

# Madagascar in Crisis

By Eric Hoffman

Photographs by Frans Lanting

**L**emurs and other unique wildlife dwindle as Madagascar suffers the ravages of poverty.

Wildlife photographer Frans Lanting peered up into the dense bamboo forest in Madagascar's eastern rainforest. He dared not blink the sweat out of his eyes nor swat the leech crawling up his leg for fear of missing a once-in-a-lifetime opportunity. He heard two faint grunts, turned slowly, and there on a branch sat a pair of furry reddish gray lemurs staring down at him with saucer-shaped eyes. They looked more like a child's stuffed toy animal than living things. Lanting's camera shutter clicked. Instantly, the animals vanished. But Lanting had captured on film the extremely rare golden bamboo lemur—a species not known to exist until German researcher Bernard Meier and others discovered it in 1985. The golden bamboo lemur is among the most endangered primates in the world—along with several of the 26 species of lemurs that live on Madagascar.

The island's lemurs are just one kind of wildlife faced with extinction due to the human-caused ecological disaster that involves hundreds of species of plants and animals found only on Madagascar. When H.R.H. Prince Philip, Duke of Edinburgh, visited in his official capacity as international president of the World Wildlife Fund in 1985, he looked around and did not mince words. "Your country is committing suicide," he told a member of the ruling Supreme Council of Revolution.

A crowned lemur traverses an expanse of eroded limestone, one of the tremendously diverse habitats of Madagascar. Below: A rare glimpse of extremely rare golden bamboo lemurs—discovered as recently as 1985.



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Massive erosion from past and present times scars deforested hilltops (above). Parson's chameleon (top, right) is just 1 of the 32 chameleon species depending on the fast-disappearing landscapes of Madagascar, home to a wide variety of endemic animals.

Madagascar is one of the least known and most mysterious places on Earth. Located in the Indian Ocean, 260 miles across the Mozambique Channel from East Africa, it measures 1,000 miles long and 360 miles wide. It is the fourth largest island in the world.

Scientists often view Madagascar as a mini-continent. It possesses rugged mountains, forests, deserts, rivers, lakes, and a vast range of habitats that include rainforests along the east coast, dry forest in the west, and "spiny desert" in the south. These habitats are tremendously diverse within themselves. In them, animals have evolved in a myriad of directions in isolation that began when the island separated from Africa more than 160 million years ago. The result is an incredible assortment of unique plants and animals that is only rivaled by Australia's. More than half of the island's 240 species of birds occur only on Madagascar, as do 85 percent of its plants, and more than 800 species of butterflies. In fact, many of these species occur only in small regions within Madagascar.

Some plant and animal species that have died out in the rest of the world have continued to flourish in Madagascar,



Madagascar's ring-tailed mongoose is another island rarity. The carnivorous forest dweller includes small lemurs in its diet of insects, eggs, snails, and reptiles.

while families of animals found elsewhere are entirely absent. Of all the chameleons in the world, three-fifths (32 species) live on Madagascar. There are 7 species of oddly bulbous baobab trees in Madagascar, but only one in Africa and one in Australia. The tenrec, a tiny insect eater and one of the earliest placental mammals, lives here. There are 400 kinds of frogs, but no toads, no native hoofed animals, no wild dogs, no native cats, no monkeys, and no woodpeckers.

Instead, Madagascar has come up with tremendous

diversity among its native animals. No group better illustrates this than the lemurs, which occupy the monkey niches. Lemurs belong to a group of monkeylike primates known as prosimians, which in evolutionary terms came before today's monkeys that populate the tropical regions of Africa and South America. Their name is believed to have come from the Roman word *lemures*, which means wailing ghosts – probably an early European description of the indri's eery territorial vocalizations.

