubenstein, 1993; Willers, 1994). The results of the sustainability debate are not conclusive but a number of useful viewpoints have emerged.

- Sustainability should be defined in each context.
- Sustainability should be seen as an ideal like liberty and equity.
- There is little alternative than to attempt sustainable use.
- An interdisciplinary approach is needed linking research, policy, social and economic aspects.
- Conflict, which often revolves around property rights, undermines management, thus ownership and property rights need reexamining.
- Proposed operations should demonstrate sustainability, with the onus on the resource users to demonstrate sustainability.
- Uncertainty about resource availability needs to be incorporated into decision making and research.
- There is a need to involve all interested parties or stakeholders in planning.
- Extraction rates need to be well below the maximum sustainable yield.
- The way organisms persist in their environment needs to be better understood.

The buffer zone concept was developed as an attempt to reconcile conservation and development (Batisse, 1984; 1986; 1990; 1993; McNeely & Millar, 1984; Mackinnon *et al.* 1986). Many Integrated Conservation and Development Projects (ICDPs) and Biosphere Reserves (UNESCO, 1995; 1996a; 1996b) have proposed or implemented buffer zones but a number of problems with the concept have been raised:

- Apart from a few examples, buffer zones tend not to be well defined;
- there is lack of consensus on objectives, loca-

tion, shape and permitted uses;

- social benefits from buffer zones are either not defined or unlikely to be sufficient;
- emphasis is on protection while community benefits come second;
- there are unknowns and uncertainties regarding sustainability of resource use;
- there is often lack of legal authority to establish or manage buffer zones.

The concept was developed further during an international workshop on buffer zone management in Africa, held in Uganda in 1992 (Brown & Wyckoff-Baird, 1992). This workshop included representatives of communities living adjacent to parks, thus adding depth to the discussions. The resulting definition of a buffer zone, although perhaps vague, struck a better balance between social and ecological aspects than many previous definitions. It also recognized that buffer zones can be either inside or outside protected areas. Our experiences working in Bwindi Impenetrable and Mgahinga Gorilla National Parks have led us to suggest “support zones” rather than “buffer zones”, recognizing that adjacent communities need buffering from conservation measures as much as the conservation areas need to be buffered from the communities (Box 1).

ICDPs also have problems defining who is “indigenous” (Alcorn, 1994) and how close to a national park a community should be considered local. Concern has been raised that indigenous or local groups and conservationists not only define biodiversity and its conservation in different ways, but that their agendas may not entirely coincide (Redford & Stearman, 1993). Additional concerns have been expressed with ICDPs in the fact that there are also many exam-

Box 1. Definitions of buffer ...

“Areas adjacent to protected areas, on which land use is partially restricted to give an added layer of protection to the protected area itself while providing valued benefits to neighbouring rural communities” (Mackinnon *et al.*, 1986)

“Areas outside the protected area that are designed to protect parks” (Wind & Prins, 1989)

“Areas peripheral to a national park or equivalent reserve, where restrictions are placed on resource use or special development measures are undertaken to enhance the conservation value of the area” (Sayer, 1991)

“A buffer zone is an area inside or adjacent to a protected area where the harmonious relationship between the natural environment and the people is promoted” (Brown & Wyckoff-Baird, 1992)

“...relatively narrow strips of land on park boundaries, within which the “sustainable” use of natural resources will be permitted” (Wells *et al.*, 1992)

... and support zones

“Any area, often peripheral to a protected area, inside or outside, in which activities are implemented or the area managed with the aim of enhancing the positive and reducing the negative impacts of conservation on neighbouring communities and neighbouring communities on conservation” (Wild and Mutebi, this paper)

ples in history of traditional communities destroying the resources upon which they depend (Peres, 1994), and the difficulty in making the links between ICDP activities and the protected areas they are supporting.

Within such a context, this working paper recounts the progress of one ICDP, which has initiated controlled harvesting by local communities from within protected forest. Since 1988,

the Development-Through-Conservation (DTC) project undertaken by CARE International in collaboration with Ugandan government institutions, local communities, other NGOs and donors has been attempting to reconcile local needs with forest conservation at Bwindi Impenetrable National Park and to a lesser extent Mgahinga Gorilla National Park.

History of resource use and conservation in Bwindi Impenetrable and Mgahinga Gorilla National Parks

The Ugandan context: conservation policy and community politics

Uganda is actively trying to conserve its biodiversity. Since the National Resistance Movement (NRM) came to power in 1986, the country has been revising its conservation legislation, policies, network of protected areas and their management. A major change has been the recognition that local communities need to benefit from conservation if they are to contribute to it. Uganda has been experimenting with ways to increase the flow of benefits to communities. The limited use of plant resources from inside national parks by local communities is one such experiment, and this paper documents the process of establishing resource use from two national parks in the south-west of Uganda. Uganda has ten national parks which are managed by Uganda National Parks (UNP; since 1996: Uganda Wildlife Authority, UWA). Four are savanna, two are lowland forest and four are Afromontane forest parks. Activities at two Afromontane forest national parks, Bwindi Impenetrable National Park (BINP) and to a lesser extent at the Mgahinga Gorilla National Park (MGNP), are exploring new approaches to community access to forest resources, involving various local and national projects and institutions (Box 2, next page). The progress at BINP has contributed to developments and activities at other parks.

The early history of Ugandan state-led conservation follows the pattern of many British Colonies and Protectorates. In the early part of the 20th century, Forest and Game Departments were established to manage and exploit timber and wildlife resources, with a strong conservation emphasis. The balance of exploitation versus conservation has swung back and forth over the decades (Howard, 1991; Kamugisha, 1993). In 1952 Uganda National Parks was established

with an emphasis on wildlife (large savanna mammal) conservation. Use within the first three parks was restricted to tourism and this meant the exclusion and in some cases removal of neighbouring communities (Calhoun, 1991). The Act establishing UNP ignored community livelihoods and being openly confrontational, was difficult to uphold (Kamugisha, 1993). In its early implementation, community benefits and local sensitivity were, however, emphasized (Kayanja & Douglas-Hamilton, 1984). After independence from Britain in 1962, civil war prevented progress in conservation activities, and there was minimal protection, widespread poaching, encroachment and overuse of resources in all protected areas (e.g. UNEP, 1988; Howard, 1991). In addition, there was widespread deforestation and land-use change outside protected areas.

Since 1986 there have been significant conservation changes. Protection of many areas has increased and poaching and resource use was largely controlled. People who encroached have been evicted from many protected areas, sometimes with considerable controversy (Colchester, 1994). Six forest reserves were gazetted as national parks between May 1991 and September 1993. Not least of these conservation changes is that Uganda National Parks has moved away from pure protectionist policies and made significant moves toward participatory conservation.

The National Resistance Movement (NRM) Government introduced a grassroots system of political administration. This system, made up of Resistance Councils (RCs), builds up from village to parish to sub-county level and beyond. Elections are held at each level and an executive of nine people nominated. The RC system, which is accepted over much of country, has devolved real decision-making to the village level, and facilitated community-based management of natural resources (Box 3, next page).

Box 2. Actors involved in conservation in BINP and MGNP

Forest Department – FD: Government department under the Ministry of Natural Resources. Manager of Bwindi and Mgahinga Forests from the 1930s until 1991.

Game Department – GD: Government department under the Ministry of Tourism, Wildlife and Antiquities (MTWA). Secondary manager of the forests from 1930s until 1991. Merged with UNP in 1996.

Uganda National Parks – UNP: Government parastatal under MTWA. Assumed management of Bwindi Impenetrable and Mgahinga Forests in 1991 when they were gazetted National Parks. UNP is the lead agency in implementing resource use and has overall responsibility for the activity. Merged with GD in 1996.

Uganda Wildlife Authority – UWA: Successor to Uganda National Parks since August 1996, UWA's mandate includes tasks which were formerly assumed by the Game Department.

Impenetrable Forest Conservation Project – IFCP: WWF project established in 1986 to support the Game and Forest Departments in conservation and gorilla research. Initiated the Development Through Conservation (DTC) project and established a sub-project at Mgahinga, the Gorilla Game Reserve Project, which became the Mgahinga National Park Project. IFCP was institutionalized as ITFC in 1991.

Institute of Tropical Forest Conservation – ITFC: ITFC was established in 1991 as a faculty and research facility of Mbarara University Institute of Science and Technology. ITFC's primary objectives are: i) To preserve the biological diversity and the ecological wellbeing of Uganda's tropical forests and ii) To enhance the environmental quality of life of the people of Uganda. ITFC is developing a research and monitoring system for multiple-use and product substitution.

Development Through Conservation Project – DTC: DTC is an integrated conservation and development project managed by CARE International and funded by USAID. It supports both conservation and appropriate development activities around BINP and MGNP. Part of the project's remit is the development of low impact resource use and the establishment of buffer zones. It is also supporting sustainable agriculture, agroforestry and other development activities.

International Gorilla Conservation Programme – IGCP: IGCP is a collaboration of African Wildlife Foundation, World Wide Fund for Nature (WWF) and the Fauna and Flora Preservation Society (FFPS). At BINP it is supporting UWA in the establishment of gorilla based tourism. It is assisting the development of well-controlled multiple use of the forest that is consistent with conservation. It is providing guidance on methods to reduce risks of disease transmission between resource users and gorillas and on prevention of behavioural disturbance or range alterations of gorilla groups.

Park Management Advisory Committee – PMAC: A new UNP initiated committee consisting of elected community representatives and local administrators to advise park management on issues related to the community. Has no executive powers but its recommendations are taken seriously. One PMAC is formed for each park.

Box 3. Community leadership institutions

Abataka: The *abataka* is a traditional community organization among the Bakiga and refers to all the responsible adults within a geographical area, e.g. a ridge or hill. Irresponsible adults, although living in the area, may be rejected from the *abataka*, and become "endeme". The *abataka* can include related and unrelated families. *Abataka* leadership is drawn from community elders and includes a chairman, secretary and treasurer. There is no exact English translation but it is a village community or citizens group. The *abataka* solve cases before they go to the RC-I (village) level. The *abataka* of a geographical area may belong to one or several stretcher societies.

Ebibiina bya'engozi: The *ebibiina bya'engozi* is the stretcher society or group. These were formed in the 1980s to provide an ambulance service to the clinic. Membership is compulsory and there is a monthly fee. Due to the remoteness of the area a round trip to the clinic can be more than 50 km, and all members of the society are required to assist. To maintain this level of support, discipline is very tough. The penalty for being absent can be a drum of local beer (200 litres or the equivalent of US\$ 30). In addition the societies provide funeral services and small scale credit and deal with smaller cases such as land disputes. In some places the *ebibiina bya'engozi* and the *abataka* are synonymous.

The Resistance Councils: The Resistance Council (RC) system is peculiar to Uganda, and was introduced by the NRM Government. At the RCI level every adult member of the community (c.150 households), is a member of the RCI Council who elect a committee or executive of nine to manage the affairs of the village. All the committees in a civil parish form the RCII Council, which similarly elects a committee of nine. The system develops similarly through Sub-County (RCIII), County (RCIV) and District level (RCV). The RCV Chairman is the head of the District. The RC system has built on the indigenous decision making structures, has gained considerable acceptance in many parts of the country and allows significant local self determination.

The District Administration: The Civil Service of the District; at the lower levels this consists of Chiefs. Initially there was conflict between the Chiefs (appointed) and the RCs (elected), but roles have now become established.

Setting, past management and use of forest resources at Bwindi Impenetrable and Mgahinga Gorilla National Parks

The BINP and MGNP are Afromontane forests in the Kigezi region in south-west Uganda (Figure 1). Both were formerly Forest Reserves, gazetted in 1932 (BINP) and 1941 (MGNP), and Animal Sanctuaries, gazetted in 1930 (MGNP) and 1964 (BINP). Mgahinga was upgraded to a Game Reserve in 1964. Both forests were declared National Parks in 1991. The conservation importance of both sites has been well documented (*e.g.* Butynski, 1984; Howard, 1991; Butynski & Kalina, 1993; Cunningham *et al.*, 1993; Cunningham, 1996). Both forests support the endangered mountain gorilla (*Gorilla gorilla beringei*), as well as other rare primates. BINP is one of the richest forests in east Africa, with 205 species of tree, ten of which are found nowhere else in Uganda, 336 species of bird, including six species listed in the Red Data Book as well as 202 species of butterfly (Butynski, 1984). MGNP is less well known but has Afroalpine vegetation and Red Data Book bird species.

The forests of the area have a long history of occupation which probably dates to *ca.* 32000-47000 years ago (Cunningham, 1996). Forest clearance for agriculture is thought to have begun about 2200 years ago (Taylor, 1990; Taylor & Marchant, 1995) with the arrival of Bantu speaking peoples with iron-smelting technology.

Three main ethnic groups live adjacent to the forests, the Bakiga, the Bafumbira and the Batwa. The Bakiga predominate around BINP and the Bafumbira around MGNP. The Bakiga and the Bafumbira are agriculturalists. The Batwa were previously forest dwellers, dependent in part on hunting and gathering. They have a long history of trading their forest products for food from their neighbours. The Batwa have gradually been squeezed between conservation measures on the one hand and development on the other (Box 4, next page). The density of human population around both parks reaches 200 - 400 people per km², being among the highest on the continent. There has been rapid population increase, and the area has a 50 year history of out-migration to other parts of the country, which continues today (CARE, 1994b). Land use is intensive, with sorghum, millet, wheat, Irish potatoes, beans, peas, bananas, and cassava, the main crops grown. The wide crop variety reflects the altitude range (1100-2600m). Far from urban centres, there is little trade in agricultural produce to external markets and crops are sold on weekly local markets.

When Bwindi became a Forest Reserve (1932), it formed the central part of a large forest



Figure 1. Location of national parks in Uganda.

area which extended into Zaïre. The forested land outside the Forest Reserve was held under customary tenure by individual families and was gradually cleared for timber and agriculture. Aerial photo analysis for the Ugandan portion of the forest has shown that 29% of the forest was cleared between 1954 and 1991 (Scott, 1992). The Zaïre part of the forest has almost all gone and the total forest area cleared during the last forty years is likely to be close to 50%. There is virtually no forest now remaining outside the park boundary.

The Forest and Game Departments managed the forests under the Forest and Game Acts 1964. Both reserves had Forest Department Working Plans (Leggat & Osmaston, 1961; Kingston, 1967). At BINP timber exploitation was limited to "restricted species", felled by licensed pitsawyers. The Forest Act of 1964 made provision for the local use of minor forest products (Leggat & Osmaston, 1961; Butynski, 1984; Howard, 1991; Cunningham, 1996). Use of some products, particularly the climbers, was controlled by issue of a free permit by the forest guards. The guards made their own assessments as to how many permits the resource could sustain. There was no control over the collection of medicinal plants (Tumwesiimire, pers. comm.).

At Mgahinga, the main resource harvested was bamboo (*Sinarundinaria alpina*). From 1940-1950 harvests were said to have been very large (Kingston, 1967). The forest reserve was closed from 1950-1955, to prevent overcutting and encourage cultivation of bamboo on farms. From 1955 the forest bamboo was divided into coupes, with a limit to the number of harvesters and quantities they could cut. Harvesting was

allowed two days per week. Illegal cutting was followed by rapid court action and heavy fines. Applications for free bamboo had to be confirmed through the village Chiefs. Use of other non-timber products was unrestricted.

When current conservation initiatives started during the 1980s with a survey by the New York Zoological Society, it was found that implementation of the 1964 Acts and the working plan was ineffective at BINP (Butynski, 1984). Pitsawing (both legal and illegal), gold mining, beekeeping and hunting were out of control. At Mgahinga, part of the Forest Reserve had been degazetted in 1951, and 220 families had settled in the degazetted area despite it remaining a Game Reserve. Butynski (1984) found the main reason for ineffective control was inadequacies in the Acts and the lack of financial and logistical support to staff of both Forest and Game Departments. For example, by 1988 the salaries of the Forest Department staff stood in real terms at only 0.4% of their 1962 levels (Howard,

1991). This removed the incentive for staff to function effectively and provided the incentive for illegal use of forest resources. Agricultural clearance and overexploitation of the forests had led to losses in biodiversity (Butynski 1984).

In 1986, the Impenetrable Forest Conservation Project (IFCP) funded by the World Wide Fund for Nature International (WWF) was established to support the Game Department in increased protection activities at BINP. In late 1989 an IFCP sub-project, the Gorilla Game Reserve Project (GGRP), carried out similar work at MGNP. There have been considerable conservation successes. Consumptive exploitation at both forests has stopped. Illegal activities have been reduced and are under control. The 220 families in Mgahinga have moved out and the boundaries of both parks were demarcated. These conservation successes have come, however, at considerable cost to local communities, as meetings with communities adjacent to the parks revealed.

Box 4. History of removing people from BINP

People were gradually moved out of the Forest Reserve over a period of many years and the actual pattern is not clear. Originally there were both Batwa and Bakiga households settled in many parts of the forest. Old settlement sites are often secondary forest planted with species of religious significance (*Erythrina abyssinica* - Ekiiko and *Ficus sp.* - Ekiitooma). In Mukono Parish, oral history has it that first community members grouped together and moved to one site near the forest edge, to reduce leopard attack on livestock. Later the Forest Department negotiated a move from the gazetted forest to other, then forested, land nearby. The Batwa remained in the forest longer, being more dependent on it than other groups. Some 100 Batwa were living nomadically in the forest in 1961 (Leggat & Osmaston, 1961). Local reports suggest the Forest Department moved the Batwa out in 1964, although this is likely to have been a gradual process. In discussions with the Batwa community in Rutugunda Parish, they say none of the current generations have ever lived permanently in the forest but their grandparents used to. Batwa still do live temporarily and illegally in the forest and it is possible that some come from Zaire. Using the forest as a base to rustle livestock has made the Batwa increasingly unpopular with their neighbours. The Batwa own no land and "squat" on the "citizens" land (their own expression) and are given food by them. In return they do agricultural work and collect items from the forest. The closing of the forest to resource use has further weakened the position of the Batwa as they have little access to essential materials. Their Bakiga landlords are now fearful of permanent occupation of their land and are accommodating them less readily. Cultivation was allowed in the forest until the 1980s when the taungya system was used for enrichment planting.

Are gorillas more important than people?

"Iyo utarikumvikana numuturanyi ntaho umutubara" - "When your neighbour is your enemy you let his house burn" **A Bafumbira saying.**

"Are gorillas more important than people?" is a question that has often been asked by local community members around Bwindi and Mgahinga forests. Conserving the last few individuals of the mountain gorilla (*Gorilla gorilla beringei*), one of our closest relatives in the animal king-

dom, is an urgent global priority. The people who are the closest neighbours of the gorillas have had to bear the heavy costs of conserving these animals, though it is increasingly recognized that it is unreasonable to expect them to do so. Meetings with villagers revealed many of the hidden costs of conservation borne by the communities around BINP and MGNP. Examining these costs in detail, from a community perspective, could help in defining solutions.

Communities around both parks faced similar problems and costs associated with conservation successes. At BINP, following the establish-

ment of the WWF Impenetrable Forest Conservation Project (IFCP) in support of the Game Department, open conflict occurred between game guards and local communities. In Mpungu Parish, for example, community members were on permanent standby to warn pitsawers and goldminers of the approach of patrols. On a number of occasions, violence erupted and game guards were attacked and beaten. Local people registered their hostility towards creation of the national park during public meetings called to discuss the issue:

"In short the response of all these people is extremely negative..."

"I wonder why these innocent Ugandans should be made to suffer by creating a national park in such a forest reserve?..."

