

**Danger coming**  
These Verreaux's  
sifaka lemurs  
are threatened  
by the steady  
loss of their  
forest habitat in  
Madagascar



**SPECIAL REPORT**

# The New Age of **Extinction**

As the globe warms, more than the climate is endangered. Species are vanishing at a scary rate. We're the cause—but we're also the solution

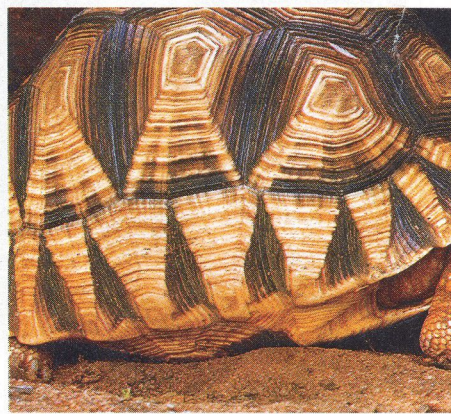
BY BRYAN WALSH/MADAGASCAR



## Madagascar's Vanishing Treasures



**Moon Moth**  
One of the world's biggest moths—while it lasts

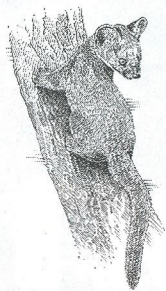


**Panther Chameleon**  
Males of the species can grow to almost 2 ft. long

**T**HERE ARE AT LEAST 8 MILLION unique species of life on the planet, if not far more, and you could be forgiven for believing that all of them can be found in Andasibe. Walking through this rain forest in Madagascar is like stepping into the library of life. Sunlight seeps through the silky fringes of the *Ravenia louvelii*, an endangered palm found, like so much else on this African island, nowhere else. Leaf-tailed geckos cling to the trees, cloaked in green. A fat Parson's chameleon lies lazily on a branch, beady eyes scanning for dinner. But the animal I most hoped to find, I don't see at first; I hear it, though—a sustained groan that electrifies the forest quiet. My Malagasy guide, Marie Razafindrasolo, finds the source of the sound perched on a branch. It is the black-and-white indri, largest of the lemurs—a type of small



**Aye-Aye**  
Spectacularly strange, it uses its long middle finger to dig grubs from trees



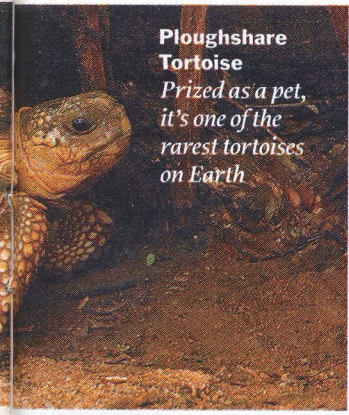
### An Island Apart

Madagascar split from India 80 million to 100 million years ago. All that time in virtual isolation meant that wildlife on the island followed its own evolutionary path. This helped produce unique species like the fossa, a catlike carnivore with the agility of a squirrel and the attitude of a wolverine.

ILLUSTRATIONS FOR TIME BY JOHN BURGOVNE



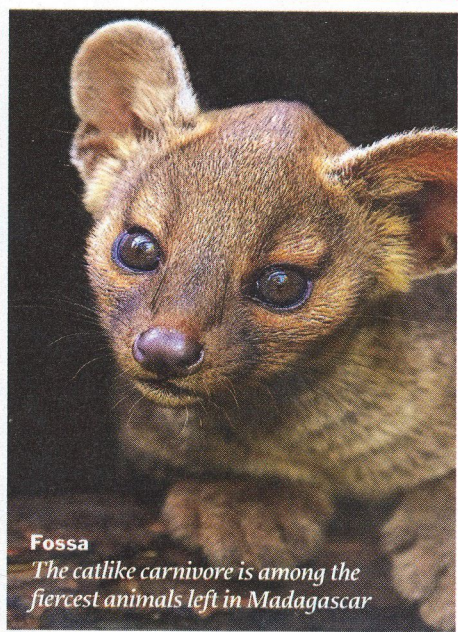
**Leaf-Tailed Gecko**  
This threatened lizard has more teeth fitted into its mouth than any other land animal