The ringtail lemur looks somewhat like a cross between a monkey and a raccoon. Like the baboon, it travels in troops; except in lemur society troops are run by females, not males. Where the ringtails are at home on the ground, most lemurs are arboreal. Most, too, are vegetarians, with each species having specific food sources. Some eat bamboo shoots, others munch on fruits, others eat insects. Their physical appearances also vary a great deal. The largest is the spectacular, child-sized indri, marked something like a giant panda but with a leaping ability that spans 25-foot distances between trees. There is the tiny bug-eyed mouse lemur that weighs a few ounces and is known to gorge itself on berries. Probably the most unique is the aye-aye, which occupies the ecological niche filled by woodpeckers in Europe, Asia, and the Americas. The aye-aye has oversized, batlike ears, large

beaverlike teeth, and a highly evolved second finger that is especially thin and long. The unusual primate listens intently for grubs and termites under the bark of trees. When it hears something, it chews into the tree and extracts insects by poking its specially designed finger down the narrow passages made by the bugs it eats. All total, there are 26 species of living lemurs, 2 discovered as recently as 1985.

**B**esides lemurs, Madagascar has a wide range of mammals unknown to most of the world. There's a red-colored mongoose with a bushy, striped tail and a giant jumping rat that resembles a jack rabbit. The fossa, a tawny brown predator that looks like a cross between a wolverine and a dog, is at the top of the native food chain.

Many of these species are in immediate danger of extinction. The combination of deforestation, uncontrolled burning, exploding human population, poverty, ignorance, and age-old customs of local people have a strangle hold on the island's entire ecology.

While Madagascar's wildlife avoided the ravages of humans until relatively recently, the rate of extinction on the island may be unprecedented. Humans arrived on Madagascar

Ringtail lemurs, extremely social, travel in female-run troops of up to 50 members.



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only about 1,500 years ago, when seafarers from Africa and Asia became the first permanent settlers. These founders discovered a rich and wondrous world with giant lemurs the size of humans climbing through endless rainforest. There were giant tortoises like those found on the Galapagos Islands, a pygmy hippo, and three kinds of big flightless birds. The nine-foot-tall elephant bird was probably the largest bird to have ever lived: it weighed half a ton and laid 20-pound eggs. All of these animals are now extinct.

The last 20 years has seen a doubling in human population from 5 to 10.2 million people. *Tavy*, as the Malagasy refer to slash-and-burn agriculture, has intensified and the pressure it has placed on all native animal life has become catastrophic. Today, only one-fifth of the forest is estimated to remain and much of it is patchy. Practiced by subsistence farmers, cattle raisers, and poor loggers who lay to waste large tracts of land by fire and axe, *tavy* has resulted in massive erosion and overgrazing, rendering large areas unfit for agriculture or reforestation. Vast sections of the interior have become dead zones — barren and kept that way by large herds of cattle.

Of the one-fifth (about 12 million hectares) of the island still possessing forests, only 4 million hectares are protected by the Malagasy government. Of this protected forest, 3 million hectares are “forests in reserve,” which means they can be harvested at some later date. That leaves only 1 million truly preserved hectares scattered over dozens of preserves and parks, most of which were set aside by the French during their colonial rule. The permanently protected parks make up less than 2 percent of Madagascar.