"Licensed pitsawers operating in this Forest Reserve are the only source of employment to the local population. Where else shall we get our school fees and money for graduated tax if we are deprived of such opportunities?" (a community leader at Mpungu, cited in Hamilton *et al.*, 1990).

During a series of community interviews held in December 1991 and January 1992 prior to a socio-economic survey for the CARE-DTC project around Bwindi, considerable hostility was expressed towards the National Park. Comments included *"When you mention the National Park we want to vomit. Nothing you ever say will change our minds"*. *"Gorillas should be put in cages and taken to zoos"*. There were also direct threats against the gorillas themselves. The hostility of communities at Mgahinga Gorilla National Park was so great at that time, that it was judged impossible to carry out a similar socio-economic baseline survey for the DTC project in the area until emotions had cooled.

BITTERNESS OF LOCAL COMMUNITIES TOWARDS MGNP

Later, in 1994, and during the participatory process of producing the management plan for MGNP, local community members analyzed the problems they faced, and still face. Problem trees were developed as a way of analyzing the background to these problems. Creating a problem tree is a method of examining the cause and effects of a particular problem. The core problem (tree trunk) is identified by a process of discussion and placed on a pinboard using "idea cards". The different levels of causes (tree roots) and effects (tree branches) of the core problem are then developed by the planning team. Two problem trees were developed for MGNP, the first was the general problem tree for the park and had as its core problem "Environmental degradation and loss of wildlife in MGNP and adjacent areas", the second was developed from it and took as its core problem "Bitterness of local communities toward MGNP". This problem had

appeared in the first tree in a number of places and was worded as hostility and negative attitudes of the community. This problem tree (Figure 2, next page) was supplemented with information gathered during an earlier survey at Mgahinga (Cunningham *et al.*, 1993) and is appended to the draft management plan for MGNP (UNP, 1994).

The problem tree (actually lying on its side) shows four root causes of community bitterness: eviction from the park; closing the park to resource use; park management perceived as aggressive; and poor control by park staff of problem wildlife, including vermin.

EVICTED FROM MGNP

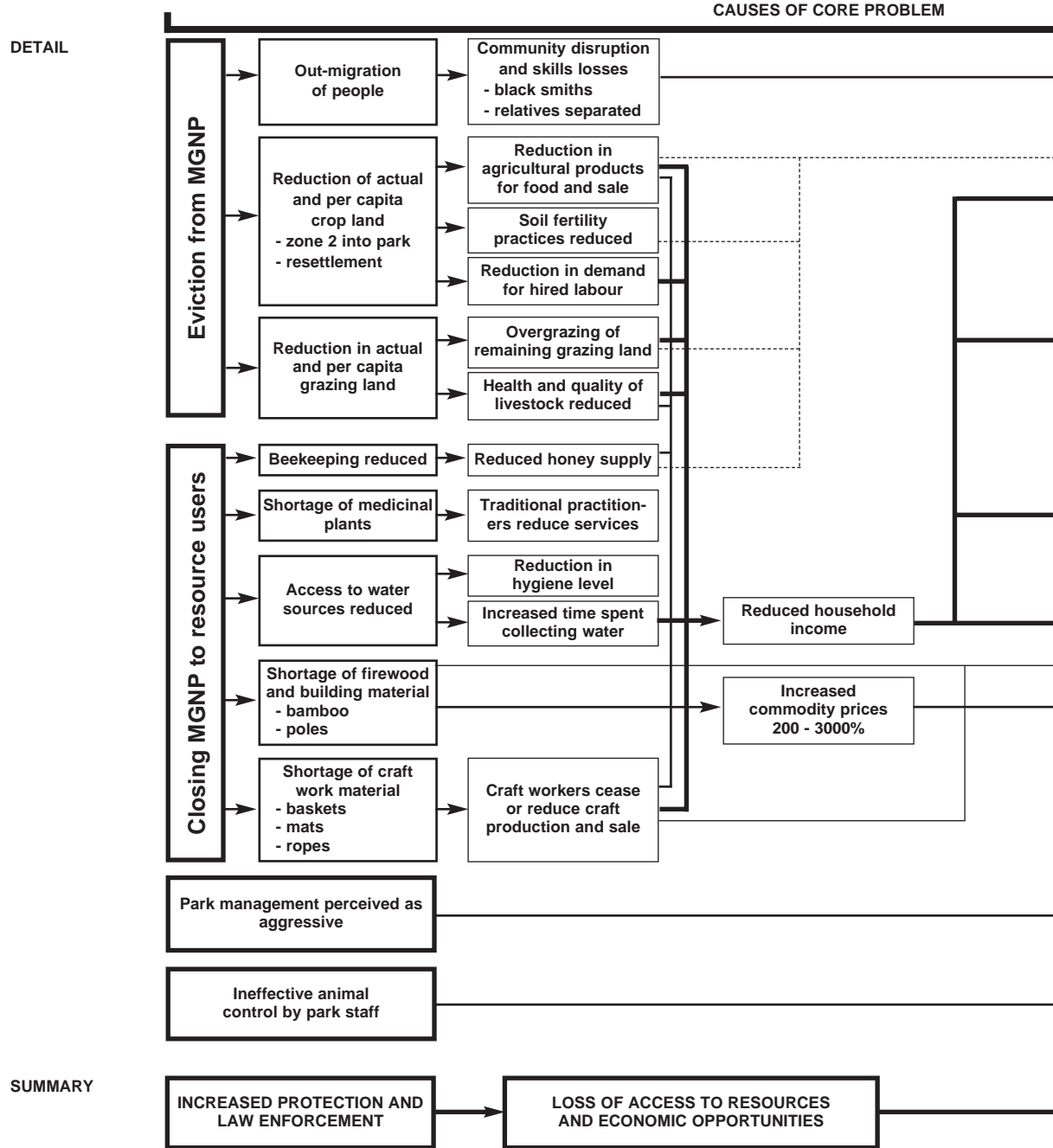
To understand the eviction process, some historical background is necessary. The Gorilla Game Sanctuary (later upgraded to the Gorilla Game Reserve) was established in 1930 and managed by the Game Department. The Mgahinga Forest Reserve was established in 1941 and managed by the Forest Department. The two areas had the same boundary until 1951, when the Forest Department degazetted 10 km² to provide local people with additional agricultural land. Local people moved in and cultivated. The Game Reserve was not, however, degazetted and was in fact extended in 1964 to include an area which had never previously been a protected area and had been under cultivation for a long time. The Game Department did not demarcate this boundary or enforce the Game Act outside the reduced Forest Reserve boundary, but under the law the people living in both these areas were illegal encroachers (Kingston, 1967). During the public enquiry which preceded establishment of the park (Yeoman *et al.*, 1990), the issue of encroachment was discussed with local communities; it was later recommended that the national park boundary should be established along the pre-1951 Forest and Game Reserve boundary and this was implemented in May 1991. Subsequently, after some difficulties, the Ministry of Tourism, Wildlife and Antiquities and Uganda National Parks signed an agreement with local community leaders and the district administration for a planned relocation of residents from the disputed area and the cessation of cultivation and grazing. In return, communities were promised compensation for the displaced people, increased agricultural support and infrastructure development in the surrounding areas.

Some 220 households moved out, and a further 2000 land owners ceased cultivation by the end of 1992; compensation was paid in May 1993. Increased agricultural support was given by the CARE-DTC project through UNP Extension Rangers. Unlike earlier and subsequent evictions of "encroachers" in Uganda (Colchester, 1994) people moved out of the park in a peaceful and negotiated way. There were

Figure 2.
Problem analysis from a
community's perspective.

PROBLEM ANALYSIS -

Problem tree produced and discussed during



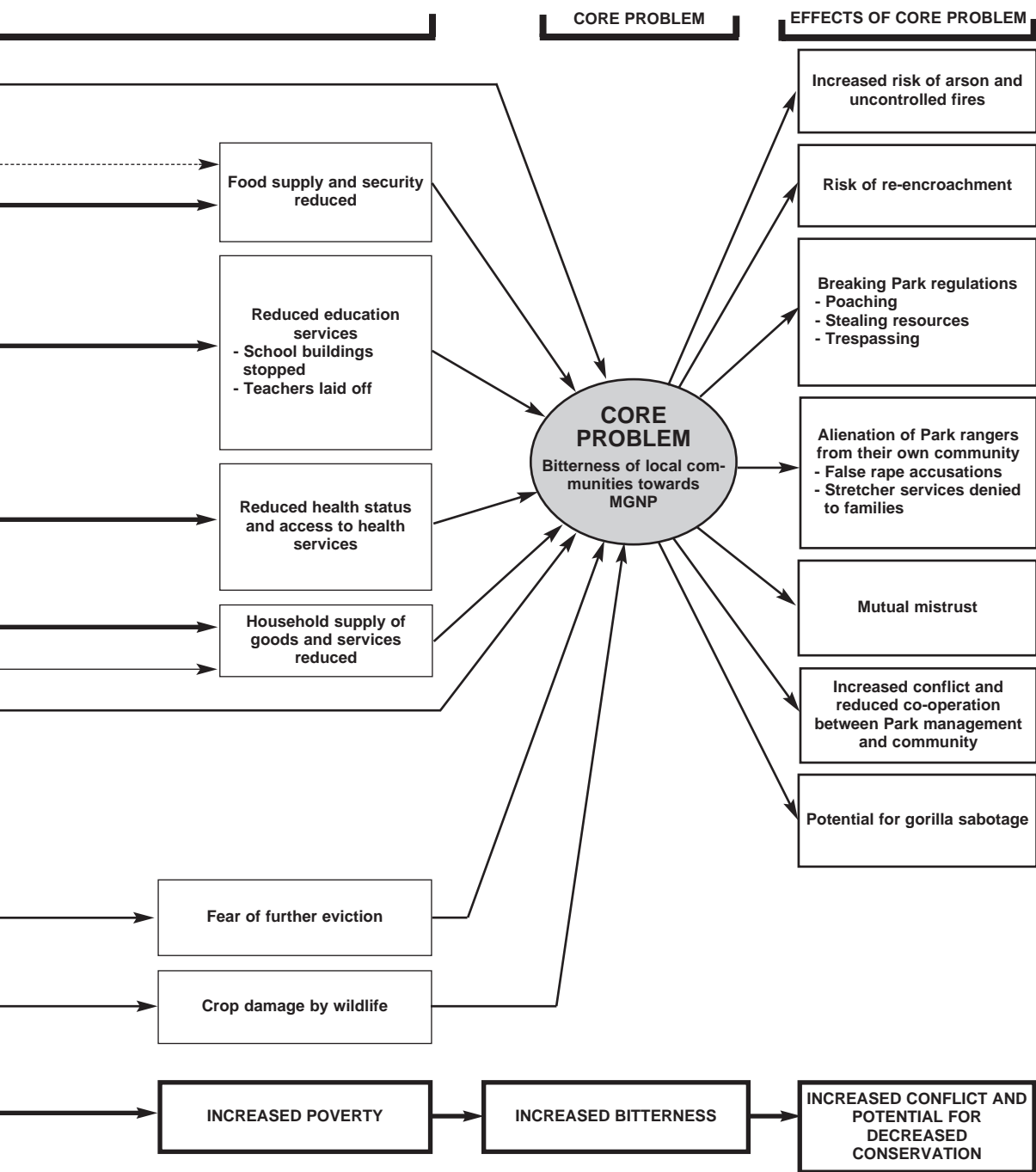
The question "Are gorillas more important than people?" is frequently asked by people living near Mgahinga Gorilla and Bwindi impenetrable National Parks, and was asked during the MGNP management Plan workshops.

other effects, however. Some of the families left the area completely, which led to the separation of relatives and loss of skills. Of the three blacksmiths in Gisozi Parish only one remained. Other families settled on land outside the park, increasing the land shortage here. The land inside the park was important agricultural land, growing mainly wheat and Irish potatoes sold to either Rwanda or to Kampala. The community lost income from sale of crops, land for food produc-

tion, and employment, as many had cultivated for absentee owners. The cost of hiring land outside the park increased by 1000%. Grazing land was greatly reduced as people moved out and the health and numbers of livestock decreased/were reduced. The prices of milk increased while the value of cattle fell. Wheat straw used for thatching became in short supply and the price increased (Table 1, next page).

A COMMUNITY PERSPECTIVE

planning workshops for MGNP Management plan and annexed to the plan.



Details from community members, park staff and from Cunningham *et al.* (1993).

CLOSING MGNP TO RESOURCE USE

Bamboo was the most significant product collected from the forest (Kingston, 1967; Cunningham *et al.*, 1993), and became in very short supply. The price went from 10 USh (US\$ 0.01) per stem in 1990 to 300 USh (US\$ 0.3) per stem in 1993, a massive increase of 3000% (Cunningham *et al.*, 1993). Other resources which became in short supply also increased in price. The shortage of medicinal plants led to a shortage of herbalists' services. In some villages,

where half the households had been engaged in basket making, production was severely reduced (Cunningham *et al.*, 1993). Access to water resources was stopped initially in the recently evacuated areas. Due to the porous volcanic rock, permanent water sources are few and the alternative to in-park sources involved a 17 km return hike down the mountains to Kisoro town. Pressure for access forced the authorities to allow the use of two in-park sources during restricted times and under armed guard. This still meant all

Table 1. Commodity price changes as a result of eviction from MGNP

Product	Price 1990 [USh]	Price 1993 [USh]	Change [%]
Bamboo (stem)	10	300	3000
Seed potatoes (sack)	1000	15 000	1500
Land hiring (0.25 acres/season)	2000	20 000	1000
Wheat thatch (<i>isa</i> - a 2 hand diam. bundle)	10	50	500
Milk (litre)	100	500	500
Thatch grass bundle	500	1500	500
Potatoes (sack)	2000	8000	400
<i>Cyperus</i> mats	1000	3500	350
Building poles (wattle, each pole)	300	700	233
Wheat (cup)	100 - 150	200 - 300	200
Bamboo baskets	300 - 400	600	200
Goat (15 kg)	5000 - 8000	8000 - 15000	187
Honey (1.5 kg)	1000	3000	100
Cattle (each animal)	50 000	15 000	-300

From information collected from MGNP park rangers. These prices have not been corrected for inflation as the inflation rate for 1990/91 was not available. The rate for 1991/92 financial year was 63% and for 1992/93 was 7.7%. Nonetheless, the price increases are far in excess of the probable inflation rate and although these data should be treated with caution, the price changes indicate a relative increase in scarcity of key wild plant products (from Cunningham *et al.* 1993).

night queues at the point where one of the sources left the park.

The net effect of the relocation and closure of the park to resource users had been to increase prices, and reduce income, household goods and food security. Community projects were halted. Gizoji parishioners were building a new school when the park closure occurred, and could no longer make their contributions; building stopped, teachers were laid off, and education reduced (Hanyirwa & Nteziyaremye, pers. comm.).

PARK MANAGEMENT PERCEIVED AS AGGRESSIVE

Strict law enforcement led the community to perceive the park management as aggressive. Persistent use of the word "zone" for areas outside the park led to fear of park expansion, and a delay in compensation added to people's dissatisfaction with park management (although this was outside park management's control). Misunderstandings over the access to water and the confiscation of jerrycans from those collecting water added to the hostility.

POOR CONTROL OF PROBLEM ANIMALS

The damage of crops by buffalos added insult to injury. "We are arrested for going into the park, why can't we arrest the buffalos when they come on our land?". The park was considered to be making little effort to help communities with this issue.

COMMUNITY RETALIATION AT MGNP AND BINP

These problems led to considerable hostility, and to actual and potential threats to the parks themselves. Sixteen fires started during a drought following the gazetting of BINP and a third were started deliberately or allowed to enter the park from outside. For many fires community assistance was not forthcoming, and there are stories of communities helping to fight the fires, then deliberately restarting them. Roughly 5% of Bwindi Forest burnt, including some areas which had never burnt before. Fire has also been one of the main concerns of the management of MGNP, with the slopes of Mt. Muhabura being particularly susceptible. In 1985 a particularly bad fire reached the heath and afro-alpine vegetation.

Mgahinga Gorilla National Park is one of the best patrolled parks in Uganda with the highest ranger to area ratio of any park. Despite this, the park staff could not completely control illegal activities. At Bwindi Impenetrable, with a boundary of about 115 km and a patrol staff of 24, the situation was even more difficult to control. During one of the management plan workshops for BINP, one of the community representatives, John Tindiwegi, said: "The reality is, no matter how many rangers you have, you will not be able to control people going into the park. Timber is coming out of the forest even now."

In the absence of community support the parks were faced with a long-term war of attrition with hostile communities. When this "war"

was at its worst, communities at both parks targeted rangers who are locals themselves. They were physically attacked, refused the sale of food, falsely accused of rape and even refused ambulance and burial services – serious sanctions in these tight-knit communities. Accompanying the deep dissatisfaction with the parks is the risk of reoccupation. During the campaigns before national elections in June 1993, politicians at MGNP were promising that the park would be given back to the people. The risk is particularly great at times of institutional or national upheaval.

Community members have often made open threats to the gorillas at BINP. The gorillas have come to represent all the problems they face from conservation. The most extreme case of conservation related gorilla sabotage, however, comes from Rwanda. In the West, Dian Fossey has become the epitome of the dedicated conservationist, with a conservation foundation named after her. There are, however, other aspects to the story, as related by Adams & McShane (1992).

“After the death of her favourite gorilla, Digit, Fossey stepped up the campaign of what she called “active conservation”, while others called it “confrontational conservation”. She intimidated the local people and waged a psychological war against them. This had the effect of making some Rwandans her sworn enemies. Most of the gorillas killed by poachers from 1978 on were the ones in her favourite study group. The poachers specifically sought out these particular gorillas, waiting for a time when they knew no researchers would be around before killing them. The poachers were sending a clear message to Fossey, and it was now equally clear that she had become a major threat to the gorilla’s survival.”

Ironically perhaps, it has been the tourist revenues earned by the gorillas which have brought local support to the Parc des Volcans from both sides in the Rwandan conflict, tourism to which Dian Fossey was opposed.

From an analysis of the costs borne by local communities it is easy to see why they

are hostile to conservation. The communities will wage a war of attrition, and at moments of government weakness destroy or reoccupy the parks. As is increasingly recognized, the conservation of parks by aggressive protection is not a sustainable option. This does not assume law enforcement and protection are unnecessary. Law enforcement still plays a key role in conservation, but balanced with additional approaches. Realizing this, Uganda National Parks has added community participation and resource sharing to its management policy.

In 1991, the decision was taken to explore limited and controlled harvesting of plant resources from within BINP. UNP, supported by CARE-Uganda’s DTC project, began the process at Bwindi in 1992, and Mgahinga in 1993, of working with communities adjacent to the parks to assess the use and vulnerability of key plant resources, and to plan and implement collaborative management of these resources through written agreements between UNP and communities (Photo 1).



Photo 1. Surveying forest to establish resource use agreements.

The collaborative management process at Bwindi Impenetrable National Park

“Mpora mpora ekahitsya omunyongorowa aha iziba” - “Slowly slowly the worm reached the well”.

A Rukiga saying.

First steps

Although the Game Department, Forest Department and the IFCP were trying to control unsustainable resource use at BINP, they had no intention to stop resource use altogether. Limited resource use was discussed at an early stage in renewed conservation efforts in the forests and was the remit of the DTC project developed by IFCP and CARE from 1986/87 on (CARE, 1987). The controlled use of resources was recommended during the first workshop on the conservation of Afromontane forests, held in Rwanda in 1989 (Butynski, 1989; Vedder, 1989). When Bwindi became a National Park in 1991, the ITFC (the institution that succeeded the IFCP) recommended to UNP that resource use be allowed and trials initiated. In turn, UNP requested that 20% of the forest be identified for this purpose.