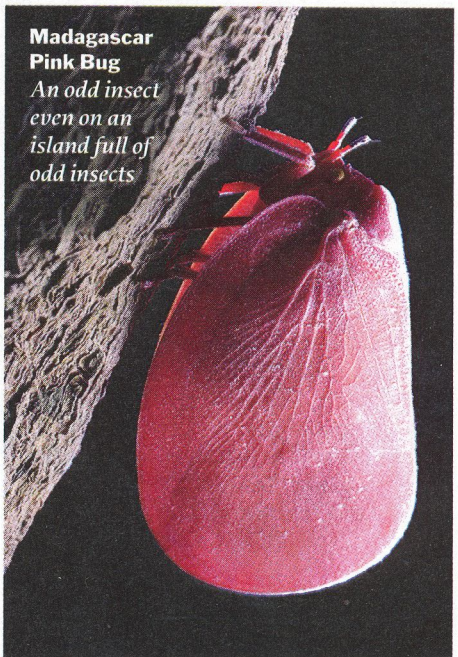
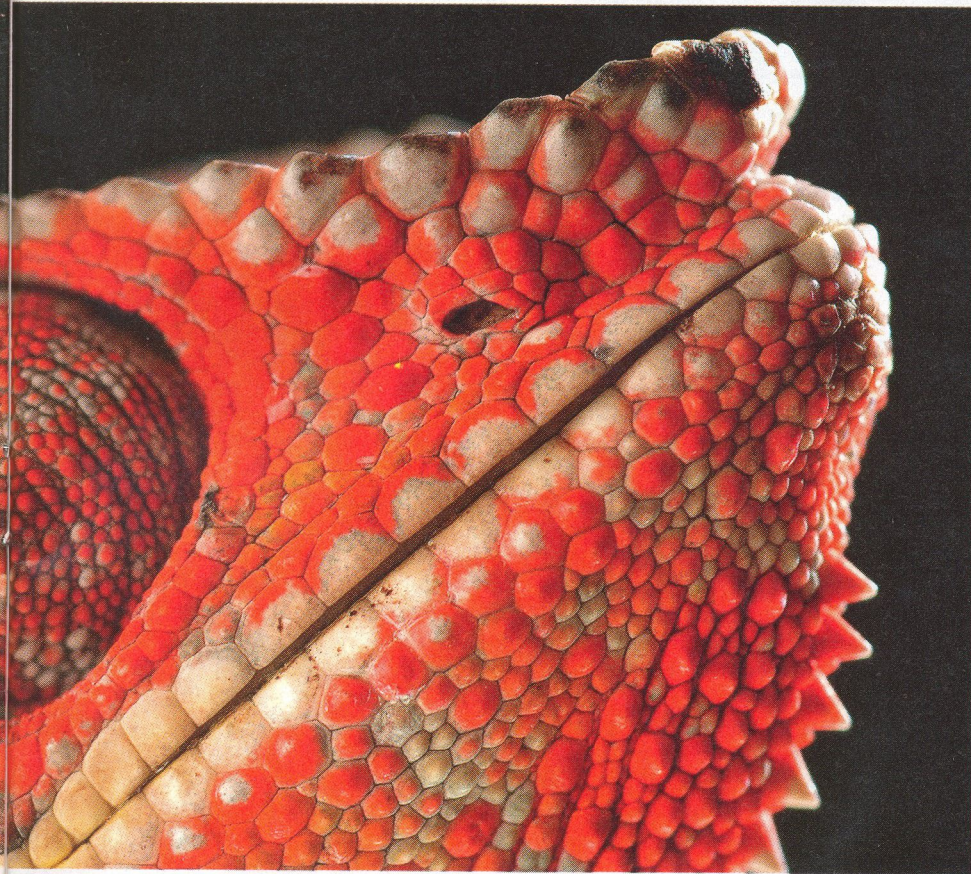
**Ploughshare Tortoise**  
*Prized as a pet, it's one of the rarest tortoises on Earth*