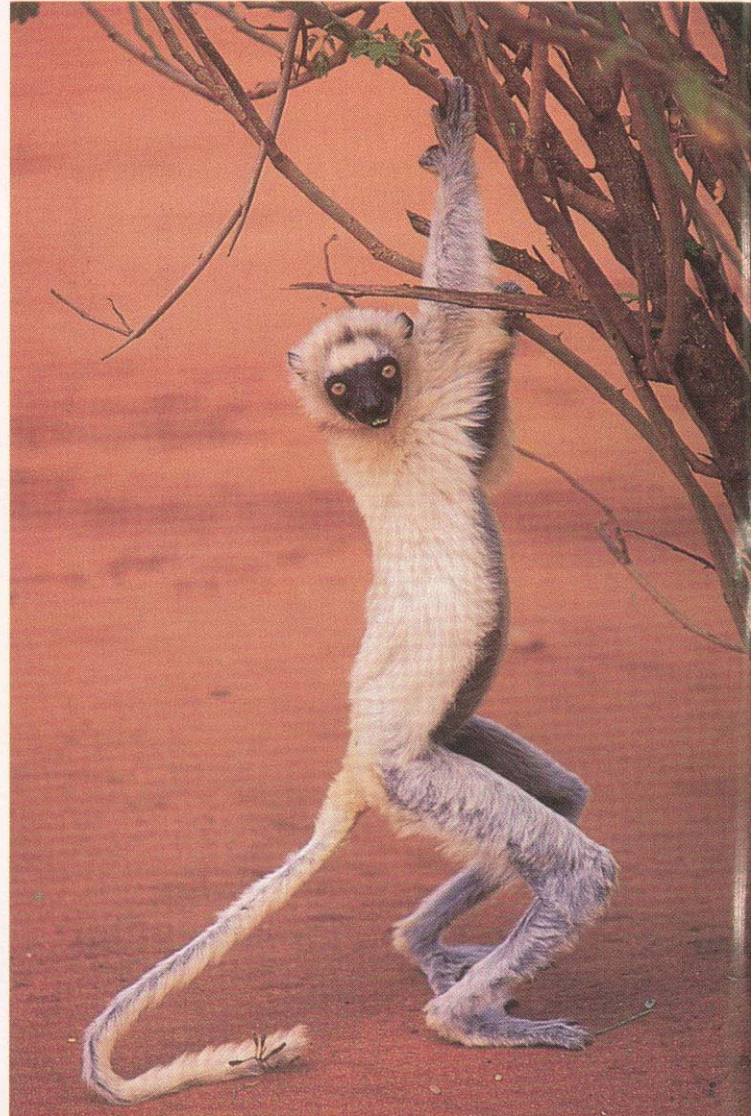
What alarms many scientists is how rapidly sections of habitat are being gobbled up and how little is known about the creatures that are disappearing in the process. Aside from lemurs and a few other highly endangered species, little is known about Madagascar’s wildlife. However, every time scientists probe, they are astounded at what they find. In the last 15 years, 70 new kinds of reptiles and amphibians and two kinds of lemurs have been found, and one lemur not seen for 15 years was rediscovered. The Madagascan Aunganoka tortoise, believed to be a top contender for the rarest tortoise in the world, was discovered clinging to life in an isolated patch of forest around a single bay. Its estimated population is around 100 individuals.

Though there is an increased effort by the Malagasy government to work in concert with conservation efforts from abroad and establish some of its own programs, the struggle to

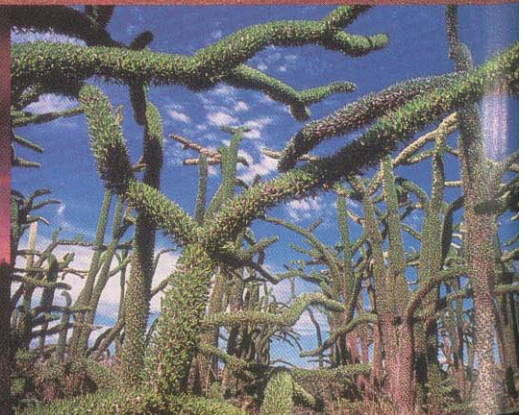
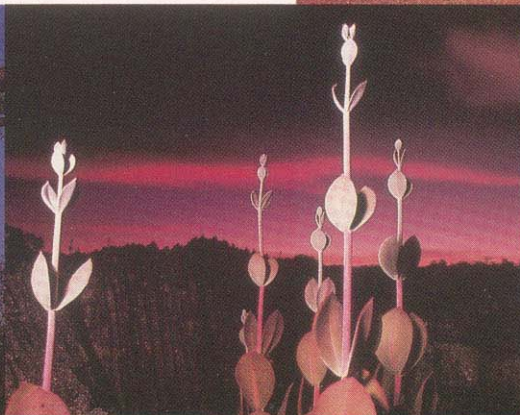
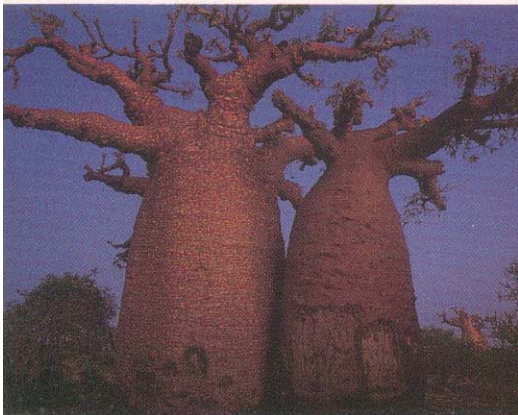
reverse the rate of devastation will be difficult at best. Changes in the average Malagasy’s standard of living may be required, and an appreciation of native wildlife must be developed.