The initial steps in establishing collaborative management of extractive resource use included allowing non-extractive beekeeping, setting resource use objectives during the management plan process, preliminary studies into extractive resource use, selecting pilot parishes for pilot resource use and identifying the multiple-use team to carry out the establishment work.

BEEKEEPING

UNP gave permission for beekeeping as it has low impact and did not require detailed resource assessment. Park staff held meetings with beekeepers; beekeeper groups were formed, a list of regulations was drawn up by park staff and beekeepers and beekeeper identity cards issued. This approach was mid-way between the earlier no control of beekeeping by the Forest and Game Departments, and the high control of extractive resource use that was developed subsequently by UNP for other forest resources. It differed from the later approach in that negotiations were held with beekeepers only and not with community leaders (although some beekeepers were community leaders), and no collaborative management agreement was developed.

PARTICIPATORY MANAGEMENT PLANNING

During the writing of management plans for Bwindi and Mgahinga in 1993/94, resource use

was seriously discussed with community members. Small planning teams of park and DTC Project staff were established to produce the plans. The teams chose the basic plan format and designed a programme of planning workshops. Although making both plans involved community participation, it was more comprehensive for the MGNP plan, which was produced second and benefitted from the first experience at BINP.

At MGNP, the outline for consultations and plan production was amended and approved by the Park Management Advisory Committee (PMAC, see Box 2, page 6). Public meetings were held in all RC-Is (villages) in which issues and potential solutions were presented. At these meetings three village representatives were elected who met park and District staff at subsequent parish (RC-II) level meetings at which each village presented its problems/solutions to take to the planning workshops. Two representatives were then elected from each parish to attend the planning workshops.

Key planning decisions were made during the workshops, first at local level, then at national level. At BINP workshops approaches taken from other plans (FAO, 1988; Olivier, 1990, 1992a, 1992b) were adapted, and small groups worked on sections of the plan, both making the decisions and drafting the text. At MGNP a “park planning table” or “logical framework” (matrix) was used. The logical framework approach is a planning tool developed in the late 1960s by USAID and further developed in the 1980s by GTZ, the German Agency for Technical Cooperation (Sartorius, 1991). The GTZ approach, known as ZOPP (Objectives Orientated Project Planning), uses “visualization” or “idea cards” to develop preliminary analyses. These include stakeholder analysis, problem analysis and objectives analysis. Once these analyses have been developed by the planning team, the park planning matrix is constructed. This approach allows effective participation. It identifies specific points at which there are conflicts and methods for resolving them. The examination of the costs incurred by the community allowed the production of a framework of problems, objectives and activities which clearly linked the activities of the ICDP with the conservation problems. The difficulty of effectively linking conservation and development has been a problem of ICDPs.

While sometimes used for the development of park support projects, MGNP was the first national park in East Africa and possibly on the continent to adapt this tool for a park management plan.

In both BINP and MGNP, participatory planning began genuine and meaningful community participation in park management and significantly enhanced park interactions with the communities and administration. Benefits included the following:

- Solutions to urgent conflicts were discussed and action plans produced.
- Consensus planning between all major stakeholders.
- A sense of ownership among park staff for the planning process was promoted.
- Community leaders became convinced that park designation could have benefits.
- A planning context for parish level negotiations over resource use and management was established.
- Mechanisms for community involvement in park management were established.
- Significant local knowledge was documented and utilized.

The process of planning was equally if not more important, at least initially, than the plan document itself. This contrasted with the earlier UNP plans, produced by an external expert and based on consultations mostly with park staff. The final output of participatory planning was less polished and needed refining. In the longer term, the involvement of community members, some of whom were ex-pitsawers and goldminers, had unexpected and positive implications. Some individuals went on to represent the local community on local and national conservation bodies and became strong advocates for conservation within their own communities.

Of the two approaches taken, the Logical Framework Approach applied at Mgahinga produced a more satisfactory plan, having the following advantages:

- A non-participating “moderator” trained in the technique, who can facilitate, mediate and guide the process.
- Focusing and reducing conflict to the critical points and using formal techniques to deal with these points.
- Structured analysis using effective participation methodology.
- Setting realistic “objectively verifiable indicators” which guide the monitoring programme.

The process, however, is not always easy, and at times is very hard work. On one occasion it took all day to move eight idea cards from one board to another; but these cards represented eight major planning decisions in a situation of prior conflict.

The plans for Bwindi (Figure 3) and Mgahinga each included four main park zones: a high protection zone (core conservation area); a tourism zone for controlled gorilla tourism; a multiple-use zone for community use of resources; and a sustainable development zone outside the park boundaries. At Mgahinga, local communities associated the word “zone” with eviction, so the term “area” was used instead.

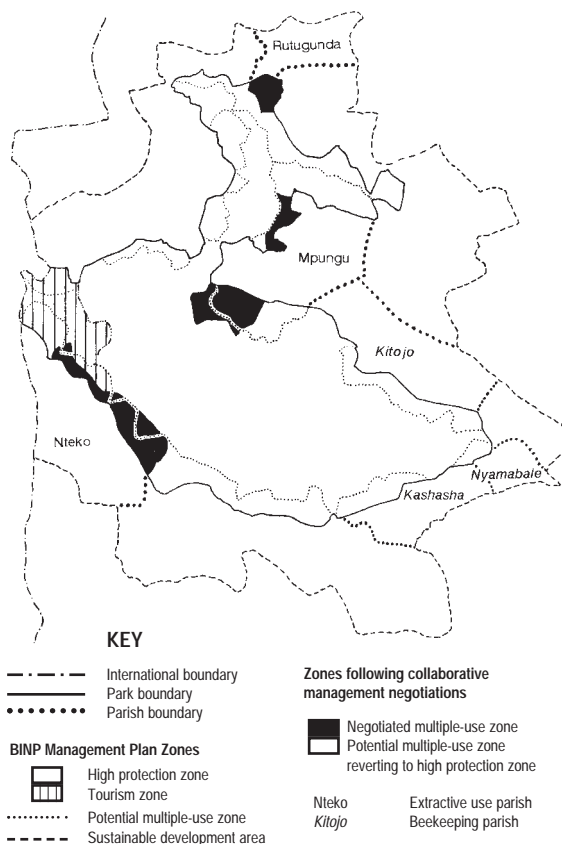


Figure 3. Management zones and multiple-use pilot parishes at BINP.

PRELIMINARY SURVEYS

Three preliminary studies were carried out to collect information on which to base multiple-use activities. Scott (1992) established demand for forest species at BINP using random household questionnaires. Estimates of abundance in the forest of the highest demanded species were carried out. Potential multiple-use areas were surveyed and most of these were adopted in the BINP management plan (UNP, 1995; Figure 3).

Cunningham (1996) carried out the second survey in 1992, working with specialist resource users in Bwindi. He examined species ecology, botanically identified the species used, and made recommendations for resource categories and for some individual species. Cunningham recommended the establishment of *low impact, specialist* resource use from multiple-use zones inside BINP and the provision of substitutes for *high impact, general* uses of forest resources on farms outside. In 1993, permission was given by

UNP headquarters to begin the process of establishing extractive resource use in Bwindi Forest adjacent to three parishes as a pilot programme.

A similar study at MGNP (Cunningham *et al.*, 1993) was carried out prior to the management planning process there. Detailed negotiations on multiple resource use with communities adjacent to Mgahinga have not yet begun (late 1996). At Bwindi, written agreements have been signed and harvesting has begun. The rest of this section recounts the collaborative management process in the pilot parishes at Bwindi, so as to give an overview of the process as a whole.

SELECTING PILOT PARISHES AT BWINDI

The parishes of Mpungu, Nteko and Rutugunda (Figure 3) were selected as pilot parishes on the basis of the following aims:

- To examine ecological interactions and ways to minimize negative human interaction with (a) the mountain gorillas and (b) the rare trees in Ishasha Gorge;
- To spread the benefits of forest resource use to areas not already benefitting from either tourism or beekeeping;
- To focus on areas that had the worst relationships with the park in the past;
- To work on issues related to the Batwa; and
- To select areas with a range of (a) population densities, (b) lengths of community establishment and (c) forest-people ratios.

MULTIPLE-USE TEAM

A team of staff from UNP and the DTC project was formed to take a lead in establishing multiple-use. These included the Multiple-use Warden of BINP, the Multiple-use Officer, Botanist and Deputy Project Manager from DTC and Monitoring Researcher from ITFC. Other staff were involved including DTC's parataxonomist (Forest and Herbarium Technician), patrol rangers and DTC's conservation extension agents, who carry out agricultural and agro-forestry extension and conservation education.

Methods to establish resource use

Two tools, rapid vulnerability assessment and participatory rural appraisal, were used to answer the following questions about resource use from within BINP:

- Which resources?
- How much of those resources?
- Where should they come from?
- Who should collect them?
- Who should get the benefit?
- Who should manage the activity?
- Who should be responsible if things go wrong?

- Who monitors to see if things are going right?
- What should be monitored, and when?
- How is monitoring done?

RAPID VULNERABILITY ASSESSMENT

Rapid Vulnerability Assessment (RVA) is a systematic method developed by Cunningham to rapidly assess the vulnerability of plant species to use by people (*e.g.* Cunningham, 1987; 1991; 1994; 1996). The method collects ecological and social data from a number of sources using a range of techniques. The fundamental unit of consideration is the species, but the RVA can be used to assess the vulnerability of categories of species (*e.g.* medicinal plants) or of the site as a whole. The data are collected in a way that allows increasing refinements of the data set. At each level decisions can be made as to which aspects to emphasize to meet management priorities. The level of knowledge of any one species is developed only to the point necessary to make an appropriate management decision. In this way, a large number of species initially identified as used by people is quickly reduced to a smaller number of potentially vulnerable species which need more detailed work.

A key aspect of RVA is the integration of indigenous knowledge and scientific knowledge. Both these types of knowledge have strengths and weaknesses. Attention is needed to identify mismatches between indigenous and scientific data sets and so to reduce errors. The matching of the vernacular name of a plant with its scientific name links the two bodies of information into a powerful tool (Martin, 1995).

The Rapid Vulnerability Assessment is based on a number of principles drawn from ecology, sociology and economics. These are:

- There is a relationship between species population size and quantities of material available for harvest.
- This relationship is modified by species ecology, life history, and which parts are harvested and used.
- The growth and reproductive capacity of a plant may respond positively as well as negatively to harvesting.
- Each species has a range of levels of harvesting at which harvesting will be sustainable. This can range from almost zero to some upper quantity often called Maximum Sustainable Yield (MSY).
- For any one species, the range of harvestable quantities will vary with location, season and parts used. The range of harvestable quantities can be considered as a margin of vulnerability, sustainability, or error.
- As demand increases, there is often a progression of social and economic changes from subsistence use to commercial exploitation.

Box 5. Factors considered in Rapid Vulnerability Assessments

Life form: A plant's life form is easy information to collect and approximates some of its ecological characteristics which take longer to ascertain, such as growth rate, production to biomass ratio, reproduction and longevity (Rutherford & Westfall, 1986). Through approximating these characteristics, life form indicates vulnerability; for example slow growing, long-lived, slow reproducing trees are more vulnerable than fast growing, short-lived, fast reproducing ephemerals.

Habitat specificity: Species with very narrow habitat requirements are likely to be rarer and more vulnerable.

Abundance and distribution: Abundant widely distributed species are less vulnerable to overuse.

Growth rate: Slower growing species will be more vulnerable to use.

Response to harvesting: The ability of a species to regrow or increase its growth rate as a response to harvesting affects its vulnerability.

Parts used: The part used significantly affects sustainability. Use of leaves has the least impact on the plant, then twigs, branches, bark, stems and last the whole plant. Studies have shown that removal of up to 50% of tree leaves does not significantly affect the growth of the species studied (Poffenberger *et al.*, 1992).

Pattern of selection and use: If a certain size, age or quality of a plant is used, the remaining population may ensure the survival of the species. But there is a risk that ecological assessments may indicate a higher availability than the more selective resource user assessment and lead to an overestimate of supply.

Demand: The level of demand has a major impact on the plant. Demand is made up of two factors - the quantity harvested and the frequency of harvest (Bennet, 1992).

Seasonal harvesting: Demand may be reduced if harvesting is restricted to seasons.

Traditional conservation practices: Many cultures have developed practices to control use. When demand increases, especially if the resource becomes commercially exploited, these traditional practices often break down.

Commercialization: Once a product moves from subsistence use to commercialization, the chances of unsustainable use increase.

Substitutes: The availability of substitutes affects species' vulnerability indirectly by reducing demand.

From these principles a number of important factors can be identified (Box 5). The complex interaction of these factors will determine where use of a species falls on a gradient from sustainable use to unsustainable use, and whether it is vulnerable to harvesting. The aim therefore is *not to identify the MSY for each species but to find out whether harvesting is or can be carried out at some level below the maximum sustainable yield*. The system links ecological and social data, which is rarely a feature of such data sets (Wily, 1994). It identifies vulnerable species or categories which require further research, greater caution in their use or substitution with a less vulnerable resource (e.g cultivated outside the park) and it identifies gaps in the information.

The method can identify vulnerable categories of resource use. Timber harvesting is difficult and expensive to manage sustainably (Muir, 1990), whereas many medicines used at Bwindi are leaves from less vulnerable life forms. It is also possible to estimate the potential vulnerability of a site as a whole to resource use by looking at overall features. For example, habitat, species and life form diversity are inter-related factors that indicate the vulnerability of an

ecosystem to over-use of resources. Less vulnerable habitats such as grasslands have a lower species diversity and higher biomass production. More diverse habitats with many vulnerable plant life forms such as forests are more vulnerable to use. Where species diversity is high, each species will be less abundant, produce less biomass and have less potential for large harvests. In addition, human population density is a driving force behind demand, and population density surrounding a site therefore also indicates vulnerability.

In Bwindi and Mgahinga, data for the rapid vulnerability assessments were collected from literature, herbaria, local experts, team observations, research plots and market surveys. Most of the information came from local experts, supplemented by the team's observations. There is little detailed information on most species in the literature, for example detailed distributions, growth rates, parts of value to users and response to harvesting. Research and monitoring plots were used to answer specific questions. A recording system was developed to guide species assessments, and field and summary forms were produced. Once the form was sufficiently complete

it was reviewed and the decision taken whether to allow use of those species. Species were assigned to categories depending on the results of the assessments (Figure 4). The RVA approach was effective in providing park management with information upon which to decide which species could be used.

The Rapid Vulnerability Assessment addresses the difficult question of which species can be used with least chance of over-use. The advantages of the system are:

- It uses data which can be quickly collected as indicators of less accessible information, e.g. growth rates and biomass production.
- It integrates social and ecological data.
- It integrates indigenous knowledge and is participatory.
- It collects and preserves indigenous knowledge.
- It allows working decisions to be made which can be modified during successive refinements of the data.
- It graduates from intuitive perceptions, through indigenous knowledge to scientific ecological methodology.

Wise use of plants has to be approached at a species level. There is no substitute for understanding the response of an individual species to utilization. RVA provides information quickly enough for decisions to be taken at a level of detail that is appropriate for a large number of species.

The disadvantages of the system in our experience are:

- Difficulties with conceptualization of the system by new users;
- The diffuse nature of its presentation in the literature;
- Maintaining species identification and information gathering in pace with negotiations;
- Handling the quantity of data that are derived.

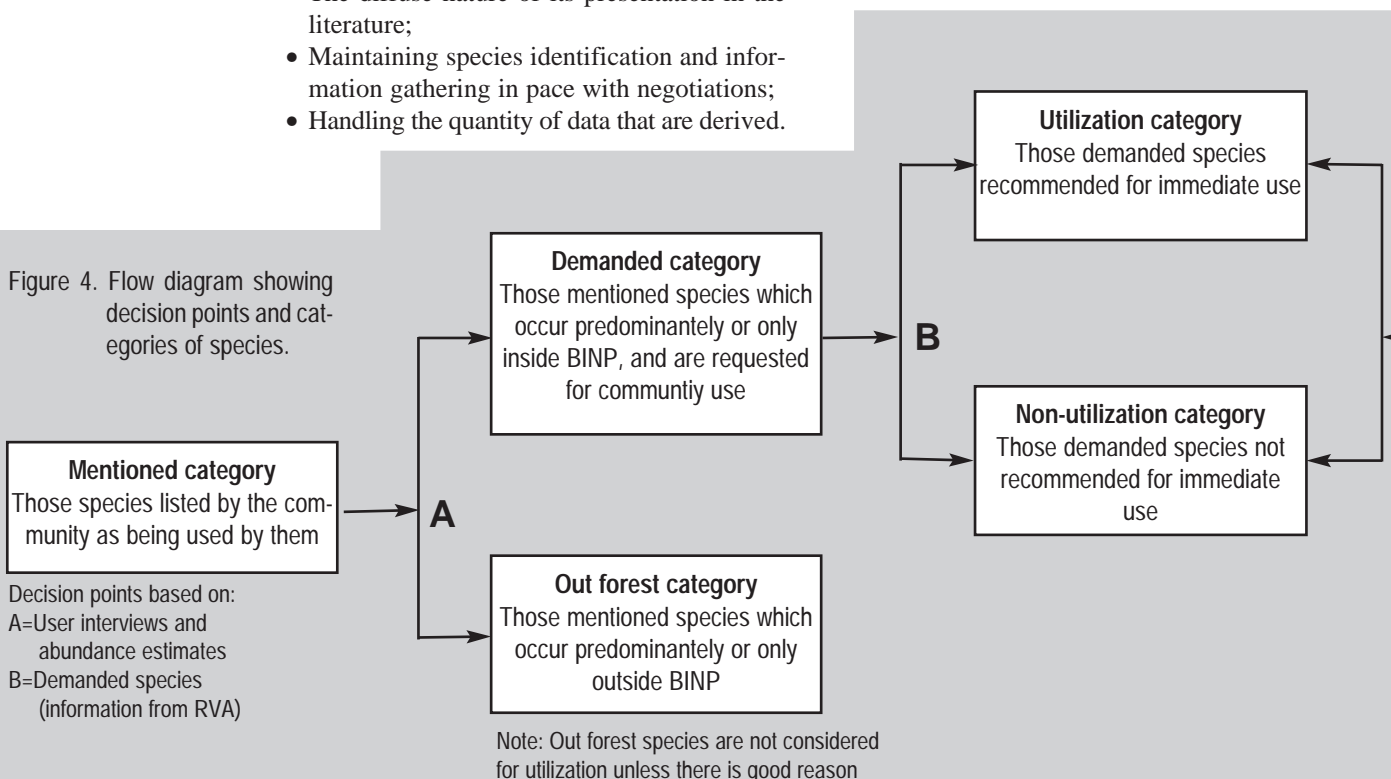
People new to the method found it difficult to grasp and appreciate. This is in part a problem of the large numbers of species and complex variables. The first group to use it found it difficult to link data arising from diverse techniques, such as specialist user interviews, participatory plots and market surveys, and to appreciate that the system operates at the levels of species, site and resource category. To understand the implications of each piece of data, and the way specific factors impact on the sustainability of harvesting for a particular species is complex.

It was difficult for species identification and literature review to keep pace with the development of management agreements with each parish. This was due to lack of literature at the ITFC herbarium, and logistical problems of visiting other herbaria. Related problems of handling, sorting and storing data meant that some information could be lost. The DTC project is in the process of developing an ethnobotanical database. The large amount of species data generated will be useful to other projects establishing sustainable use of forest resources. It would therefore be ideal if the information could be more widely shared, perhaps through a regional plant use database.

