ENDANGERED SPECIES

Uganda Enlists Locals in the Battle to Save the Gorillas

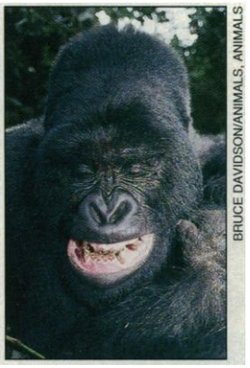
BWINDI-IMPENETRABLE FOREST, UGANDA—Nestled amid the picturesque terraces of the Ugandan highlands, an arduous 10-hour drive southwest of Kampala, lies one of Africa's richest stretches of rain forest, the Bwindi-Impenetrable Forest. The forest swells with a breathtaking array of wildlife: Thousands of different trees, birds, ferns, butterflies, amphibia, reptiles, and mammals reside here. But Bwindi-Impenetrable Forest is best known for a single species, the mountain gorilla. It provides a home for 300 of these animals—half of the entire world population.

But the mountain gorilla is far from safe in the secure-sounding "impenetrable" forest. Its survival is threatened by the dense sea of humanity that laps the tiny 330-square-kilometer island of biodiversity. The local population, desperate for firewood, medicines, and other forest resources and for the income that can only be earned from illegal gorilla-poaching and timber-cutting, could totally destroy the forests in as little as 20 years, according to some estimates. This dire threat, however, has inspired one of the most intense conservation efforts in Africa's history. Following a trend occurring elsewhere on the continent (*Science*, 5 August 1994, p. 733), local and international conservation officials are instituting a batch of programs, including Africa's first conservation trust fund, that aim to recruit the local people to the cause of conservation. And although it's too soon to tell whether the novel approaches to community-based conservation will succeed in the long term, early indicators suggest that they are off to a good start.

A new gorilla population count is not yet complete, but one of the easier-to-observe gorilla troupes has increased in size, and the animals also appear to be expanding their range. This February, Bwindi head ranger Vincent Banshekura stumbled upon a troupe while escorting Western journalists on a trail deemed safe even for schoolchildren because the gorillas had long since deserted it. "They're moving back; these gorillas have come to like this place again," said an elated Banshekura.

"The forest is holding its own; it's actually improving in quality," agrees Thomas Butynski, senior conservation biologist with the Zoo Atlanta in Nairobi, Kenya, and a former director of the Institute of Tropical Forest Conservation in Bwindi. For instance, nowadays a visitor to the forests is far more likely stumble upon not just gorillas, but two species of duiker, a small African antelope.

The effort to protect Uganda's gorillas didn't always look so promising, however. Each square kilometer of surrounding farmland supports between 150 and 350 people (for comparison, each square kilometer of land in the United States supports about 28 people) who have for generations relied on Bwindi for medicine, food, firewood, and income. In 1991, under mounting international pressure to stem the habitat loss caused by the ever-expanding population, the Ugandan Government designated two new national parks: Bwindi-Impenetrable National Park and Mgahinga Gorilla National Park, which lies 25 kilometers to the south in the Virunga volcanoes. These volcanoes, which straddle the border between Uganda, Zaire, and Rwanda, are home to another 325 gorillas.



BRUCE DAVIDSON/ANIMALS, ANIMALS

Smiling. Will mountain gorillas see better days?

When the parks were created, the government banned entry by everyone except a limited number of authorized researchers. This stamped out gorilla-poaching and the large-scale logging that were the most immediate threat to the gorillas and their habitat. But it also fueled resentment among the local people. Not only were they suddenly at the mercy of crop-raiding baboons that found a safe haven in the protected forest, but they were also deprived of income from the timber industry and poaching, and of meat, firewood, medicines, and honey that they had previously obtained from the forest.

R. NOWAK

Where forest meets farm. Farming communities encroaching on Uganda's rain forests threaten the forests' survival.

"All of a sudden 'boomph' the local people weren't allowed in the park, and that created a lot of hostility," says Jaap Schoorl, an adviser on park management in Uganda for the international aid organization CARE. The international conservation community, fearing that without the cooperation of the local people the Ugandan National Parks would be unable to prevent slow destruction of the forest by illegal harvesting, set out to win their support.