Presently, though, Madagascar is a Third World nation where the basic needs of its citizens are often not being met. The average annual income is less than \$250. Death from pneumonia and diseases commonly controlled by antibiotics

**The endangered sifaka, one of three genera of silky lemurs, uses its long hind legs for walking upright and hopping.**



**Eighty-five percent of Madagascar’s plant species occur nowhere else on Earth. Below, left to right: one of the island’s seven species of baobab trees, unique desert vegetation, and the bizarre “spiny desert.”**





**As Madagascar's largest carnivore, the fossa claims the highest spot on the island's native food chain.**

still run rampant in the human population. Food and clothing is sometimes in short supply. The most sobering example of what must be overcome before wildlife will become a serious topic is illustrated in the sad story of a crocodile in the national zoo, the Parc de Tsimbazaza. The reptile slowly starved to death because the animal's keeper used its food to feed his family.

Even among the better fed, appreciation of the island's unique wildlife is not an overriding concern. A common question put to scientists by educated Malagasy citizens who speak English or French is, "Why don't you study wild lemurs in your country?"

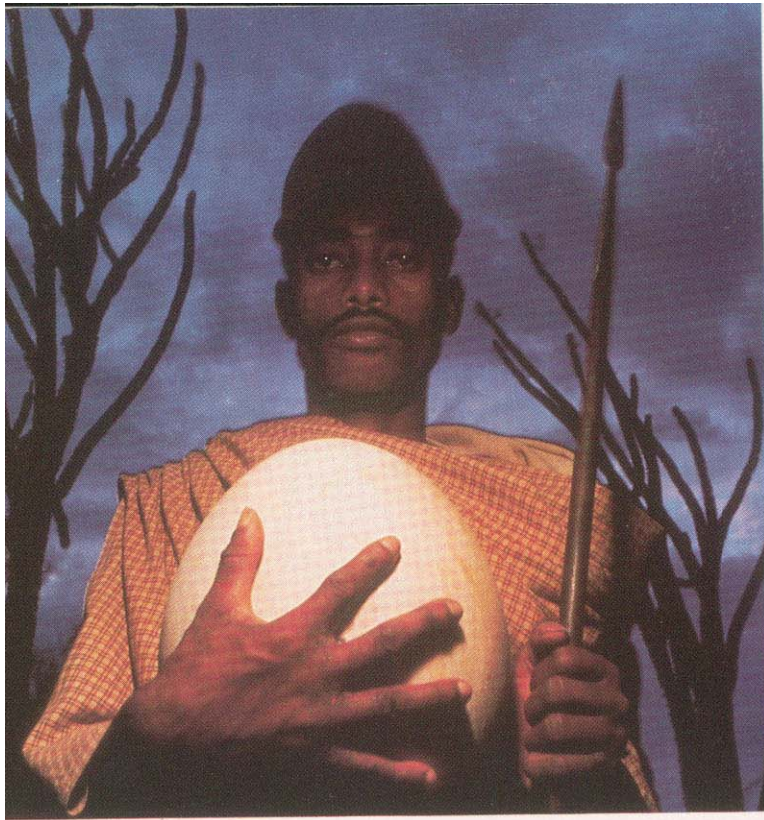
"It's not an unfriendly question. Many Malagasy don't realize lemurs are unique to their island country," says Elwyn Simons, a world expert on lemurs who oversees the lemur captive-breeding program at the Duke University Center for the Study of Primate Biology and History, the largest such program outside of Madagascar. Simons stresses how important education of the Malagasy people will be to the future of lemurs and other wildlife in Madagascar with these statistics: "More than 60 percent of the people are under 20 years of age. Eighty-five percent of the people live rurally. I would guess no more than 6 percent know about the need for conservation efforts."