PARTICIPATORY RURAL APPRAISAL

Participatory Rural Appraisal (PRA) is an approach to community development which has evolved over the last decade and spread rapidly among specialists engaged in rural development (Chambers, 1992). PRA has developed a number of principles (Box 6) and is now becoming adapted for use at sites where biodiversity conserva

Figure 4. Flow diagram showing decision points and categories of species.



Box 6. Principles of Participatory Rural Appraisal

REVERSING LEARNING	Development workers learn from rural people.
RAPID AND PROGRESSIVE LEARNING	Learning is quick and flexible.
RELAXED	PRA is not hurried and involves listening, not rushing.
BEING AWARE OF BIASES	Opinions of marginal groups are sought.
APPLYING "OPTIMAL IGNORANCE"	Gauging when sufficient, and sufficiently accurate, information has been gathered.
VERIFYING INFORMATION	Cross-checking using several sources.
HANDING OVER	Handing the facilitation and the process over to the community wherever possible.
SHARING AND RETURNING INFORMATION	Information should be shared with, left with, or returned to the community.

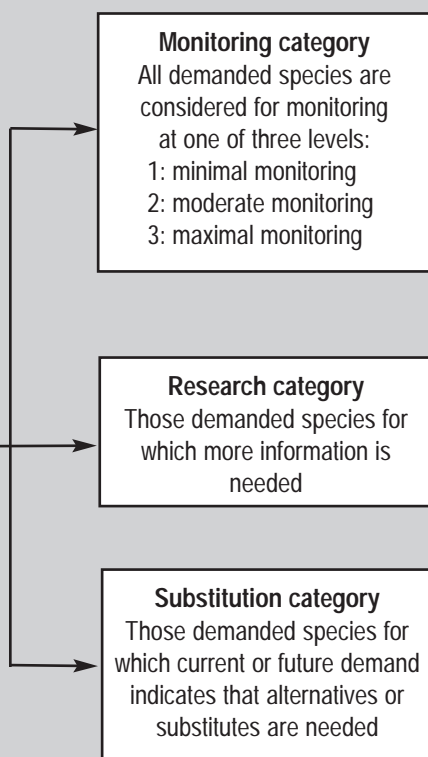
tion is an objective (Drijver, 1994; Momberg *et al.*, 1994).

Methods were selected from development literature (FAO, 1989; Chambers, 1992), training sessions attended by project staff, and literature compiled from the Indian Joint Forest Management movement (*e.g.* Poffenberger *et al.*, 1992). Available information on the area was collected and 1:25 000 scale base maps were pre-

pared prior to fieldwork. The multiple-use team went to each parish and camped for a period of 2-5 days on three or four occasions. Other visits were made to undertake forest surveys and collect data from monitoring plots. The actual methods used in these parish workshops are described below.

The PRA techniques were adapted easily and allowed real participation at the community level. The exercises helped to understand the realities faced by partners in the collaborative management process. The multiple-use team often felt that it was gaining much information from the process, to be told by community members how much they had also learned. The sequence of exercises was particularly important, and while this is recognized in the PRA literature (Chambers, 1992), the PRA training staff had not emphasized this aspect. The "relaxed" aspect of PRA is important for building relationships in conflict situations. Trust building is crucial and comes with spending time in communities in an open and transparent atmosphere. Although the PRA exercises were good for collecting information, there were few exercises available to analyze that information and then make planning decisions. On most occasions we used the time-honoured and effective local method of sitting under a tree and thrashing out the decisions in open discussion.

Community members sometimes exaggerated or understated certain issues. Where the community had suffered most from the park, they overstated their case with hostility. Where the park had had less impact, they understated the situation to maintain good relations with park staff in the hope of greater dividends. Occasionally we were misinformed on technical issues, in the hope of a favourable allocation of resources. With considerable local knowledge on



Note: A species can fall under monitoring, research and substitution categories and there is feedback to utilization categories

the park's multiple-use team, misinformation was quickly identified and then pointed out in gatherings of the whole meeting in an unthreatening and light-hearted way. As a positive working relationship developed, these phenomena declined.

PARK MANAGEMENT ADVISORY COMMITTEE

As a new institution, the PMAC was evolving. Its contribution to resource use was minimal at BINP, but it was more involved at MGNP. At MGNP it reviewed and endorsed the consultative process prior to management plan production. It discussed crucial resource use issues and decided to allow the use of certain sources within the park. The major problem faced by the PMAC was the communication between its representatives and the rest of the communities, especially at BINP with its twenty-two forest-adjacent parishes.

Parish workshops: Mpungu, Nteko, Rutugunda

The main outputs of the parish workshops were collaborative management agreements between UNP and communities for resource use from within the park. A set but flexible sequence of PRA and related activities was developed during the parish workshops (Figure 5, page 22).

INTRODUCTORY ACTIVITIES

The introductory activities aimed to create a positive atmosphere with which to start the meetings. The reason for the meeting was explained, and everyone introduced themselves. Resource users used the introductions as a means to vent their anger at the park.

"My names are Ndemeye Matayo, I used to get enshuli from the forest when it was ours, then it was taken away and now I am starving."

"You ask me to introduce myself, but I don't know what to say because the chimpanzees are chasing me out. I used to survive on herbs and honey, first you stop me getting the herbs and now the chimps steal my honey."

These introductions reflected local concerns, while the exaggeration and provocation had the meeting laughing. The multiple-use team was watched keenly for inappropriate responses such as anger. To introduce the national park, a towel board was used. Pictures (backed with sandpaper) depicting the park and resources were brought to the meeting. The

pictures were handed out to participants, who came up, described them and placed them on the board (Photo 2). People often emphasized the importance of the resource and expressed resentment at their loss of access to it. Community members were initially reticent to mention illegal activities in front of park staff but including pictures of these activities promoted openness and discussion. Most people felt the exercise was good, allowing all to participate, including those who could not read and write.

The community events and forest history (time line) identified key historical events (Table 2). The activity began the process of working together, and provided useful background to the area. At the first meeting, we tried to split into small groups, but this was seen as trying to divide the community. Subsequently the first activity was always carried out with the whole group, no matter how large the gathering.

To look at trends in resource availability and population, stick graphs were produced by groups of elders, using relative lengths of stick to represent the availability of resources in the parish over time (Photo 3). Food availability was the first graph to be produced, an important and uncontroversial item. Graphs of availability of trees and herbs on the farm and in the forest were then constructed. The community's perceptions of forest trees often differed from those of the team. The Nteko community claimed they did not know what was now in the forest, not being allowed to go there, and they supposed much tree regeneration, hoping for a resumption of pitsawing. The exercise was another opportunity to express the negative effects of the park on the community. The group was asked if they would like to plot the trend in the human population. In all cases they agreed willingly. The graphs showed population increase modified by immigration and emigration.

The next three activities produced detailed information and moved into planning by identifying users, multiple-use areas and species for harvesting.



Photo 2. Herbalist Tereza Kagwimukama (left) and DTC facilitator Virginia Nyamaguru using the towel board.

Table 2. Key events in community and forest history, Rutugunda Parish, 1941 - 1993

1941	The government allowed pitsawing in the forest, by giving licences.
1942	Locusts ate all the crops, resulting in famine.
1946	A sub-county chief set all the Batwa huts on fire, and beat the Batwa and they all ran away to other areas.
1946 - 1980s	The government allowed people to cultivate in the forest, in return for planting trees.
1951	The Batwa living in the forest started getting vaccinations against a disease called <i>ebinyoro</i> .
1991	The Church of Uganda brought Batwa back, bought them land and preached them the gospel.
1992	Hailstones destroyed all the gardens and in the end there was famine.
1993	People in Rutugunda Parish started getting vaccinations against river blindness.



Photo 3. Elder Muhairwe Francis constructing stick graphs, Nteko Parish.

RESOURCE IDENTIFICATION AND RANKING

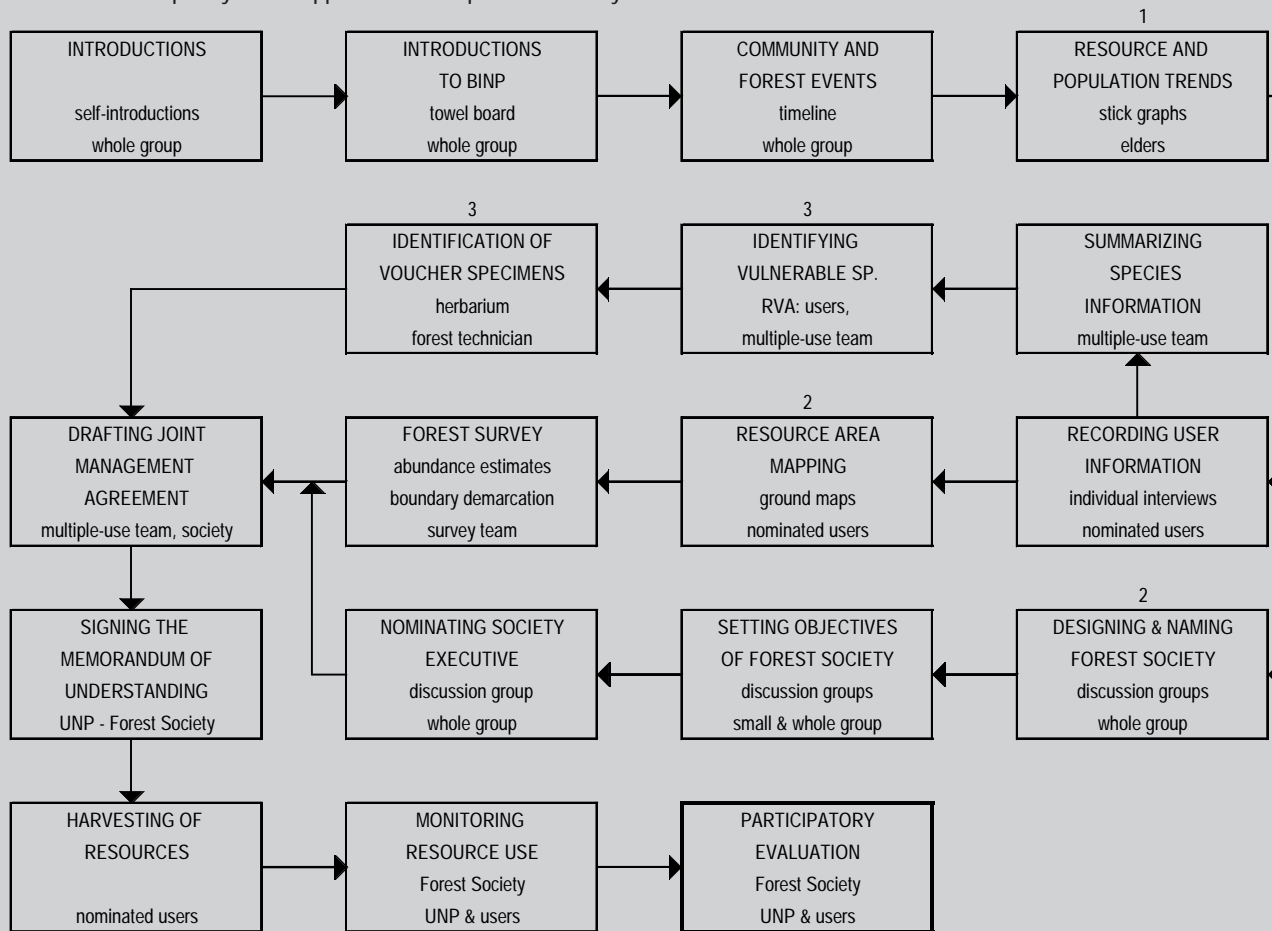
Small groups identified categories of forest resources and ranked them in order of importance (Table 3). Groups of women worked separately, to bring out gender differences. Resources were identified by brainstorming and the resulting list discussed to arrive at community categories. These were then ranked using either discussion or the pairwise ranking technique. Pairwise ranking using local materials on the ground went deeper and revealed more species information but took longer. In some cases people chose not to rank items they felt were not up for discussion, such as timber and gold, saying “we will not be allowed to use these so why bother to talk about them”.

Table 3. Ranking of resource categories by three parishes around BINP

Rank	Mpungu All 10/6/93	Rutugunda All 5/4/94	Nteko Men 23/4/94	Nteko Women 23/4/94
1	medicinal plants	basketry	medicinal plants	medicinal plants
2	basketry	medicinal plants	Kayonza Road	basketry fibres
3	beer boats	water for stock	<i>enshuri</i>	Kayonza Road
4	firewood	firewood	timber	bean stakes
5	beanstakes	tree seeds	<i>omujega</i>	tool handles
6	beehives	food	bean stakes	firewood
7	fruit		building poles	fish
8	mushrooms		vegetables	mushrooms
9	honey		fish	fruit
10			gum	
11			water	
12			meat	
13			beehives	
14			hoe handles	
15			fuelwood	
16			beekeeping	
17			honey hunting	
18			<i>Raphia</i>	
19			<i>ebihama</i>	
20			gold	

enshuri = *Smilax anceps* *omujega* = *Loesenerellia apocynoides* *ebihama* = *Dioscorea* sp. tuber
 food = tubers, stingless and honeybee honey, fish
 tool handles = hoe handles, pounding sticks, walking sticks
 Rutugunda: women ranked firewood first; Batwa ranked firewood first and food (tubers) second.

Figure 5. Flowchart showing the sequence of Collaborative Management Activities including Participatory Rural Appraisal and Rapid Vulnerability Assessment.



Note: Activities took place at 3-4 Parish Workshops, taking 10-20 days over 7-10 months.

Key: .1, 2 & 3: Activities that can occur concurrently followed by reporting back.

WHICH ITEMS WOULD UNP PERMIT THE USE OF?

On the basis of earlier reports (Cunningham, 1996) UNP had already taken some decisions on which resources could be used. Presenting these was sensitive, as people's responses would show whether items on offer were of sufficient interest to communities to make collaborative management worth their while. First, the community's views of which items they thought the park authorities would allow use of were elicited. The towel board was set up and individuals invited to place the pictures of forest resources under the appropriate heading (Table 4). Many made comments as they put the items on the board.

"Hunting is not allowed, so the poachers will not be accepted to go to the forest to kill animals with their dogs". "I know there are medicines in the forest which can cure some diseases, so we are begging to be accepted to go to the forest". "Fish are also animals, so I am doubting if they will accept but we should all pray hard so

fishing will be allowed". "Bean stakes are got from trees in the forest so they will not be accepted". "In order to survive we need to cook food, so here the park will allow us to collect fire-wood".

The Park Warden then discussed each item and moved those which were in a different position than that assigned by UNP (Table 4). As each one was moved, the reasons for the move were given. Each item discussed was accompanied by either applause, discussion, grumbling or open dissent. On the whole people were satisfied with what was on offer, saying "let us work with this and see what the future brings." It was pointed out that within each category of resource approved by UNP for use, each species would be assessed to ensure that extraction did not exhaust supply. Items that were not currently permitted by UNP would be the subject of extension and research work by DTC and ITFC to provide alternatives or encourage on-farm cultivation.

NOMINATING RESOURCE USERS

Deciding how many resource users could harvest from an area and who they should be were important steps, affecting the harvest quantity and quality and behaviour in the forest. Contrary to our expectation, the community willingly discussed severe limitation on numbers. For the two Mpungu multiple-use areas (ca 9 km²), for example, the numbers of basketmakers discussed ranged between 2 and 20. Following this discussion the community nominated 22 basketmakers. Once more details on species and areas harvested were collected we felt the resources could sustain all the 22 nominated users. We had the same experience in all the pilot parishes and the nomination process therefore proved to be self-limiting.

Nominations were made, discussed and either accepted or rejected by community consensus. Criteria for nominations were that users be the recognized experts of their trade, provide good quality, fair service and be responsible and reliable individuals. In Mpungu parish, species and harvest area data were collected from 129 people (85 basketmakers, 44 herbalists) interested in harvesting before the nomination meeting, but only 39 were then actually nominated. To avoid this in other parishes, the nomination sessions were brought forward, and data were collected from nominated resource users only.

Having arrived at a list of nominated resource users the parish workshops split into two main areas of focus, one gathering information on species harvested and the areas of the forest where harvesting would occur, and one dealing with how harvesting would be managed to ensure sustainability and overall conservation of the forest.

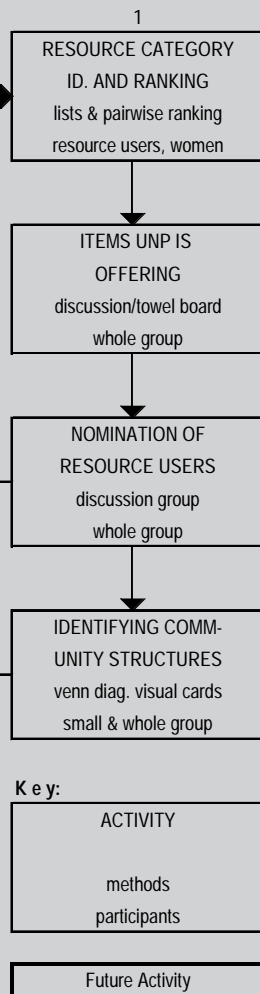


Table 4. Results of the session "What UNP would allow" at Mpungu Parish, Bwindi Impenetrable National Park

	ALLOWED	UNDER CONSIDERATION	NOT ALLOWED
COMMUNITY VIEW	medicines basketry honey firewood fruits stock watering	mushrooms fish footpaths gum	meat timber hunting beanstakes gold building poles
UNP HQ APPROVED	medicines basketry beekeeping footpaths	mushrooms fruit fish stock watering gum	meat timber hunting beanstakes firewood gold building poles

RESOURCE USER (KEY INFORMANT) INTERVIEWS

User interviews provided much valuable data for establishing resource use. Two approaches were tried, group sessions and individual interviews. The group sessions were less effective as most people were idle while one user was interviewed. Users also affected the answers of each other. Herbalists do not like to divulge "their" species, and one group session revealed only 17 medicinal species, while 49 were identified from individual interviews in the same sub-parish. Individual interviews took place at the same time as a group activity. The information collected included the name of the user, home area, the species requested, quantities used, locations collected from, estimated abundance and products made, species ecology, and estimated maximum number of harvesters for sustainable harvesting. The data were recorded on raw data sheets, and transferred to summary sheets.

GROUND MAPS

Ground maps were drawn by groups of users to identify potential multiple-use areas. The maps included villages, roads, the forest boundary and features in the forest and were produced using local materials (Photo 4). Locations of the key species were indicated using flowers or leaves. The main resource and boundary loca-



Photo 4. Group constructing a ground map, Mpungu Parish.

tions were discussed. After ground maps were produced, a smaller team was identified to join the park staff for forest surveys.

FOREST SURVEYS

The nominated forest survey team visited the areas identified in the ground maps, examining resources and confirming or modifying boundaries. At the edge of the forest, the users estimated the abundance of demanded species in that area of forest. The abundance scale was discussed and vernacular words agreed corresponding to the DAFOR (dominant, abundant, frequent, occasional and rare) scale (Smith *et al.*, 1985). The list of species was read out and users' estimates of abundance in forest and on farmland were recorded (Table 5). This identified species that were common on farms and need not be harvested from forest.