The strategy: Use the gorillas to earn tourist dollars that would be fed back into the community. That way, the local people would have a strong stake in the gorillas' preservation. By 1993 the International Gorilla Conservation Program, which is funded by the African Wildlife Foundation (AWF), the World Wide Fund for Nature, and Britain's Fauna and Flora Preservation Society, had gotten permission from the Ugandan government to open the park gates to tourism, charging each visitor $120 for a tourist permit and $23 to enter the park. "The traditional approach of putting a fence around a protected area is no longer going to survive," says AWF's head of program development, Rosalind Aveling. "You have to make the link between good conservation of protected areas and benefits going to the community."

Those benefits will begin flowing shortly. Between April 1993 and June 1994, the tourist permits brought in $225,000. This month, Ugandan National Parks plans to start distributing 20% of those earnings through the Park Management Advisory Committees, which include representatives from every parish that abuts the forests, and will decide which projects—ranging from school repairs to tanks to collect roof water—to fund.

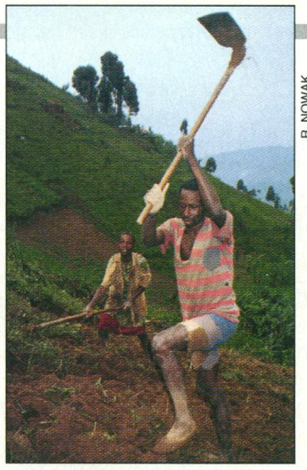
CARE is also working directly to raise the farmers' standard of living to the point where they can embrace conservation. At the moment, says Philip Franks, project manager for CARE's Development Through Conservation (DTC) program in Kabale, many of the local people "are in survival mode; they're desperate, and they're likely to say, 'Resource management is fine, but what about this dysentery?' or 'How do I pay my children's school fees?' " That realization has spurred DTC to employ 43 local people as conservation extension agents to teach farmers how to improve the yield from their land. For example, working with researchers from the International Center for Agroforestry (ICRAF) in Nairobi, the conservation agents are training farmers to plant nitrogen-fixing trees along their field boundaries. The trees help improve soil fertility and prevent ero-

sion. They have another benefit as well: They provide firewood, which ICRAF estimates now falls 40% short of demand, tempting farmers to harvest it illegally from the forest.

Within the last 6 months, DTC and Ugandan National Parks have also attempted to increase the benefits of the forest to the local people by introducing a "multiple use program" that allows locals to harvest controlled amounts of produce from the forest. Under the program, which is still in its pilot stage, designated villagers can collect plants, including vines for basket-making and medicinal plants such as the bark of *Prunus africanum*, which reportedly cures stomachache. The villagers may also visit the forests' mineral springs and tend their beehives.

This approach seems to be bringing home the message that resource conservation and development are linked: Speaking through a translator, farmer Velleriano Turyananuka said, "The park will help educate us and bring us money so that we will be at a higher stage of development." At the moment, he admitted, he can't afford the 5000 Ugandan shillings per child (about $5.50) to keep his five children at school.

Turyananuka's optimism could be extinguished quickly, however, if the foreign funds supporting the projects at Bwindi amd Mgahinga begin to dry up. Today, Uganda is riding a tide of international goodwill—and hence foreign aid—triggered by the country's spectacular economic and political resurrection following the years of chaos when the country was ruled by dictators Idi Amin and Milton Obote. But few people expect the current level of assistance to continue for long.



R. NOWAK

Good times ahead? Velleriano Turyananuka and daughter Tumusime work their fields.

To help protect the Bwindi and Mgahinga projects from fluctuations in foreign aid, the World Bank is creating Africa's first conservation trust fund, the Mgahinga and Bwindi-Impenetrable Forest Conservation Trust. In January, the bank approved a $4 million international endowment that will generate about $100,000 per year. Sixty percent of the money is earmarked for homegrown conservation and development projects (for example, the cultivation of medicinal plants that are traditionally harvested from the forests), and the remaining 40% will be used for forest conservation research and park management. "The Bwindi trust is the hope for the future," says Aveling.