Invariably, efforts to educate run into formidable obstacles, besides meager funding. The Malagasy have an insular society often nominally Christian or Moslem, but strongly influenced by animistic beliefs that work both for and against the wildlife. For example, if an aye-aye is seen in a village, the

Malagasy in some areas believe it must be killed or the village abandoned in order to avoid the evil spirits thought to reside in the animal—spirits so strong human deaths may result. Killing an aye-aye is of course easier than abandoning a village. That done, the hapless aye-aye's body is hung from a tree in the nearest crossroads so that its evil spirit will be carried away on the back of the next passerby. It's little wonder the harmless aye-aye is among the most endangered lemurs. On the other hand, the spectacular indri is never hunted; villagers believe it is a relative, and killing one would be the same as murdering a person. Other lemur species are hunted for their tender meat.

Agricultural practices of a frontier mentality akin to the settling of the American West are a time-honored mode of operation in Madagascar. Woodcutters, working for subsistence wages to support large families, are constantly harvesting the island's hardwood trees. Zebu cattle are hoarded like money and are seen as a measure of wealth. Fires lit to clear land for cattle often burn out of control and devastate prime wildlife habitat in and out of the natural preserves. The resulting erosion has turned large areas into oozing quagmires during the wet season. Rain sweeps away topsoil, making the land unsuitable for reforestation or agriculture.

This dismal picture is not entirely the fault of those Malagasy in positions to bring about change. Until 1960, Madagascar was a French colony. The French did little to develop an infrastructure. Under them, the island's children were taught about the creatures of Europe and Africa, not those on



A Madagascan native holds the enormous egg of the now-extinct elephant bird, which weighed half a ton.

their own island. These former students are now running the government, which has seen serious upheaval and realignment with the Soviet bloc as well as the West in recent years.

**D**espite the obstacles, there are efforts underway to save Madagascar's wildlife. The island nation is one of the first emerging countries earmarked for funding by a joint effort of the World Wildlife Fund (WWF) and the World Bank. These two organizations have joined forces with the aim of coordinating efforts to conserve wild lands and address human economic needs. The involvement of the World Bank is a new approach in conservation. The institution will lend to programs after receiving advice from WWF, which began surveying 50 protected sites in 1986 to review the damage and suggest ways to reduce or stop it. These suggestions are included with the World Bank's economic plan for Madagascar. Traditionally, conservationists have been leery of funding development—often seen as the basis of environmental problems. In fact, the coming together of conservationists and the World Bank is in part the result of the bank changing its emphasis to encourage forms of prosperity that do not pose a threat to ecological considerations. In the case of Madagascar, the development may take some of the pressure off rainforests.