These user abundance estimates were compared with knowledge of the multiple-use team and discussed with local patrol rangers. On the whole, the abundance assessments compared favourably, though users consistently estimated abundance at one level higher than the team. The estimates were also confirmed, as far as possible, during the forest survey itself. It was not possible to cover more than a small part of the forest during these surveys and so the focus was on vulnerable species identified by the RVA. Resource users would draw to the attention of the multiple-use team any species in demand and their ecology, distribution, abundance and use were discussed. Specimens were collected of species not previously recorded in the area by the multiple-use team.

The boundaries drawn used known landmarks: rivers, hills and major footpaths. Footpaths proved particularly useful, as they were well known by the community. The rangers used these paths for patrol and could detect people crossing the paths and moving deeper into the forest. To determine the multiple-use area boundary, the team took into account the locations of resources in relation to clear boundaries, the home ranges of gorillas and the need to limit the overall size of the areas. On the spot negotiations were important to make appropriate changes to the areas.

Due to the large areas and difficult terrain, we could not assess the species and identify the boundary during the same survey. Identifying the boundary was given first priority. Some species assessments were made as the boundary was walked and follow-up visits made for vulnerable species.

FOREST SOCIETIES

A weakness in earlier resource use under the Forest Department (FD) was the lack of community involvement in management. The FD

Table 5. Abundance estimates of medicinal plants by the nominated survey team, Nteko Parish, 6 July 1994

Local name	Botanical name	Life form	Abundance in forest	Abundance in village
omwiha	<i>Ocotea usambarensis</i>	tree	F	-
rukukota	<i>Piper guineensis</i>	climber	F	-
nyakibazi	<i>Rytigynia kigezensis</i>	tree	O	-
omuhanga	<i>Maesa lanceolata</i>	tree	O	A
omuyovi	<i>Entandrophragma</i> sp.	tree	F	R
omujeesi	<i>Hagenia absyssinica</i>	tree	F	R
omkarara	<i>indet.</i>	climber	O	-
omuguruka	<i>Maesopsis eminii</i>	tree	O	-
omuna	<i>Seriestachys scandens</i>	climber	A	R
omushasha	<i>Macaranga</i> sp.	tree	F	O
kitkye'ihamba	<i>indet.</i>	shrub	F	-
isubyo	<i>indet.</i>	climber	F	-
kitinwa	<i>indet.</i>	creeper	-	A
ekizimyamuriro	<i>Crassocephalum</i> sp.	climber	R	A
omumara	<i>indet.</i>	climber	-	R

A=abundant, F=frequent, O=occasional, R=rare

had made decisions and issued permits to individuals. The active involvement of participating communities in management was a key principle followed in this work:

- Communities often have a greater knowledge of the resource than the conservation managers.
- They are better able to control their own members.
- Community involvement would improve community relations with park staff.
- Community involvement would instil a sense of ownership and hence responsibility for forest conservation

Several questions needed to be answered before community management was implemented:

- Which community organizations operate at parish level, how do they operate and what is their relationship to the forest?
- In which organizations do people have confidence to manage forest utilization?
- How do these organizations work with existing government structures and how would they interact with Uganda National Parks?
- Are they sufficient, as they are, to manage forest utilization?

To identify community structures, small groups in the parish workshops listed the organizations which were then written on individual cards. In a subsequent large group, anyone who wanted to take a card placed it on a board and a short discussion was held, facilitated by a community leader, as to how the groups should be classified in relation to the forest. We tried to understand the nature of these groups and how they fitted in with local government and the geography of the parish. Then the discussion moved on to which organization should manage the utilization activities. Each of the three parish-

es chose a different organization, the *abataka*, the *engozi* (stretcher) groups and the RC-I (Box 3, page 6), respectively, none of them having a direct relationship with the forest. This selection showed the importance of having both users and non-users involved in forest management to enhance equity within the community.

In all 22 parishes there were several *abataka*, *engozi* groups and RC-Is which made it difficult for park staff to co-ordinate joint activities. It was therefore agreed to form a new link organization or society in each parish. The membership and management of the society was formulated and the post-holders elected. Most of the members were the leaders of the community groups chosen previously with additional members drawn from among nominated users, RCs, Chiefs, religious leaders, park and project staff (Figure 6). Each society chose its own name and the English "Forest Society" is derived from the first one set up *Ekibiina Kya'beihamba - Omuruka gwa Mpungu* (Forest Society - Mpungu parish).

The operation of the society was discussed and the idea of documenting the resource use decisions in a written agreement was enthusiastically embraced. These written agreements were to become the Memoranda of Understanding (MoUs). Small group sessions decided the objectives of the Forest Society (Box 7, next page). Through the secretaries of the *ekibiina ky'engozi* and *abataka*, the Society would also maintain records of the quantities of resources harvested. Each user would be issued with an identity card. The Forest Societies would meet at least three times a year and one meeting would be an Annual General Meeting, to which all the resource users and the Park Warden would be invited.

PARISH WORKSHOP
FOLLOW-UP

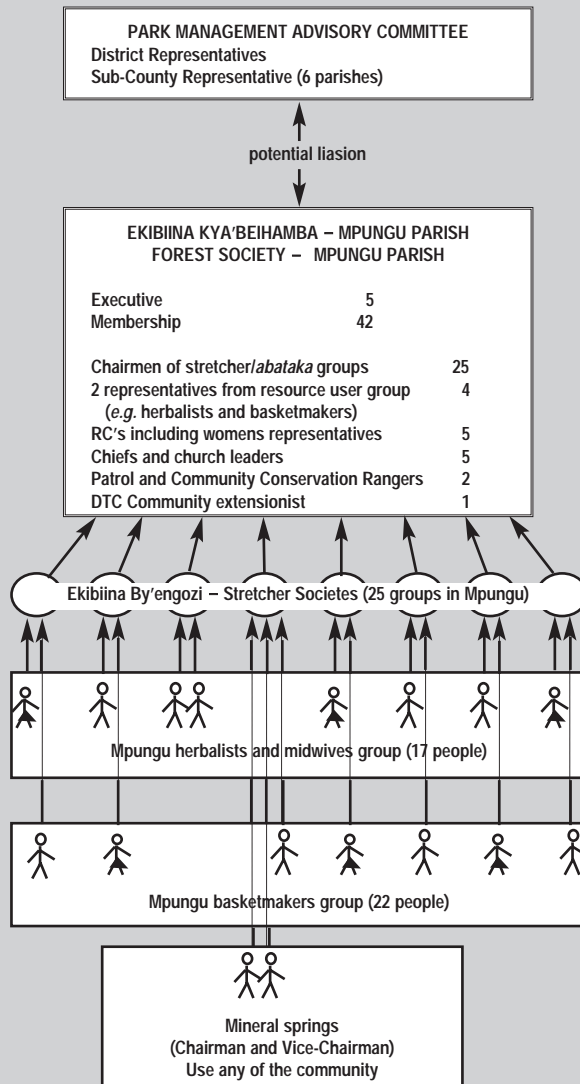


Figure 6. Link organization or society in each parish. Most of the members were the leaders of the community groups, with additional members drawn from among nominated users, RCs, chiefs, religious leaders, park and project staff.

The development of the MoUs was supported by follow-up work, data processing and participatory research plots of vulnerable species. Consultations and briefings were held with UNP staff and other organizations locally and at headquarters. Plant specimens were identified at the park or national herbaria. The species summary forms were completed and decisions on harvest levels made. These decisions were presented to the nominated users for discussion. In most cases quantities were based on the suggestions of users. In a few cases limits were made and some species not allowed for use, but this was open to negotiation. In the case of *Loeseneriella apocynoides*, which the park did not initially think should be harvested, the community in Nteko argued strongly for some use. A single one-off harvest was allowed for stretchers only, with the decision to be subsequently reviewed. Following analysis of the data from the research plots, its use for stretchers was considered acceptable. This followed closely the recommendation by Cunningham (1996).

Participatory research was carried out for vulnerable species. Permanent sample plots were set up with local experts, species were recorded and trial harvesting carried out if appropriate. Village use of such resources was researched to confirm demand and identify intervention points. Consultations were held with ITFC and the International Gorilla Conservation Programme (IGCP) and the following guidelines were adopted to reduce interaction and the risk of disease transmission to gorillas:

Box 7. The objectives of Ekibiina Kya'beihamba - (Forest Society), Mpungu Parish

The objectives of the committee shall be as agreed:

- To protect and conserve Bwindi Impenetrable National Park
- To develop and maintain good relationships between the people of Mpungu Parish and the National Park staff
- To negotiate access to resources from the National Park and participate in developing a system to ensure their utilization is sustainable
- To participate in determining the multiple-use areas and assessing and monitoring the levels of each species or resources in those areas
- To improve the communication between the National Park staff and the community and act as an information link
- To investigate the illegal use of resources and other illegal activities both inside and outside the multiple use areas and take appropriate action
- To encourage the community to grow on their own land species that are not obtainable from the park and other species as substitutes
- To collaborate with the BINP staff to find ways of controlling crop damage by wildlife
- To encourage the collaboration between the traditional herbalists and medical personnel
- To control the nominated resource users to ensure high standards of behaviour within the National Park and that the benefits of utilization of resources are equitably shared amongst the community.

- Minimize the overlap between gorilla home ranges and multiple-use zones.
- Minimize user presence in the forest by seasonal collection.
- Close the multiple-use zones when gorilla groups are present.
- Set regulations for movement in the forest similar to those for tourists.
- Train resource users in those regulations.
- Monitor user presence in the forest.
- Monitor the movement of gorillas into the multiple-use zones.
- Monitor changes to the home ranges of the gorillas.

Memoranda of Understanding

The output of the parish workshops, follow-up work and participatory research were Memoranda of Understanding between communities and park authorities which documented the decisions taken in the meetings as a parish multiple-use plan. They were not legally binding but set out the intent and responsibility of each party. They contained the structure of the Forest Society and its objectives, the names of the office holders, nominated resource users, and the species and quantities to be harvested by each user. A boundary description was included as well as a map of the multiple-use areas. Additional sections included activities related to the control of crop-raiding by wildlife. The agreements, in Rukiga and English, were reviewed by each Forest Society. A ceremony was held when the agreement was signed by both parties (Photo 5). To disseminate the agreements to the whole community, a new cadre of Community Conservation Rangers, established by the park to improve communication, went through the agreement with each *engozi*, *abataka* or RCI, resource users and interested community members.

In the pilot agreements, a total for the three pilot parishes of 36 species of medicinal plants and 21 basketry species were sanctioned for use (Tables 6, 7 and 8). Total annual quantities agreed were small, less than 40 handfuls of bark or leaves for most medicinal plants, and were to be harvested

in an area totalling 23.8 km² for the three parishes. Some 77% (44) of the species named were collected by five or less harvesters. Herbalists were allowed to collect approximately once a month, while basketmakers were to collect in two seasons, with approximately 6 days in the forest per year. With the exception of women basketmakers, who collect in groups in limited areas often at the forest edge, there were 91 nominated harvesters. This gave a user density in the use areas of *ca* 0.038 per ha. As users agreed to visit the forest on *ca* 10 days per year (*ca* 6 hrs a day), and were allowed to be accompanied by one registered apprentice, user presence in the multiple-use areas would be *ca* 4.6 person hrs per ha and year. The total area allowed for multiple-use for all parishes around the forest is 20% (66 km²) of the forest. The area for the three pilot parishes (23.8 km²) is 7.2% of the forest and 36% of the multiple-use zone. If 20% of the forest is to be enough for all parishes, each parish should use an average of 3.3 km². The average area of forest for each pilot parish (7.9 km²) is double this size. This is not necessarily too much, as two of the pilot parishes are large with long forest boundaries, and Rutugunda is likely to share its multiple-use area with neighbouring Bushura parish. Also several parishes are smaller and will use below average areas. The areas allocated, however, will need to be carefully assessed as other agreements are negotiated. If necessary some pilot areas could be reduced as unused areas were included in the multiple-use areas to establish a clear boundary.

Four species were identified as vulnerable; *Prunus africana*, *Celtis durandii*, *Rytigynia kigeziensis* and *Loeseneriella apocynoides*. Only one heavily debarked specimen of *Celtis*



Photo 5. Signing ceremony of the Memorandum of Understanding, Mpungu Parish. Dr. Eric Edroma, Director UNP and now Director UWA, second right.

Table 6. Species and quantities of medicinal plants, agreed for harvesting, in the joint management agreements

Family	Species	Local name	Life form	Part used	No. of users			Total	Total quantity used per year
					MPU	RUT	NTE		
Rubiaceae	<i>Rytigynia kigeziensis*</i>	nyakibazi	tree	bark leaf root	14	3	6	26	68 hfs 4 hfs 20 fls
Lauraceae	<i>Ocotea usambarensis</i>	omwiha	tree	bark leaf root	7	1	5	14	160 hfs 20 hfs 2 arm lengths
Piperaceae	<i>Piper guineensis</i>	rukokota	liane	root leaf bark	7	1	5	14	720 fls 8 hfs 2 hfs
Rhamnaceae	<i>Gouania longispicata</i>	omufurura	creeper	leaf stem sap	7	1	1	9	84 hfs 2 ft. 20 hfs
Euphorbiaceae	<i>Croton macrostachyus</i>	omurangara	tree	bark	5			5	2.5 hfs
Marattiaceae	<i>Marattia fraxinea</i>	omutumbagire	fern	leaf	4			4	480 leaflets
Euphorbiaceae	<i>Neoboutonia macrocalyx</i>	omwanya	tree	leaf bark	4 4			4	12 hfs 12 hfs
Rosaceae	<i>Prunus africana*</i>	omumba	tree	bark	4			4	48 hfs
Celastraceae	<i>Maytenus acuminata</i>	omulembwe	tree	leaf	2	1		3	36 hfs
Myricaceae	<i>Myrica salicifolia</i>	omugyegye	tree	bark	1	2		3	28 hfs
Zingiberaceae	<i>Aframomum</i> sp.	obuzi	herb	leaf		1		2	8 hfs
Fabaceae	<i>Albizia gummifera</i>	omuragaza	tree	leaf		1	1	2	36 hfs
Theaceae	<i>Ficalhoa laurifolia</i>	omuvumaga	tree	bark	2			2	24 hfs
Rosaceae	<i>Hagenia abyssinica</i>	omugesi	tree	bark			2	2	24 hfs
Myrsinaceae	<i>Maesa lanceolata</i>	omuhanga	tree	leaf			2	2	40 hfs
Rhamnaceae	<i>Maesopsis eminii</i>	omuguruka	tree	bark	2			2	24 hfs
Loganiaceae	<i>Nuxia congesta</i>	omubuzigye	tree	bark		2		2	24 hfs
Amaranthaceae	<i>Seritostachys scandens</i>	omuna	liane	leaf			2	2	40 hfs
Myrtaceae	<i>Syzygium guineense</i>	omugote	tree	leaf bark	2 2			2	24 hfs 24 hfs
Rutaceae	<i>Zanthoxylum macrophylla</i>	omushaga	tree	bark	2			2	12 hfs
Rutaceae	<i>Zanthoxylum</i> sp.	omushaga	tree	bark leaf			1 1	2	12 hfs 20 hfs
Loganiaceae	<i>Anthocleista</i> sp.	omunyinya	shrub	bark			1	1	12 hfs
Euphorbiaceae	<i>Clutia abyssinica</i>	omubarama	shrub	leaf		1		1	24 hfs
Euphorbiaceae	<i>Croton</i> sp.	omurangara	tree	leaf			1	1	20 hfs
Cyatheaceae	<i>Cyathea manniana</i>	ekigunju	tree	leaf bark	1 1			1	6 hfs 6 hfs
Sterculiaceae	<i>Dombeya goetzenii</i>	omukore	tree	leaf			1	1	20 hfs
Proteaceae	<i>Faurea saligna</i>	omurengyere	tree	bark			1	1	12 hfs
Moraceae	<i>Myrianthus holstii</i>	omwifa	tree	fruit	1			1	12 fruits
Asteraceae	<i>Notonia</i> sp.	otunyarufuzi	creeper	leaf		1		1	4 hfs
Adiantaceae	<i>Pellaea viridis</i>	orushwiga	herb	leaf		1		1	8 hfs
Clausiaceae	<i>Symphonia globulifera</i>	omusisi	tree	bark	1			1	12 hfs
Asteraceae	<i>Vernonia smithiana</i>	otunyarogongo	herb	leaf		1		1	8 hfs
	indet.	ekyururu	climber	leaf			1	1	20 hfs
	indet.	enkiriahakye	herb	stem		1		1	2 ft.
	indet.	obuteraganyi	herb	leaf		1		1	8 hfs
	indet.	isubyo	shrub	leaf			2	2	40 hfs
	indet.	obutungo	herb	root		1		1	4 hfs

* Potentially vulnerable species

MPU=Mpungu, RUT=Rutugunda, NTE=Nteko Parishes
hfs=handfuls, fls=fingerlengths

Table 7. Species and quantities of basketry plants used by men, agreed for harvesting, in the joint management agreements

Family	Species	Local name	Life form	Part used	No. of users			Total	Total quantity used per year
					MPU	RUT	NTE		
Smilacaceae	<i>Smilax anceps</i>	enshuri	liane	stolon	18	9	12	39	180 headloads
Agavaceae	<i>Dracaena laxissima</i>	enchenche	liane	stem	18	5	9	32	82 headloads
Annonaceae	<i>Monanthes littoralis</i>	entaaro	liane	stem	17	4		21	400 8 ft. sticks
Vitaceae	<i>Cyphostemma bambuseti</i>	embungwe	liane	stem			10	10	40 headloads
Urticaceae	<i>Urera hipsilodendron</i>	emishe	liane	stem			5	5	20 headloads
Tiliaceae	<i>Triumfetta sp.</i>	omunaba	shrub	stem			3	3	12 headloads
Euphorbiaceae	<i>Alchornea hirtella</i>	ekizogwa	shrub	stem		2		2	8 headloads
Celastraceae	<i>Loeseneriella apocynoides</i>	omujega	liane	stem			2	2	2 headloads
Clusiaceae	<i>Symphonia globulifera</i>	obukoro	arbre	gum			2	2	8 handfuls
	<i>indet.</i>	endengematar	liane	stem			7	7	26 headloads
	<i>indet.</i>	bikaku	liane	stem			3	3	6 headloads
	<i>indet.</i>	emisheshe	liane	stem			3	3	12 headloads
	<i>indet.</i>	omwatamabar	liane	stem		3		3	12 headloads
	<i>indet.</i>	engondero	liane	stem			5	5	20 headloads
	<i>indet.</i>	ebyeate	liane	stem		2		2	8 headloads
	<i>indet.</i>	endengamatar	liane	stem		2		2	8 headloads
Nominated male basketmakers					19	9	19	47	

durandii, a common forest tree in many Ugandan forests, was found in the multiple-use areas and users agreed to use a common shrub as a substitute. *Prunus africana* was not considered vulnerable at BINP itself, but was given this status due to the international trade in its bark which is threatening the species across the continent (Cunningham & Mbenkum, 1993). It is hoped that the nominated herbalists will protect this species should attempts be made to recruit commercial collectors locally. Small quantities of the other two species were allowed. Of these, *Rytigynia kigeziensis* is at most risk. Substitution by taking less damaging parts of the plant (leaves, branch bark) may prove the best option. Following six months of field research in 1995/96, a post-graduate student who worked with local users is currently developing recommendations which address this issue.

Negotiating the Memoranda of Understanding took 15-20 days of fieldwork per parish, over a period of 6 to 10 months. The seven months taken for the Rutugunda agreement was appropriate and allowed sufficient "gestation" time between meetings. The other agreements took too long, due to inexperience and incidental delays. Occasionally, community members wanted to move more quickly, but overall they were satisfied with progress. Periods shorter than six months could jeopardize the process. At this rate, however, negotiations for the remaining 17 parishes would take three years: too long for the last parishes to wait. Speeding up the process could cause reduced participation. The process may accelerate as word spreads elsewhere. In negotiating the agreements the community members who were also park or project staff played particularly important roles, having the knowledge and confidence of both groups.