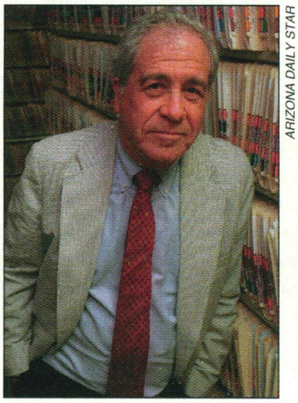
But despite the optimism that surrounds the mountain gorilla conservation efforts, Butynski sees one major cause for concern: "We've done just about every conservation project you can think of" to save Bwindi, he says. "If we have to devote that much effort into saving every 330-square-kilometer piece of rain forest in Africa, we are not going to be able to save very many of them."

–Rachel Nowak

BIOMEDICAL POLICY

Fisher Given New Role In Cancer Project

SAN DIEGO—Bernard Fisher, the University of Pittsburgh surgeon who was ousted last year as head of a major breast cancer research project, is back with the project in a new capacity. On 13 March—a year to the day after a *Chicago Tribune* article pulled the rug out from under his career—Fisher was named scientific director of the National Surgical Adjuvant Breast and Bowel Project (NSABP), the group he co-founded and headed for 27 years.



ARIZONA DAILY STAR

Chief scientist. Bernard Fisher, back with the NSABP.

The announcement was made by Norman Wolmark, Fisher's longtime friend and collaborator, who succeeded him as chair and principal investigator of the NSABP. Wolmark simply introduced Fisher as the group's first scientific director, at the NSABP annual meeting here. Fisher later told *Science* that he will be in charge of the scientific agenda of the NSABP, writing manuscripts and "doing my own research." The position was designed by officials of the National Cancer Institute (NCI), which funds the NSABP, and the executive committee of the project, with input from Fisher himself.

Fisher's new appointment represents a remarkable turnaround. On 29 March last year, NCI demanded his resignation as chair of the project because of concerns about his management of the more than 500 research centers that participate in the NSABP. Fisher's troubles had started when the *Chicago Tribune* detailed the results of a federal investigation that concluded that a Montreal surgeon had falsified data on six women he had enrolled in an NSABP study establishing the safety of breast-sparing lumpectomy as an alternative to mastectomy. Then came media reports of additional falsifications by the same surgeon and a bruising set of hearings by a congressional subcommittee headed by Representative John Dingell (D–MI), who sharply criticized Fisher's management of the project.

Fisher began to fight back last July, when he filed a lawsuit against the University of Pittsburgh, which he says violated his right to due process by caving in to NCI's demands for his removal. That suit is still pending. Then, on 6 March, he filed suit against NCI and other federal agencies, because "scientific misconduct" warnings had been placed on computer listings of 148 of his papers. The next day, a federal judge ordered the agencies to remove the labels and publish an apology to Fisher, who has never been found guilty of misconduct.

Fisher's reinstatement to the project was greeted with enthusiasm among his supporters at the meeting here. He was given a standing ovation, and University of California, Berkeley, geneticist Mary-Claire King praised him for standing firm. "There is nothing more heroic than stubbornness in a good cause," said King, who in 1990 discovered the chromosomal location of *BRCA1*, the breast cancer susceptibility gene. Hints of conciliation even came from Bruce Chabner, NCI's outgoing director of cancer treatment, who with former NCI Director Samuel Broder is widely regarded as responsible for Fisher's ouster. Chabner spoke of "harsh and often irresponsible attacks from the press and from Congress" last year. He offered no apology for NCI's actions, however.

But meeting participants were eager to put the episode behind them. Fisher said it's time to get back to "scientific thought and accomplishment that will put an end to breast cancer. That's what this is all about." Acting NCI Director Ed Sondik went to the meeting "to affirm NCI's continuing commitment to the NSABP."

First, though, Fisher will complete a reanalysis of the lumpectomy study. Although NCI has already done its own reanalysis and found the conclusions unchanged, Fisher has yet to publish his recalculation of the results. Fisher said earlier this week that his manuscript will be finished "very shortly. . . . This is a very meticulous process, and we don't want to make any mistakes."

–Jane Erikson

Jane Erikson is a medical reporter with The Arizona Daily Star.