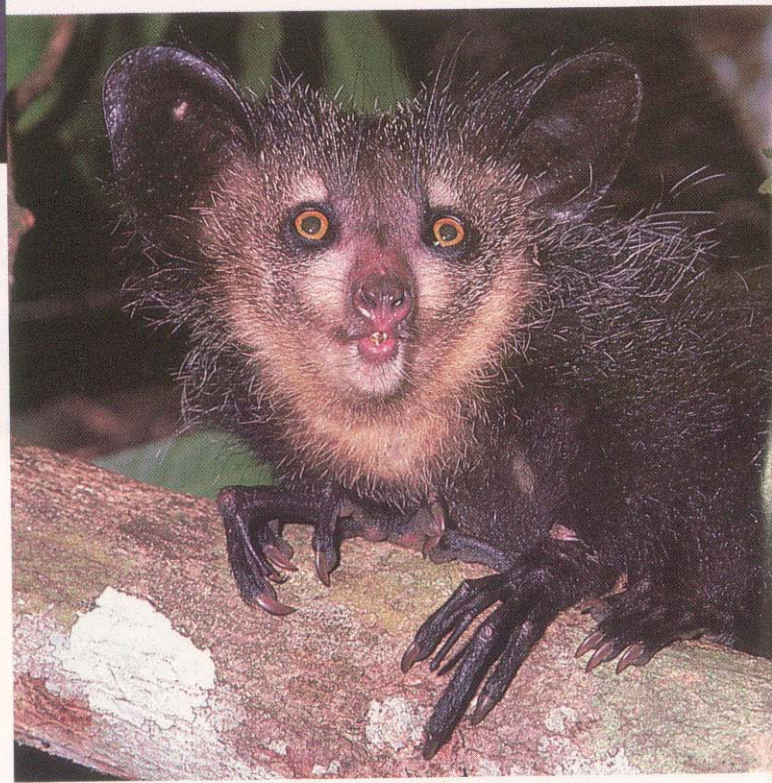
The Malagasy government is coming to see the link between protecting the landscape and a viable economic future. At the International Conference of Conservation for Development, held in the capital of Antananarivo in 1985, government leaders made it clear that conservation of the island resources was important to them. A priority was put on preventing further destruction of Madagascar's rainforests. As an alternative to logging for a subsistence income, the World Bank is backing programs that call for intensive and efficient rice production that will reduce the need to expand the rice farming onto the slopes now occupied by rainforests. Efforts are also underway to develop fuel-wood plantations to take the

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pressure off natural forests. There is also talk about developing revenue-producing tourism in the national parks and preserves.

It is too early to tell what the outcome will be of merging economic development and conservation concerns. Photojournalist Lanting, who has spent better than a year criss-crossing the country, agrees with this approach. "It is easy for people in developed countries to sound the alarm about environmental problems in the Third World. It's easy to fall in love with lemurs, but more difficult to develop sympathy for hungry woodcutters and their families. The fate of the woodcutter and lemur is connected."

Much of the World Bank's involvement has not progressed to actual programs yet. However, the United States



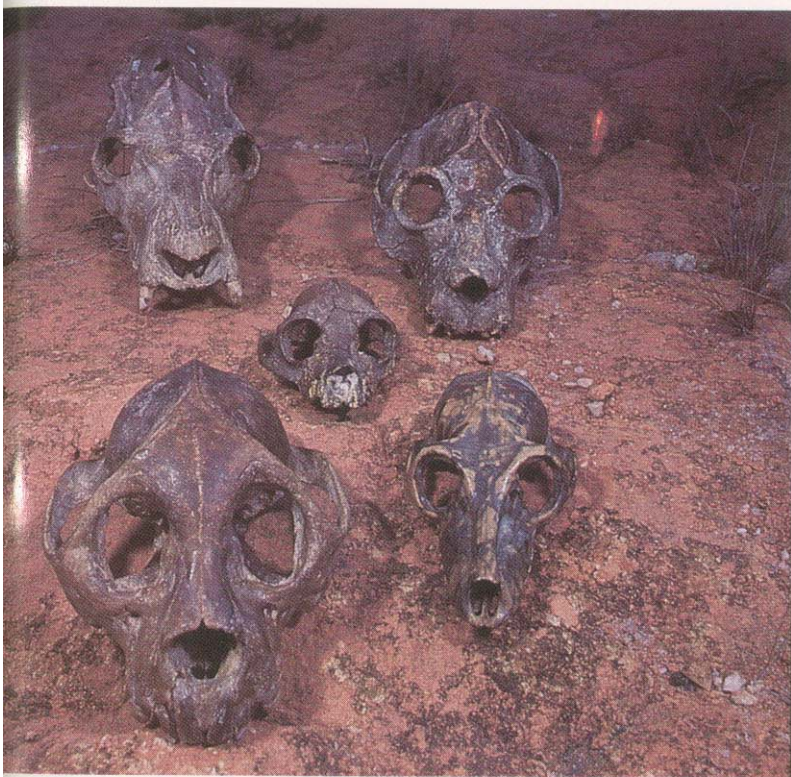
Considered a harbinger of evil in some villages, the aye-aye is killed on sight. In other villages, taboo protects them.