Table 8. Species and quantities of basketry plants used by women, agreed for harvesting, in the joint management agreements

Family	Species	Local name	Life form	Part used	Group visits/year			Total quantity allowed per year
					MPU	RUT	NTE	
Poaceae	<i>Eleusine indica</i>	enchenzi	grass	flower stem	10			40 bundles
Marantaceae	<i>Marantochloa leucantha</i>	omwiru	shrub	stem	10	10		80 bundles
Tiliaceae	<i>Triumfetta sp.</i>	omunaba	shrub	stem		10		40 bundles
Arecaceae	<i>Raphia farinifera</i>	ebihungye	palm	leaf shoot			6	60 bundles
Marantaceae	<i>gen. indet.</i>	obukogoso	shrub	stem	10	10	12	140 bundles
Zingiberaceae	<i>gen. indet.</i>	ebitatara	shrub	flower stem	10	10		80 bundles
Nominated womens leaders					3	17	5	Total women 25

Harvesting

Harvesting began after signing the agreements and harvesters were to be accompanied by park staff until it was felt unnecessary. This allowed the rangers to learn more about the species, harvesting and areas, as well as getting to know the resource users better. Community members only really began to believe the resource use agreements were genuine when they began to collect the materials (Photo 6). Before that, many nominated users still felt there was some deception by the national park and they had been told by others that they were wasting their time attending meetings.

Substitution

Substitution of resources is a key part of the resource use strategy: low impact uses of the forest and the substitution for the high impact uses by resource production on farm. Planting trees has been a main activity of the DTC project. The project has carried out general plantings of exotic species, the promotion of indigenous species and some specialized substitution for particular resources. Although tree planting was slow to begin with, it is now gaining momentum. Over a million seedlings were planted in the five years from 1988. This figure is a conservative estimate as it excluded records from extension staff who had left the project prior to 1993. Tree planting was increasing and during the first six months of 1994, 357 tree nurseries were in production and 226083 trees were planted (CARE, 1994a). In the first six months of 1994, over four thousand trees indigenous to BINP were planted on farms. Specialist substitution activities include densely planted *Sesbania sesban* for use as bean stakes and propagation of medicinal plants. The tea industry has been approached to assist in reducing the demand for tea baskets by using collection nets or plastic baskets (Wild, 1994). An alternative plucking basket has been developed by farmers in Mpungu using a shrub common on fallow land (Photo 7).

Monitoring

Close monitoring is essential for managing resource use. Five types of monitoring were identified.

ILLEGAL ACTIVITIES

For successful community utilization of park resources:

- Information on infractions must reach decision makers from the park and the community.
- Communities must have the mechanisms to control their own members.



Photo 6. Community members only really began to believe the resource use agreements were genuine when they began to collect the materials.

- Park authorities must have the capacity to enforce the decisions to the point of community exclusion (Sayer, 1991).

Measuring the level of illegal activities as an indicator of programme effectiveness is not straightforward. A decrease in infractions can mean illegal activities are decreasing or conversely that ranger patrols are ineffective in reporting infractions. An increase in arrests may simply indicate improved patrol effort, not an increase in infractions. Past BINP patrol records were inadequate: only patrols which produced an arrest or confiscation had been recorded, making it impossible to calculate the patrol effort; incomplete records were kept of the length (days) of patrols; location data were not always sufficiently precise; it is desirable to identify likely communities whose members may have been responsible for an infraction.

The system for recording patrols was revised and now includes data on community assistance in illegal activity control. It is too early to evaluate the extent of community assistance but initial indications are positive. Over the first two years that beekeeping operated with UNP agreement, there were no fires in the beekeeping areas. Prior to that, fires occurred each dry season. Park staff are now warned when fires are approaching the park boundary. Information from rangers indicated that some beekeepers were using the pretext of checking their hives to set snares. Park wardens held meetings with the beekeeping societies which warned and fined individuals. During a forest survey, illegal pole cutting was traced to

the home of a newly nominated resource user who was fined five litres of local beer and ordered to plant 50 trees. In Mpungu, nominated resource users twice informed park staff of poaching. A resulting patrol caught two poachers, one of whom escaped while the other was fined US\$ 4,000 (US\$ 4) by the police. The poacher who escaped was apprehended by his stretcher group (*engozi*) and fined a goat (US\$ 20) and a drum of beer (US\$ 20), an amount ten times the police fine.

UTILIZED SPECIES

Utilized species are monitored by users, UNP/UWA and the ITFC at three levels of intensity, depending on their vulnerability. With support from the Community Conservation Rangers (CCR) users will record offtake. Declining harvests, which may be due to other factors such as forest regeneration, will be investigated.

- **Minimal Monitoring:** For the least vulnerable species, offtake and user reports will be used.
- **Moderate Monitoring:** In addition to offtake, harvests will be measured from permanent plots by UNP/UWA and ITFC.
- **Intense Monitoring:** Permanent plots will also be established but in greater numbers and outside the multiple-use areas. More information will be collected from the plots and from records of offtake from the multiple-use areas.

During the first few harvests the multiple-use team was present and measured the weights of the items collected by each harvester. Some

resource users were not fully aware of the quantities they were allowed to harvest. Harvesters also felt the weighing and measuring of the harvested material constituted policing of their activities, rather than monitoring of the sustainability of the resource. Measuring quantities harvested will be carried out jointly by the community or patrol rangers and resource users and eventually by the resource users alone.

MONITORING SECONDARY ECOLOGICAL IMPACTS

Two secondary effects of utilization can be recognized, the impact on other species which depend on a used species, and the impact of the presence of the users in the forest. No dependent or mutualistic relationship has yet been identified with a utilized species. Utilization levels are very low and are not expected to change the range, abundance or size classes of the utilized species. Of most concern are interactions between users and gorillas. Gorilla groups are already monitored by park staff and the ITFC. Rangers nominated to be responsible for specific multiple-use areas will monitor the movements of gorillas into those areas.

USER PRESENCE MONITORING

User presence will be recorded during each harvesting event. The results can be compared with tourist and ranger presence levels.

COMMUNITY ATTITUDES

It is hoped that limited resource use will improve the attitude of the community towards the park. This approach has been tried elsewhere (e.g. Infield, 1986; Mkanda & Munthali, 1994). At BINP a number of questionnaire surveys about attitudes have been administered but there are often doubts expressed about the value of questionnaire surveys (Chambers, 1992) and they are not free of bias. These attitude questionnaires showed that the communities value the forest highly, largely for resources. During the parish workshops the multiple-use team developed an alternative PRA technique to monitor the park/community relationship – a “Ground Relationship Graph”. It has been used with resource users, people suffering from baboons raiding crops, and park rangers. The technique established the change in relationship between the community and the forest managers over a period of years, and the reasons for those changes. A graph is set up on the ground with years on the x-axis and the relationship with the park on the y-axis. For each year the group discussed the relationship with each of the management authorities. This method consistently recorded the deterioration in relationships with increased law enforcement and then recent improvements due to conservation education,



Photo 7. Community Conservation Ranger Caleb Tumwesiimire, inspecting an *omushambya* (*Dodonaea viscosa*) plucking basket.

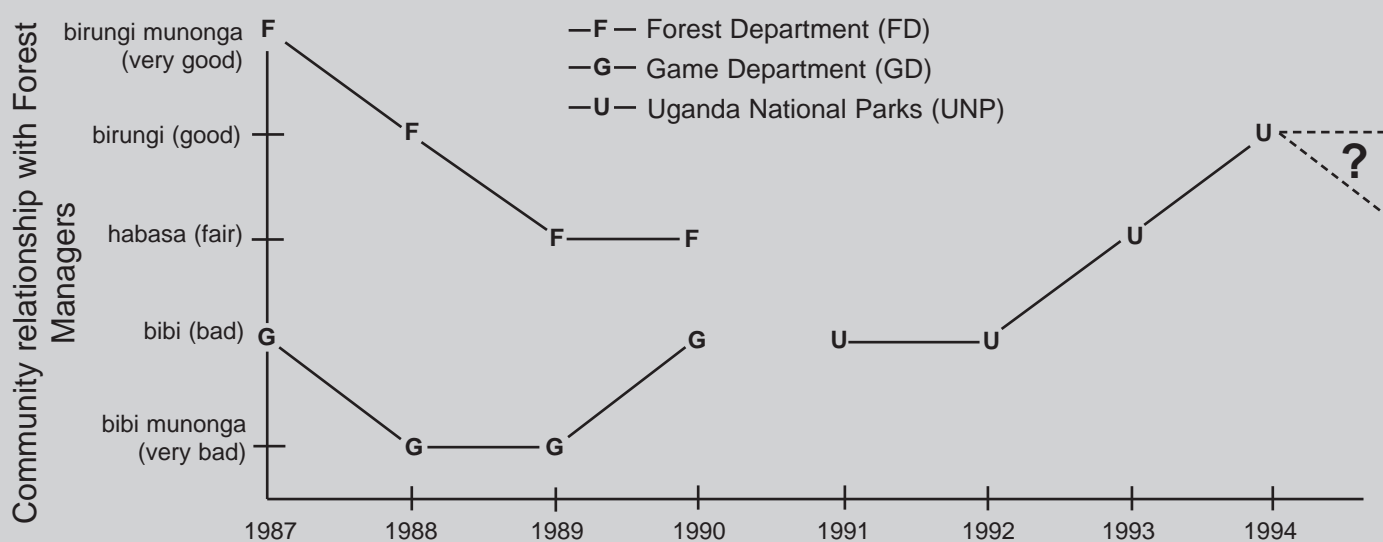
allowing RC courts to judge park infringements, the promise of resource use, agricultural support and lower expectations of a national park (Figure 7).

A possible criticism is that the group about which the attitudes are asked is the group facilitating the session. This could lead to exaggeration of the current "good" relationship as the community would not want to offend the facilitators. While this may have happened, the views presented by the communities are very similar to those given by park rangers. The results are certainly better than some questionnaire surveys which had people hiding in their fields fearing land adjudication for park expansion. This PRA approach has advantages over surveys which

establish attitudes on one day, as the results are in a historical context. The graphs were produced as a baseline for monitoring the Memoranda of Understanding, with the intention to return to the group to monitor change, when earlier results can be checked.

Having recounted the process of developing collaborative resource management at BINP, and the use of the four tools (participatory management planning, Rapid Vulnerability Assessment, Participatory Rural Appraisal, and the Park Management Advisory Committee), we now turn in the next section to an analysis of the components of collaborative resource management and its potential for other Ugandan and African conservation projects.

Figure 7. Ground relationship graph, park rangers, BINP.



Recorded by R. Barigwe, E. Gubelman and R. Wild on 26 July 1994

Indicator Factors:

- 1987 FD Pitsawings, grazing and illegal goldmining allowed. FD more powerful than GD.
GD Against activities allowed by FD, which brought conflict with community.
- 1988 FD Still gave out what people wanted, e.g. paid for a permit for two trees, and additional money to fell five trees. When GD stopped this, FD refused to pay bribes.
GD Halted illegal activities. When Game Guards entered village, people blew horns and beat drums to warn those in the forest. Game Guards stoned and FD bribed Army to beat them. Even relatives of Game Guards were chased from villages, when visiting. *Abataka* would fine market traders selling food or beer to Game Guards.
- 1989 FD Lost powers to allow resource use. Timber dealers and goldminers lost confidence in them, but realized it was their fault.
GD As 1988.
- 1990 FD Rumours began that Bwindi would become a national park. FD supported people saying "stay firm it won't become a national park and you will have access".
GD People could see GD was winning and thought they should improve relationships with them. Game Guards could buy food.
- 1991 FD Disappeared.
GD People thought GD and the RC's had sold forest to the whites as park gazetted and visitors came.
- 1992 UNP No resource use, feared other animals would be introduced and that park would expand. DTC as seen on park side.
- 1993 UNP Accepted park would stay. Conservation educators and DTC activists changed attitudes of community leaders.
- 1994 UNP Park softening, promise of resource use true. Promised revenue sharing.
- Future UWA Due to crop damage by wildlife, maximum yields will never be attained again.

The potential of collaborative resource management in Uganda

Components of collaborative management

In addition to scientific knowledge we identify collaborative management as having four additional main components: participation, local institutions, local knowledge and support zones (Figure 8). Many issues were raised in connection with each of these components at Bwindi Impenetrable and Mgahinga Gorilla National Parks.

PARTICIPATION

There were three types of fora for participation in resource use at BINP and MGNP: the Park Management Advisory Committee (PMAC), the management planning process and the parish workshops. Participation in these has already been discussed.

During the process of interacting with the communities to establish resource use, Uganda National Parks took some unilateral decisions. Questions have been raised as to whether UNP should have more fully negotiated these decisions, particularly which resource use categories to allow (Watts *et al.*, 1996). The decision to start resource use cautiously at BINP was in part to do with the ecological and historical context:

- It was a new and potentially controversial activity for Uganda, with very few models to follow;
- The presence of the endangered and sensitive mountain gorilla;
- The high biodiversity and high human population pressure;
- Hostility and mistrust between communities and park;
- Previous forest degradation only recently brought under control.

Certain dangers were recognized:

- Failure at an early stage by being too ambitious could discredit a promising tool;
- Opening old wounds by discussing recently controlled activities that would not be allowed for the foreseeable future;
- Prematurely raising the expectations of the communities;
- Starting an activity which would be found later to be unsustainable or unmanageable and then stopping it would be worse than not starting it at all;
- Community disenchantment with a process that was not getting anywhere;
- Establishing an activity which was beyond UNPs capacity to manage.

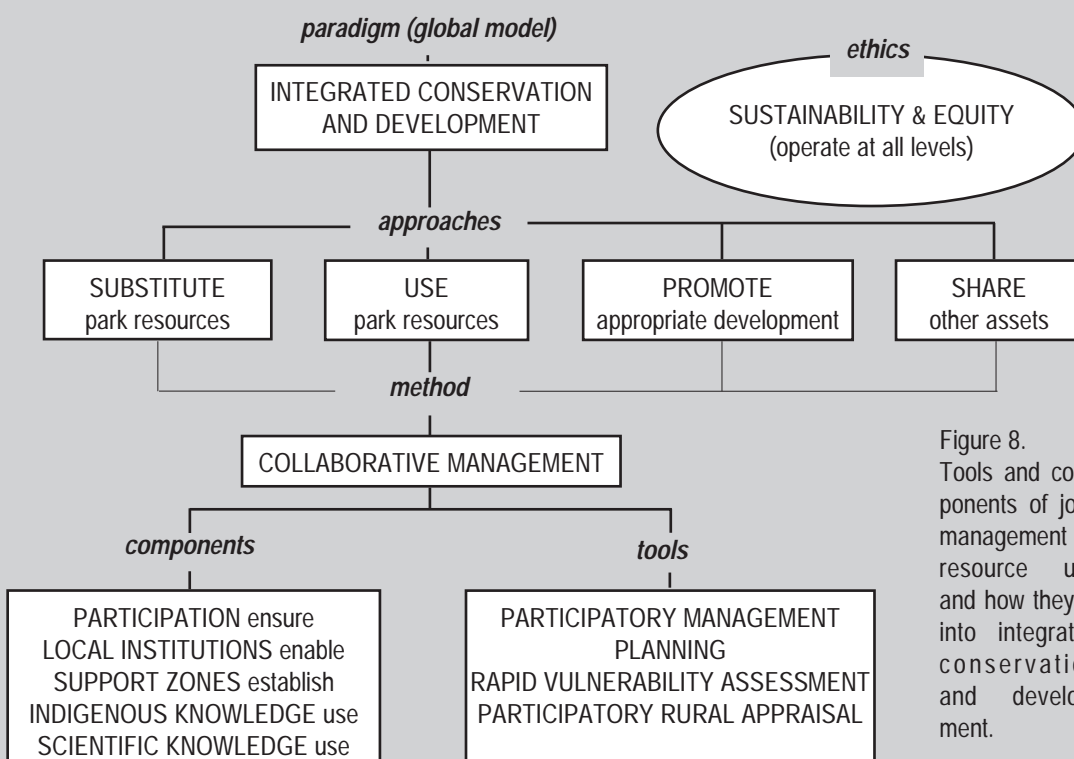


Figure 8. Tools and components of joint management of resource use and how they fit into integrated conservation and development.

Communities wanted access to the forest for some of the resources, rather than engaging in fruitless negotiations solely to satisfy Western ideals of participation. We felt that it was important, therefore, to have something on offer before the negotiations began.

This style of cautious stepwise approach has been challenged. Wily (1994) argued for a much bolder and comprehensive devolution of power to communities to the point of passing ownership to local communities:

"The extent of local control is commensurate with the extent of local rights over the resource in question. Ultimately, the user community which owns its local forest will be the most effective protector and conservator. The degree of letting go that is implied in such a development, tends to 'strike fear' into the heart of forest-owning governments..."

As a consequence it is rare for so-called community-based or joint management to move more than incrementally forward in passing power to the people and achieving equal partnership. Progress in sustainable conservation is accordingly slow."

Apart from equating equal partnership with local ownership, this viewpoint assumes local communities will always conserve their forest; an assumption not borne out by fact. The Bwindi communities cleared all their forest until the protected forest was all that remained. In the BINP management plan, community members recognized there were many constraints to absolute community management and recommended a partnership with UNP/UWA. Government has national and international obligations to consider in balancing the equity equation back towards local communities.

We were concerned that women and the Batwa should both participate in and benefit from resource use. A disadvantage of the traditional community organizations is that they exclude certain groups. The RC system has encouraged women's representation at all levels of decision making. The lower level of participation by women than men was reasonable as they use the forest less. Ensuring the effective involvement of the minority Batwa was much harder, particularly in one parish where there was historic enmity between Bakiga and Batwa. At our first community meeting there, the Batwa sat apart away from the meeting and the team invited them to join in. When introducing themselves they made statements such as:

"I am glad to be asked my name as I thought we were not considered people. The forest, where we used to get our food, is closed. We have no permanent houses, no places to dig, we are just floating."

They did not attend following meetings and we learnt that they had been warned off by other

community members. We discovered they lived completely separately, not attending the schools, or *abataka* or *engozi*, and had no access to education or health care. Community leaders told us that the Batwa had been included on the lists of resource users, but they were not. We felt it was best not to confront the community but continue the process, we had much trust to build with them. By the time the Memorandum of Understanding was signed, the Batwa women had been included for the collection of basketry materials and had a representative on the Forest Society; the first time the Batwa have had any representation within the community, as far as we are aware. We felt, given the situation, this was a good first step, and hoped that in time a more equitable arrangement for the Batwa would develop. In the other parishes where the Batwa were either more organized or better respected they were better represented in the collaborative management process.

LOCAL INSTITUTIONS

Community institutions responded positively to the idea of collaborative management of resource use and came together, through development of their meeting patterns, to form the Forest Societies. They quickly began to take active decisions and control some of the illegal activities in their area. In one parish the newly elected chairman had expectations of personal gain from the position. Once he realized that this was not forthcoming he lost interest in the position. Other members later decided to elect a new chairman.

Activities outside the normal village activities such as monitoring the amounts harvested would need support from the park staff. By identifying community organizations UNP had found a constructive way to interact with and support individuals representing the majority of the community.

"The multiple-use team has worked with communities to develop three Forest Societies, important parish level institutions. This was done through a valuable process of working with and empowering the communities. The strength of the Forest Societies is that they are based on existing community structures ... and thus can be viewed as fundamentally democratic in nature and drawing their strength and authority directly from the people." (Bensted-Smith *et al.*, 1995)

The Forest Societies have, therefore, made park communications easier, but meant the park had to adapt to make communication effective. This was achieved by establishing a new cadre of Community Conservation Rangers. The CCRs are UNP/UWA rangers who are not responsible for law enforcement but are charged with interacting positively with the communities in resource sharing, conservation education and

assisting the development of community projects for funding by tourist revenues. The park staff will need support to effectively implement these new activities.

LOCAL KNOWLEDGE

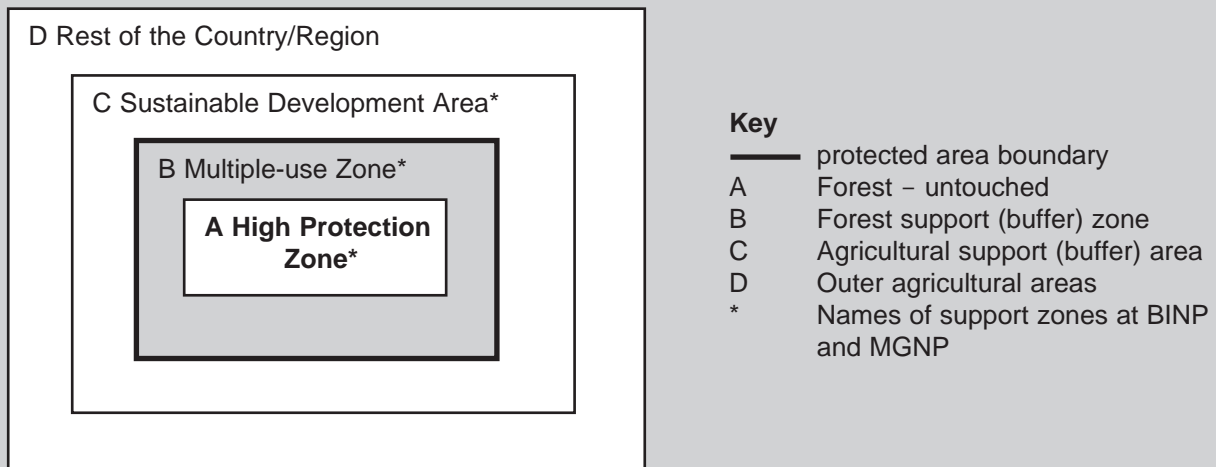
Large quantities of data were collected from the communities, which greatly assisted decision-making and made a significant contribution to knowledge of the park. In addition much of the knowledge has died out in areas far from the forest. Collaborative management will help to preserve local traditions through access to raw materials. We realized that local knowledge is often very local – an individual’s knowledge may just be of the few hills near his home.

ZONES: A BUFFER OR A SUPPORT?

The word “buffer” and “zone” had negative associations at Bwindi and Mgahinga. The terms agreed for zones established inside and outside the parks in the management plans were “multiple-use zone”, where UNP/UWA would retain ultimate authority, and “sustainable development area”, the community area under traditional land ownership where UNP/UWA would assist the community, and which for the most part contains the most affected people as indicated by the DTC baseline survey. The zones were initially identified during the management planning workshops based on the systems approach of Hamilton (Hamilton & Kigenyi, 1991) (Box 8).

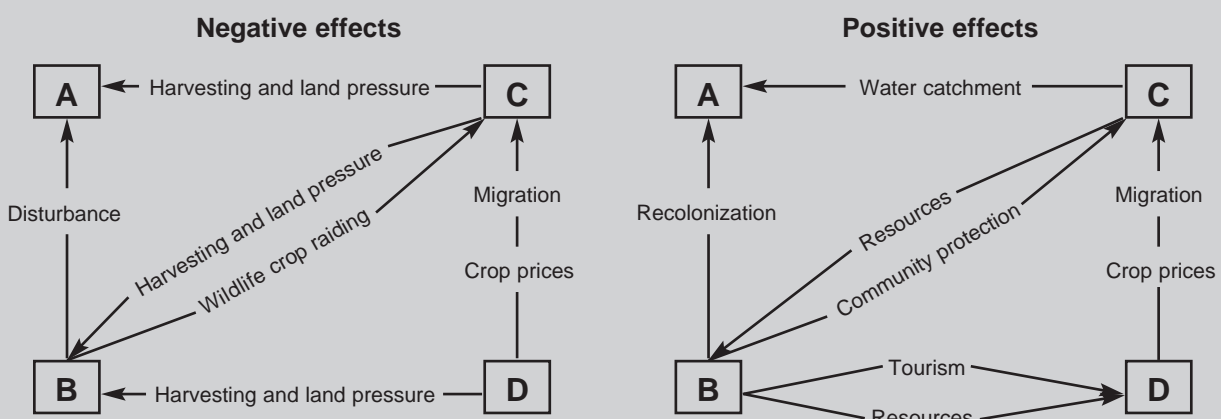
Box 8. Systems Approach to Buffer Zones (after Hamilton & Kigenyi, 1991)

1. Definition of system components



2. Definition of desirable system states (Describe and define the desirable state of each of the planning zones)

3. Identification of actual positive and negative interactions, e.g.:



4. Selection of negative interactions appropriate for research

5. Evaluation of interventions needed to achieve desired system state

6. Discussions with users of zones and practical possibilities

7. Interventions (Legal, community agreements, alternatives, new crops, crop raiding control, etc.)

8. Re-evaluation of system model (Redefinition of system components, desired states, etc.)

The development of collaborative management of resource use at BINP and MGNP has followed the broader approach to buffer zones taken by the 1992 workshop on buffer zone management held in Uganda (Brown & Wyckoff-Baird, 1992). A weakness of the buffer zone concept is that it was originally designed to buffer the conservation area from the depredations of the community, and it still carries this connotation. With a greater appreciation of the reality of the local community situation and the inequity of some conservation measures has come the realization that the community needs buffering from conservation. Given this new appreciation we recommend that buffer zones are renamed "support zones". This recognizes the ideal of mutual support between local communities and the conservation area. The relationship is thus couched in positive rather than negative terms. Our definition of support zones, based on Hamilton's systems approach is:

Any area, often peripheral to a protected area, inside or outside, in which activities are implemented or the area managed with the aim of enhancing the positive and reducing the negative impacts of conservation on neighbouring communities and neighbouring communities on conservation.

This definition resembles the 1992 workshop definition (see Box 1, page 4), but is more specific. It (a) confirms that zones can be either inside or outside the parks, (b) recognizes that people/park interactions can be positive, (c) recognizes that people need buffering from conservation and (d) suggests that a wide range of activities can induce people/park support and reduce conflict. The definition should be flexible enough to be applied to most Integrated Conservation and Development projects relying on zoning.

In Uganda more generally, the criteria for support zone area, shape and activities (Wells *et al.*, 1992) will be negotiated locally as appropriate to each situation. At Mount Elgon National Park, for example, bamboo is found well within the park, and bamboo harvesting zones cannot therefore be peripheral. Likewise, the restriction of utilization to specialist users is not appropriate at Mount Elgon where key resources are used by the whole community, and proposed resource use areas are either regenerating encroached land or low diversity/high biomass production vegetation types (bamboo). The balance between in park resource use and out of park resource substitution will depend on vulnerability/sensitivity factors including habitat type, integrity, biodiversity, rare and sensitive species, conservation status, size, biomass production, human population size, community development level.

How useful is collaborative management?

How useful is collaborative management as a way of implementing the resource use approach to improving local equity? Collaborative management of national parks has just begun in Uganda. Pilot agreements have been signed at BINP and the process begun at eight of the nine remaining parks. Initial indications are that within the pilot parishes at BINP the communities are becoming reconciled to the presence of the park and beginning a greater commitment to sustainable land use on their own land. Momentum and support, however, needs to be maintained.

Communication, a crucial part of the process, has moved beyond exchanges between rangers with guns and poachers with spears. The appointment of Community Conservation Rangers who are community members themselves, and the development of the Beekeeper Associations and the Forest Societies, means that there is a formal link between the intricate and developed communication networks of both conservation organizations and the local communities (Wild *et al.*, 1995).

Collaborative Management at BINP was guided by the experiences of Indian Joint Forest Management (JFM), but there are significant differences which help to examine whether it is more widely applicable. The process has been called "Collaborative Management" at BINP and MGNP because some park staff consider that "Joint Management" implies that communities and park authorities negotiate resource use from positions of equal strength, and this clearly was not the case at BINP or MGNP where UNP/UWA ultimately takes the decisions as to what resources can be used and where.

In India, JFM developed in a context of degraded production forests, whose biodiversity values were reduced to near zero. JFM has therefore been in the realm of restoration ecology, protecting forests on the verge of total destruction. The returning to communities of rights, long taken away by central government, in return for forest protection has halted the degradation and initiated recovery. The success of the Indian Joint Forest Management has meant that several million hectares of forest are now regenerating managed by over 10,000 Forest Protection Committees and the Indian Forest Department (Saigal, pers. comm.). This contrasts with Uganda's three fledgling Forest Societies! However, in Uganda the context is national parks of high biological diversity and integrity. The presence of the disease-prone mountain gorillas means that BINP is an extremely sensitive site. The higher conservation status has meant a careful analysis of the proposed activities. The quantities of non-timber forest products (NTFPs)

allowed for harvesting in Bwindi are very small compared to the situation in India, where unlimited use of these products is allowed. Also, in India PRA has not been used in the establishment of the Forest Protection Committees, but in the later research activities.

Based on the experience from India and Uganda we offer the following definition of Collaborative or Joint Management:

Collaborative or Joint Management is the process of collaboration between local communities and state agencies over the use and management of natural resources or other assets, either state or privately owned, through a process of negotiation which includes all stakeholders, recognizes the contribution of each and results in a mutually acceptable and adaptable agreement.

Three dimensions of sustainability

Three dimensions of sustainability affect resource use at BINP and MGNP:

Ecological sustainability: Use that does not reduce the future use potential, or impair the longterm viability of either the species being used or other species, and is compatible with the maintenance of the long-term viability of supporting and dependent ecosystems (IUCN, 1993).

Social sustainability: The ability of contracting communities to sustain their obligations as set out in the collaborative management agreements and to ensure the managing authorities maintain their obligations.

Institutional sustainability: The ability of the managing authority to sustain conservation obligations and the obligations as per the collaborative management agreements and to ensure that communities maintain their obligations.

These dimensions of sustainability raise important points for managing resource use.

- Ecological sustainability is dependent on social and institutional sustainability.
- Social and institutional sustainability needs to be maintained and monitored by all parties.
- Overall sustainability will be enhanced if resource use has been appropriately established.
- Monitoring as laid out in the agreements need to be effective.
- Social and institutional sustainability will be affected by many factors outside the control of the community or the management authority.

A number of measures have been taken at BINP to maximize ecological sustainability.

- Some 80% of the National Park zoned as high protection area with no resource harvesting;
- The proscription of high impact generalist uses such as timber, poles, firewood, beanstakes, etc.;
- Only permitting low impact specialist use of medicinal plants, basketry and low impact generalist beekeeping;
- The cautious establishment of pilot areas to test use;
- Using community leadership to nominate reliable users;
- Monitoring amounts harvested of all harvested species;
- Setting extraction rates of most species well below the potential based on the Rapid Vulnerability Assessment (RVA) methodology;
- Identification of vulnerable species and the establishment of monitoring plots for these species;
- Establishing procedures to minimize interaction with rare primates.

Factors affecting social sustainability include community cohesion and the identification and enabling of local decision-making structures. Communities will also need support to increase their capacity to monitor resource use.

Institutional sustainability refers to the ability of UNP/UWA and its support agencies to maintain the activity. Institutional sustainability is crucial but vulnerable. In the face of lack of manpower and finances, protected areas have been overexploited and damaged. In times of national insecurity, government organizations are often more vulnerable than local communities to disruption. By broadening the responsibility for conservation to local communities, conservation is almost certainly better safeguarded during these crisis points than if the communities are hostile.

WHEN IS "NO USE" UNSUSTAINABLE?

We cannot agree with Robinson (1993) when he says "*One must recognize, however, that any use of a biological community will ultimately involve a loss of biological diversity*" (our emphasis). In fact, in the area of protected area management, there are a number of situations where no use may entail more risks than use:

- The ecosystem may have evolved with human use and be dependent on use for the maintenance of key species.
- Recent impact of use or land-use change may have altered ecosystems so that there is no return to no/low impact.
- Conservation occurs in a social and political context where no use may be incompatible with the maintenance of the long-term viability of the ecosystem.

At Bwindi the activities of buffalo (now extinct) and elephant (now very few) caused disturbed secondary habitats which gorillas prefer. Secondary vegetation is now common in the forest due to timber harvesting. With better protection the forest is regenerating, and gorilla habitat is likely to decline. The level of plant use established at BINP is far below the impact needed to maintain secondary habitats at their present extent and causes less vegetation destruction than tourist trails cut daily for gorilla viewing. Robinson (1993) recognized that intermediate levels of disturbance often lead to higher levels of biodiversity, but we disagree with him that human activities are always at a level that go beyond this disturbance regime.

A policy of no use can bring greater risk to an ecosystem where communities depend on the resources. The hostility caused by cutting off these resources can be an extremely risky strategy, as has been proven time and again in recent conservation history. Aggressive protection is vulnerable to failure at "crisis points" when law enforcement fails. Crisis points are very significant long-term factors to be taken into account when determining conservation policies. In other words a protected area which has no local support, which provides no local benefit and which is maintained only by force, will be at greater risk from occupation or destruction in times of insecurity and the breakdown of law and order than a protected area in which local communities play a role in management, are benefiting from the park and have developed a good relationship with the park management.

Approaches to local equity

RESOURCE USE

Is resource use a viable conservation tool? At Bwindi Impenetrable Forest, UNP has made a concession to local communities by allowing limited resource harvesting from 20% of the area of the National Park. Trust has greatly improved through the pilot negotiations. In 1992 community members were requesting that the gorillas be taken to zoos and blaming them for their misfortunes; there have now been requests from the pilot parishes for individuals to see the gorillas as local tourists. These requests would have been unimaginable a few years ago. Resource use is however a subtle approach to conservation, resource management and interaction with forest adjacent communities. Significant knowledge about the protected area can be gained in the process but it requires a commitment by the managing authority to problem solving and to the local community.

Initial problems tend to be replaced by lower order ones and, given the fundamental difficulties that communities adjacent to the forest face,

this is not surprising. At BINP once beekeeping was restarted the beekeepers asked to cut trees for replacement hives, which UNP refused. Thus UNP finds it has replaced the seasonal fighting of forest fires with the challenge of finding cheap, chimpanzee proof hives. When discussing replacement hives with park rangers they were asked the question "What would happen if the park could not find a solution to the hives and stopped beekeeping tomorrow?". The reaction from the Rangers was very strong, unanimously saying the forest would be burning within one day. This brings home the point that these activities should not be started unless there is confidence that they can continue for a considerable time. Should they need to be reduced or halted, this must happen through negotiation over a reasonable span of time.

SUBSTITUTION

Since resource use has begun, people are more willing to carry out substitution activities. There was some initial resistance to tree planting which may have been part of the resistance to the park. Through the collaborative management process, substitution was identified as a Forest Society objective. Individual resource users have already shown an interest in cultivating medicinal plants. Tea farmers have petitioned the tea company for alternative baskets and ITFC is working with community groups to produce baskets from shrubs growing on farmland. ITFC and DTC are continuing to collaborate with the International Centre for Research on Agroforestry (ICRAF) to propagate indigenous trees in large quantities.

ARE THERE BETTER APPROACHES?

Sharing revenues from tourism cannot easily replace resource harvesting as a means of benefit sharing, at least not in the short term. They take too long to develop and the benefits are uncertain. Often there is no direct alternative to certain forest products; for example, there is little access to western medicine in Kigezi, so medicinal plants are essential. In the very long term, however, there may be a lessening of reliance on these products. Similarly, resource harvesting cannot replace tourism revenue sharing or appropriate development, as not all resource uses will be allowed on conservation grounds. The different approaches to improving local equity are complementary rather than exclusive of each other.


In the pilot parishes some local equity has been restored without reducing national and international equity. But within the communities themselves, is resource use a policy of divide and rule? Previously the community was united in its common hostility to the park. Does giving "favours" to some individuals divide the commu-

nity? Individuals are nominated by the community and have clear community responsibilities, while many of the activities have always been practised by specialists. The Batwa benefitted least from the resource use agreements, but some progress was made. Substitution activities are assisting community members who do not benefit from forest resource use. Nonetheless, some sectors of the community have had to make adjustments, particularly gold miners, pitsawyers and hunters.

It remains to be seen whether the very low amount of resource use established at BINP will be sufficient to ensure stable long term relationships between park and community. As one community member put it: *“While we are pleased to be allowed to continue our beekeeping it represents only a quarter of our former benefits from the forest.”*



Photo 8. Resource users and park staff after the first collection from Ntendure in the multiple-use zone, Mpungu Parish.



The use of plant resources from within national parks is a radical departure from traditional protected area management practices, and is still in its infancy. The low impact use of plant resources from within BINP has shown good promise to reduce the conflict between park authorities and local communities and to engender support and a sense of ownership towards the national park from its neighbours. An independent evaluation of the multiple-use programme commented:

“Communities in multiple-use parishes made strong statements indicating an increased sense of ownership of the forest as a result of the programme, frequently referring to “our forest” and stating that it had been given back to them.” (Bensted-Smith *et al.*, 1995)

It is our contention that this sense of ownership is crucial to local community support to conservation. The independent evaluation commended the progress made in implementing the pilot programme and recommended the extension of the programme beyond the pilot phase and that the experience gained at BINP should contribute to formulating a national policy for resource use. Subsequently a collaborative management unit has been established at UNP/UWA headquarters.

In March 1995 gorillas were killed in Bwindi Forest in an area far from the pilot multiple-use parishes. These killings were vehemently condemned by community leaders during parish meetings of an independent review of the Bwindi resource use programme. In one of the multiple-use parishes it was asserted that if the poachers had come from their parish they would not have escaped. In another multiple-use parish it was stated that gorilla poaching is a big person's business, organized outside, so that there is little that the local communities can do to prevent it. It is important to continue to evaluate the effect of the resource use programme on gorilla conservation following these conflicting assertions. Bensted-Smith *et al.*, (1995) add a cautionary note:

“It is too early to say whether this (improved relations and sense of ownership) will result in more effective protection of the forest and the gorillas, or how significant the benefits of multiple-use are compared with the other potential elements of a community programme.”

In the long term benefits of this low level of resource use may be limited, but one of the main points of plant use is that it is immediately implementable, while one of the greatest problems with ICD is the gap between the intention to enhance the flows of the benefits to communities through a community programme, and those benefits arriving. Thus at Bwindi resource use is providing a useful interim measure while the potential of other community programme initiatives is being developed.

While the question of protection remains open, it is clear that it has improved. At the height of the hostilities, the communities would have no thought of protecting the gorillas. Now there is more willingness to take part in gorilla protection, but uncertainty about capacity to do that. Certainly the risk of forest fires has been greatly reduced and the problems of beekeepers setting snares has also reduced with reports of the beekeeping areas being those with fewest snares (Watts *et al.*, 1996). Kremen *et al.*, (1994) have stated that ICD is perhaps one of our last and most promising hopes for protecting beleaguered natural areas, while noting that these programmes are complex and difficult to implement. As Pimbert and Pretty (1995) point out:

“Conservation efforts may need to identify and promote those social processes that enable local communities to conserve and enhance biodiversity as part of their livelihood systems.”