Agency for International Development (USAID) has been influential in the dedication of the first new preserve in 15 years. The Beza Mahafaly Reserve was opened to the public with much pomp and ceremony in 1985.

Roderic Mast, WWF program officer for Madagascar, is optimistic and takes the Beza Mahafaly Reserve dedication as a sign that the government, working with international organizations, is moving towards saving what's left. "We're going to lose some species. Our objective is to minimize the losses by focusing our conservation efforts on the areas with greatest uniqueness and diversity, where the highest numbers of different kinds of plants and animals can be found. We've come a long way in the last couple years. We've developed a list of 50 areas, including the most critical 15 places, that will

need immediate attention, and we've already begun supporting conservation in many of these." In the villages near the Beza Mahafaly Reserve, an agronomist was hired by WWF to help local people improve agricultural yields and experiment with the introduction of new crops like carrots and cabbage. WWF also repaired a local irrigation canal and the road near the park was improved to help farmers get their produce to market. The successes at Beza Mahafaly have prompted USAID to invest \$200,000 into the nearby 76,000-hectare Andohahela Reserve, which is home to such rarities as Verreaux's sifaka—a very rare snowy white lemur.

On the education front, there has been progress. Vaohita Barthéleme, a Madagascan working with WWF, has



Only a fossil record remains of the island's extinct lemurs. The center skull belonged to a small lemur, the surrounding skulls to giant lemurs—gradually wiped out by humans.

created a conservation-education program that was recently adopted by the Ministry of Education. Theoretically, every Madagascan youngster will begin getting doses of conservation in his or her schoolwork.

Another approach to saving wildlife is through captive-breeding programs inside and outside of Madagascar. Two lemur-breeding programs were started in Madagascar, but the outcome of both in terms of reproductive success will not be known for a few years. However, there is no doubt about the success of the primate center at Duke University in Durham, North Carolina. It is the only institution outside of Madagascar that has been designated by the Malagasy government to receive rare and endangered lemurs. The program is exclusively set up for prosimians, with the lemurs being the

heart of the program. The animals have been released in large enclosures covering 33 acres of forest compound that is similar to lemur habitat in Madagascar. The project now has 15 species of lemurs and regularly supplies zoos around the world. Program founder Elwyn Simons is a 30-year pioneer in lemur preservation and propagation. Simons believes vehemently that a captive-breeding program staffed by experts is the best hedge on holding off extinction for many species during this period of Madagascar's history. "I think our program is doing for lemurs what was done for Pere David deer and, to some extent, the American bison. The Pere David deer was native to China and went extinct there during the social upheaval of the Boxer Rebellion in 1900. Herds outside of China in private hands became the reservoir for the species to be reintroduced to China in recent years." The Duke primate center has produced the lion's share of the highly endangered ruffed lemur and is credited with turning around the decline of several other species.

Captive breeding may save some species of the spectacular lemur. But for countless other species that don't have programs designed to ensure their survival there is only one hope. The forces that have created Madagascar's ecological nightmare must be controlled. If not, the lemurs of tomorrow may be found in zoos and nowhere else.

*Freelance journalist Eric Hoffman is the author of *Adventuring in Australia, a travel guide to national parks in the Outback, to be released by Sierra Club Books in January.**

**Under eight inches from tip to tail, Madagascar's mouse lemurs qualify as the world's tiniest primates. All of the island's lemurs are either threatened or endangered.**