The model of plant use established at BINP is one such initiative aimed at promoting these social processes. We therefore hope that, in whichever direction the social process of the plant use programme at BINP develops, it continues to build on its initial strengths, and both brings benefits to neighbouring communities and contributes to the conservation of this special forest and its valuable wildlife.

View of Muhavura and Mgahinga from Bwindi Impenetrable Forest

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References

- Adams, J.S. & McShane, T.O. 1992. The myth of wild Africa: Conservation without illusion. W.W. Norton and Co., London.
- Alcorn, J.B. 1993. Indigenous peoples and conservation. *Conservation Biology* 7(2): 424-426.
- Alcorn, J.B. 1994. Noble savage or noble state? Northern myths and southern realities in biodiversity conservation. *Ethnoecológica* 2(3): 7-19.
- Batisse, M. 1984. Biosphere reserves throughout the world: Current situation and perspectives. In: *Conservation, Science and Society: Contributions to the First International Biosphere Reserve Congress*. Minsk, 26 Sept-2 Oct 1983, pp. v-xii. Natural Resources Series 21. UNESCO-UNEP, Paris.
- Batisse, M. 1986. Developing and focusing the biosphere reserve concept. *Nature & Resources* 22(3): 1-10.
- Batisse, M. 1990. Development and implementation of the biosphere reserve concept and its applicability to coastal regions. *Environmental Conservation* 17(2): 111-116.
- Batisse, M. 1993. Biosphere reserves: an overview. *Nature & Resources* 29(1-4): 3-5.
- Bennet, B.C. 1992. Plants and people of the rainforest. The role of ethnobotany in sustainable development. *BioScience* 42(8).
- Bensted-Smith, R., Infield, M., Otekat, J. & Thomson-Handler, N. 1995. A review of the multiple use (resource sharing) programme in Bwindi Impenetrable National Park. Evaluation Report to CARE Uganda. September 1995.
- Brown, M. & Wyckoff-Baird, B. 1992. Designing Integrated Conservation and Development Projects. Biodiversity Support Programme, WWF/USAID/IDB, Washington D.C.
- Butynski, T.M. 1984. Ecological survey of the Impenetrable forest, Uganda, and recommendations for its conservation and management. New York Zoological Society, New York.
- Butynski, T.M. 1989. Afromontane forest conservation and rural development in southwestern Uganda. In: *Proceedings of the First International Workshop for the Conservation and Management of Afromontane Forests*. 19-23 June 1989. Cyangugu, Rwanda. Pullister Town.
- Butynski, T.M. & Kalina J. 1993. Three new mountain national parks for Uganda. *Oryx* 27(4): 214-224.
- Calhoun, J.B. 1991. The plight of the Ik. In West, P.C. & Brechin, S.R. (eds.), *Resident peoples and national parks: Social dilemmas and strategies in international conservation*. University of Arizona Press, Tucson.
- CARE. 1987. Project proposal for the Development Through Conservation Project, Phase I. CARE, Uganda.
- CARE. 1994a. Project Implementation Report for Jan-June 1994. Development Through Conservation Project. CARE, Uganda.
- CARE. 1994b. The people of Bwindi Impenetrable National Park, Report of a socio-economic survey. Development Through Conservation Project (DTC), CARE, Uganda.
- Chambers, R. 1992. Rural appraisal: rapid, relaxed and participatory. Discussion Paper 311. Institute of Development Studies, Brighton, UK.
- Child, B. 1996. The practice and principles of community-based wildlife management in Zimbabwe: The CAMPFIRE programme. *Biodiversity and Conservation* 5: 369-396.
- Colchester, M. 1994. Salvaging nature: Indigenous peoples, protected areas and biodiversity conservation. Discussion Paper No. 55. UNRISD, Geneva.
- Costanza, R. 1993. Developing ecological research that is relevant for sustainability. *Ecological Applications* 3(4): 579-581.
- Cunningham, A.B. 1987. Commercial craftwork: Balancing out human needs and resources. *South African Journal of Botany* 53(4): 259-266.
- Cunningham, A.B. 1991. Development of a conservation policy on commercially exploited medicinal plants: A case study from southern Africa. In: Heywood, V., Syngé, H. & Akelere, O. (eds.), *Conservation of medicinal plants*, pp. 387-358. Cambridge University Press, Cambridge.
- Cunningham, A.B. 1994. Integrating local plant resources and habitat management. *Biodiversity and Conservation* 3: 104-115.
- Cunningham, A.B. 1996. People, park and plant use. Recommendations for multiple-use zones and development alternatives around Bwindi Impenetrable National Park, Uganda. People and Plants working paper 4. UNESCO, Paris.
- Cunningham, A.B. & Mbenkum, F.T. 1993. Sustainability of harvesting *Prunus africana* bark in Cameroon: A medicinal plant in international trade. People and Plants working paper No. 2. UNESCO, Paris.
- Cunningham, A.B., Wild, R.G., Mutebi, J. & Tsekeli, A. 1993. People and wild plant use: Mgahinga Gorilla National Park. Report for CARE Development Through Conservation Project (DTC), Uganda.
- Drijver, C. 1994. Participatory rural appraisal in Cameroon: A challenge for people and protected areas. *Parks* 4(1): 27-35.
- Erlich, P.R. & Daily, G.C. 1993. Science and the management of natural resources. *Ecological Applications* 3(4): 558-560.

- Falconer, J. & Koppel, C.R.S. 1990. The major significance of "minor" forest products. The local use and value of forests in the West African humid forest zone. Community Forestry Note 6. FAO, Rome.
- FAO. 1988. National parks planning: A manual with annotated examples. Conservation Guide. FAO, Rome.
- FAO. 1989. The community tool box: Ideas, methods and tools for participatory analysis, monitoring and analysis in community forestry. Community Forestry Note 2. FAO, Rome.
- FAO. 1991. Non wood products : The way ahead. Forestry Paper 97. FAO, Rome.
- Godoy, R.A. & Bawa, K.S. 1993. The economic value and sustainable harvest of plants and animals from the tropical forest: Assumptions, hypotheses, and methods. *Economic Botany* 47(3): 215-219.
- Hamilton, A.H., Baranga, J. & Tindigarukayo, J. 1990. Proposed Bwindi (Impenetrable) National Park: Results of a public inquiry and recommendations for establishment. Report for Uganda National Parks.
- Hamilton, A.H. & Kigenyi, F. 1991. Kibale Forest research and monitoring project evaluation. Report for New York Zoological Society and USAID, Kampala.
- Holling, C.S. 1993. Improving research for sustainability. *Ecological Applications* 3(4): 552-555.
- Howard, P.C. 1991. Nature conservation in Uganda's tropical forest reserves. Forest Conservation Programme. IUCN, Gland.
- Infield, M.M. 1986. Improving local support for African conservation areas. Monograph 8. Institute of Natural Resources, University of Natal, RSA.
- IUCN. 1993. Note by the Director General on guidelines for the ecological sustainability of non consumptive and consumptive uses of wild species. Addendum 1 to General Assembly Paper GA/19/94/3. IUCN, Gland.
- IUCN. 1994. Resolutions and recommendations of the General Assembly of IUCN (World Conservation Union), at its 19th session in Buenos Aires, Argentina, 17-26 January 1994. IUCN, Gland.
- Kamstra, J. 1994. Protected areas: Towards a participatory approach. Netherlands Committee for IUCN, Amsterdam.
- Kamugisha, J.R. 1993. Management of natural resources and the environment in Uganda. Regional Soil Conservation Unit, Report 12. Swedish International Development Authority.
- Kayanja, F. & Douglas-Hamilton, I. 1984. The impact of the unexpected on the Uganda national parks. In: McNeely, J.A. & Milton, K.R. (eds.), National parks, conservation and development: The role of protected areas in sustaining society, pp. 87-92. IUCN/Smithsonian Institution Press, Washington D.C.
- Kingston, B. 1967. Working plan for the Mgahinga Central Forest Reserve, Kigezi District, Western Province, Uganda. Forest Department, Uganda.
- Kremen, C., Merenlender, A.M., Murphy, D.D. 1994. Ecological monitoring: A vital need for Integrated Conservation and Development Programs in the tropics. *Conservation Biology* 8 (2): 388-397.
- Lee, K.N. 1993. Greed, scale mismatch and learning. *Ecological Applications* 3(4): 560-564.
- Leggat, G.J. & Osmaston, H.A. 1961. Working plan for the Impenetrable Central Forest Reserve, Kigezi District, Western Province, Uganda. Forest Department, Uganda.
- Ludwig, D., Hilborn, R. & Walters, C.J. 1993. Uncertainty, resource exploitation and the lessons from history. *Science* 260: 17-18.
- Mackinnon, J., Mackinnon, K., Child, G. & Thorsell, J. 1986. Managing protected areas in the tropics. IUCN, Gland.
- Martin, G.J. 1995. Ethnobotany. A methods manual. People and Plants Conservation Manuals Vol. 1. Chapman and Hall, London.
- McNeely, J.A. & Millar, K.R. (eds.) 1984. National parks, conservation and development: The role of protected areas in sustaining society. IUCN/Smithsonian Institution Press, Washington, D.C.
- Meyer, J.L. & Helfman, G.S. 1993. The ecological basis of sustainability. *Ecological Applications* 3(4): 569-571.
- Mkanda, F.X. & Munthali, S.M. 1994. Public attitudes and needs around Kasungu National Park, Malawi. *Biodiversity and Conservation* 3: 29-44.
- Momberg, F., Damas, D., Limber, G. & Padan, S.S.T. 1994. Participatory tools for community-forest profiling and zonation of conservation areas. Experiences from the Kayan Mentarang Nature Reserve, East Kalimantan, Indonesia. WWF Indonesia Programme - Kayan Mentang Project (PHPA -WWF-LIPI).
- Muir, D. 1990. Forest utilisation in KwaZulu: A case study of Hlatikulu Forest Reserve, Maputaland. Institute of Natural Resources, University of Natal, RSA.
- Noss, R.F. 1991. Sustainability and wilderness. *Conservation Biology* 5: 120-122.
- Olivier, R. 1990. The Queen Elizabeth National Park Management Plan. Uganda National Parks, Kampala.
- Olivier, R. 1992a. The Murchison Falls National Park Management Plan. Uganda National Parks, Kampala.
- Olivier, R. 1992b. The Kidepo Valley National Parks Management Plan. Uganda National Parks, Kampala.
- Peres, C.A. 1994. Indigenous reserves and conservation in Amazonian forests. *Conservation Biology* 8 (2): 586-588.
- Pimbert, M.C. & Pretty, J.M. 1995. Putting "participation" into protected area management. Discussion Paper 57. United Nations Research Institute for Social Development, Geneva.
- Plotkin, M.J. & Famolare, L.M. 1992. Sustainable harvesting and marketing of forest products. Conservation International - Island Press, Washington, D.C.
- Poffenberger, M., McGean, B., Khare, A., & Campbell, J. (eds.) 1992. Field method manual, Volume II. Community forest economy and use patterns: Participatory Rural Appraisal (PRA) methods in South Gujarat, India. Society for Promotion of Wastelands Development, New Delhi.
- Redford, K.H. & Stearman, A.M. 1993. Forest-dwelling native Amazonians and the conservation of biodiversity: Interests in common or in collision? *Conservation Biology* 7(2): 248-255.

- Robinson, J.G. 1993. The limits to caring: Sustainable living and the loss of biodiversity. *Conservation Biology* 7: 20-28.
- Rubenstein, D.I. 1993. Science and the pursuit of a sustainable world. *Ecological Applications* 3(4): 585-587.
- Rutherford, M.C. & Westfall, L.H. 1986. The biomes of southern Africa - an objective categorization. *Memoires of the Botanical Survey of South Africa* No.54.
- Sartorius, R.H. 1991. The logical framework approach to project design and management. *Evaluation Practices Journal* 12(2): 139-147.
- Sayer, J. 1991. Buffer zones in rainforest, fact or fantasy. *Parks* 2(2): 20-24.
- Scott, P.J. 1992. Fringe benefits: Minor forest product collection within buffer zones as a potential tool for conflict resolution in Bwindi Impenetrable National Park. M.Sc. Thesis. Agricultural University of Norway.
- Smith, I.R., Wells, D.A. & Welsh, P. 1985. Botanical survey and monitoring methods for grasslands. *Focus on Nature Conservation* 10. Nature Conservancy Council.
- Taylor, D. 1990. Late Quaternary pollen diagrams from two Ugandan mires: Evidence for environmental change in the Rukiga Highlands of south-west Uganda. *Paleogeography, Paleoclimatology, Paleoecology* 80: 283-300.
- Taylor, D. & Marchant, R. 1995. Human impact in the interlacustrine region: Long-term pollen records from the Rukiga Highlands. *Azania* 29-30: 283-295.
- UNEP. 1988. Natural resources and environment in Uganda: Strategies for environmental management. United Nations Environment Programme, Nairobi.
- UNESCO. 1995. The Seville Strategy for Biosphere Reserves. *Nature & Resources* 31(2): 2-17.
- UNESCO. 1996a. International Conference on Biosphere Reserves. Seville (Spain), 20-25 March 1995. Final Report. MAB Report Series No. 65. UNESCO, Paris.
- UNESCO. 1996b. Biosphere Reserves: the Seville Strategy and the Statutory Framework of the World Network of Biosphere Reserves. UNESCO, Paris
- UNP. 1994. Memorandum of Understanding between Uganda National Parks and the people of Mpungu Parish, Rukungiri District. Uganda National Parks, Kampala.
- UNP. 1995. Bwindi Impenetrable National Park Management Plan 1995-1999. Uganda National Parks, Kampala.
- Vedder, A. 1989. The Afromontane forests of the Western Rift. In: *Proceedings of the First International Workshop for the Conservation and Management of Afromontane Forests*. 19-23 June 1989. Cyangugu, Rwanda.
- Watts, J., Scott, P.J. & Mutebi, J. 1996. Assessing and monitoring the forest: Towards joint management of multiple use in national parks in Uganda. In Carter, J. (ed.), *Recent approaches to participatory forest resource assessment*. Rural Development Forestry Study Guide 2. Overseas Development Institute, London.
- Wells, M., Brandon, K. & Hannah, L. 1992. Linking protected area management with local communities. World Bank, World Wildlife Fund and US Agency for International Development, Washington, D.C.
- West, P.C. & Brechin, S.R. (eds.) 1991. Resident peoples and national parks: Social dilemmas and strategies in international conservation. University of Arizona Press, Tucson.
- Wild, R.G. 1994. The Rukungiri tea industry: Its relationship with and impact on the Bwindi Impenetrable National Park. Report for Uganda National Parks.
- Wild, R.G. 1996. Plants from the park: Establishing community harvesting as a conservation tool at Bwindi Impenetrable National Park, Uganda. M.Phil.-thesis, University of Cape Town, South Africa.
- Wild, R.G., Cunningham, A.B. & Mutebi, J. 1995. People, parks and plant use: Networks to enhance the conservation of montane forests in Uganda, East Africa. In: Saunders, D.A., Craig, J.L. & Mattiske, E.M. (eds.), *The role of networks*, Nature Conservation 4. Surrey Beatty & Sons, Chipping, Nortol, New South Wales.
- Willers, B. 1994. Sustainable development: a new world deception. *Conservation Biology* 8(4): 1146-1148.
- Wily, E. 1994. Looking again at community-based natural forest management: is participation enough? Draft. Nairobi, Kenya.
- Wind, J. & Prins H.H.T. 1989. Buffer zone and research management for Indonesian National Parks: Inception Report. World Bank National Park Development Project, DHV-RIN Consultancies, Bogor, Indonesia.
- Yeoman, G.H., Tindigarukayo, J. & Kigenyi, F. 1990. Mgahinga Gorilla National Park, results of public enquiry and recommendations for establishment. Unpub. report for Uganda National Parks and EEC.

Acronyms

BINP	Bwindi Impenetrable National Park
CAMPFIRE	Communal Areas Management Programme for Indigenous Resources
CARE	International relief and development agency that helps people in developing nations through humanitarian programs
CCR	Community Conservation Ranger
DTC	Development Through Conservation Project
FAO	Food and Agriculture Organisation
FD	Forest Department
FFPS	Fauna and Flora Preservation Society (now Flora and Fauna International)
GD	Game Department
GGRP	Gorilla Game Reserve Project
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (German Agency for Technical Co-operation)
HQ	Headquarters
ICD	Integrated Conservation and Development
ICDP	Integrated Conservation and Development Project
IFCP	Impenetrable Forest Conservation Project
IGCP	International Gorilla Conservation Project
ITFC	Institute of Tropical Forest Conservation
IUCN	The World Conservation Union
JFM	Joint Forest Management
MGNP	Mgahinga Gorilla National Park
MSY	Maximum Sustainable Yield
MTWA	Ministry of Tourism Wildlife and Antiquities
NGO	Non-Government Organisation
NRM	National Resistance Movement
NTFP	Non-timber Forest Product
PMAC	Park Management Advisory Committee
PRA	Participatory Rural Appraisal
RC I-V	Resistance Council I to V
RVA	Rapid Vulnerability Assessment
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNP	Uganda National Parks
UNRISD	United Nations Research Institute for Social Development
USAID	United States Agency for International Development
UWA	Uganda Wildlife Authority
WWF	World Wide Fund for Nature
ZOPP	Zielorientierte Projektplanung (Objectives Orientated Project Planning)

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1. Cunningham, A. B. 1993. *African medicinal plants: Setting priorities at the interface between conservation and primary healthcare.*
2. Cunningham, A. B. and Mbenkum, F.T. 1993. *Sustainability of harvesting Prunus africana bark in Cameroon: A medicinal plant in international trade.*
3. Aumeeruddy, Y. 1994. *Local representations and management of agroforests on the periphery of Kerinci Seblat National Park, Sumatra, Indonesia.* (This publication is also available in French.)
4. Cunningham, A.B. 1996. *People, park and plant use. Recommendations for multiple-use zones and development alternatives around Bwindi Impenetrable National Park, Uganda.* (This publication is also available in French.)

The People and Plants Initiative

was started in July 1992 by WWF, UNESCO and the Royal Botanic Gardens, Kew to promote the sustainable and equitable use of plant resources through providing support to ethnobotanists from developing countries.

The initiative stems from the recognition that people in rural communities often have detailed and profound knowledge of the properties and ecology of locally occurring plants, and rely on them for many of their foods, medicines, fuel, building materials and other products. However, much of this knowledge is being lost with the transformation of local ecosystems and local cultures. Over-harvesting of non cultivated plants is increasingly common, caused by loss of habitat, increase in local use and the growing demands of trade. Long-term conservation of plant resources and the knowledge associated with them is needed for the benefit of the local people and for their potential use to local communities in other places.

The diversity of traditional plant-resource management practices runs through a spectrum from "cultivation" through to gathering "wild" plants, all of which are included in the People and Plants approach.

Ethnobotanists can work together with local people to study and record the uses of plant resources, identify cases of over-harvesting of non-cultivated plants, find sustainable harvesting methods and investigate alternatives such as cultivation.

The People and Plants initiative is building support for ethnobotanists from developing countries who work with local people on issues related to the conservation of both plant resources and traditional ecological knowledge. Key participants organize participatory workshops, undertake discussion and advisory visits to field projects and provide literature on ethnobotany, traditional ecological knowledge and sustainable plant resource use. It is hoped that a network of ethnobotanists working on these issues in different countries and regions can be developed to exchange information, share experience and collaborate on field projects.

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