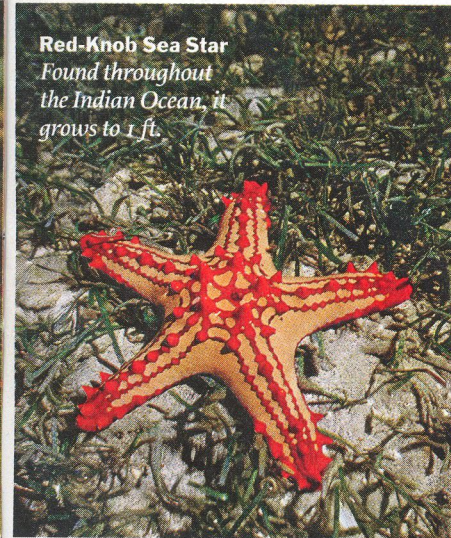
**Lowland Streaked Tenrec**  
*The spiny worm eater is so far still plentiful*



**Fossa**  
*The catlike carnivore is among the fiercest animals left in Madagascar*



**Madagascar Pink Bug**  
*An odd insect even on an island full of odd insects*



**Red-Knob Sea Star**  
*Found throughout the Indian Ocean, it grows to 1 ft.*

**Golden Mantella Frog**  
*Critically endangered and found in only a few spots, it is highly vulnerable to climate change*



**Dead forests** Madagascar has lost more than 80% of its forests, chiefly to the slash-and-burn style of ricefarming known as tavy, which exhausts the soil as it destroys habitats

primate found only in Madagascar. The cry is known as a spacing call, a warning to other indris to keep their distance, to prevent competition for food. But there's not much risk of interlopers. The species-like many other lemurs, like many other animals in Madagascar, like so much of life on Earth is endangered and dwindling fast.

Madagascar—which separated from India 80 million to 100 million years ago before eventually settling off the southeastern coast of Africa—is in many ways an Earth apart. All that time in geographic isolation made Madagascar a Darwinian playground, its animals and plants evolving into forms utterly original. They include species as strange-looking as the pygmy mouse lemur—a chirping, palm-size mammal that may be the smallest primate on the planet—and as haunting as the carnivorous fossa, a catlike animal about 30 in. long. Some 90% of the island's plants and about 70% of its animals are endemic, meaning that they are found only in Madagascar. But what makes life on the island unique also makes it uniquely vulnerable. "If we lose these animals on Madagascar, they're gone forever," says Russell Mittermeier, president of the wildlife group Conservation International (CI).

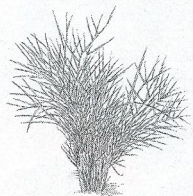
That loss seems likelier than ever because the animals are under threat as never before. Once lushly forested, Madagascar has seen more than 80% of its original vegetation cut down or burned since humans arrived at least 1,500 years ago, fragmenting habitats and leaving animals effectively homeless. Unchecked hunting wiped out a number of large species, and today

mining, logging and energy exploration threaten those that remain. "You have an area the size of New Jersey in Madagascar that is still under forest, and all this incredible diversity is crammed into it," says Mittermeier, an American who has been traveling to the country for more than 25 years. "We're very concerned."

Madagascar is a conservation hot spot—a term for a region that is very biodiverse and particularly threatened—and while that makes the island special, it is hardly alone. Conservationists estimate that extinctions worldwide are occurring at a pace that is up to 1,000 times as great as history's background rate before human beings began proliferating. Worse, that die-off could be accelerating.

#### Price of Extinction

THERE HAVE BEEN FIVE EXTINCTION WAVES in the planet's history—including the Permian extinction 250 million years ago,



#### Desert of 'life

*The spiny desert of Madagascar's south is brutally hot, but it's home to a unique population of animals. About 95% of the resident species are found nowhere else on Earth.*

## A 2004 study estimated that global warming could drive a million species to extinction by midcentury

when an estimated 70% of all terrestrial animals and 96% of all marine creatures vanished, and, most recently, the Cretaceous event 65 million years ago, which ended the reign of the dinosaurs. Though scientists have directly assessed the viability of fewer than 3% of the world's described species, the sample polling of animal populations so far suggests that we may have entered what will be the planet's sixth great extinction wave. And this time the cause isn't an errant asteroid or megavolcanoes. It's us.

Through our growing numbers, our thirst for natural resources and, most of all, climate change—which, by one reckoning, could help carry off 20% to 30% of all species before the end of the century—we're shaping an Earth that will be biologically impoverished. A 2008 assessment by the International Union for Conservation of Nature found that nearly 1 in 4 mammals worldwide was at risk for extinction, including endangered species like the famous Tasmanian devil. Overfishing and acidification of the oceans are threatening marine species as diverse as the bluefin tuna and reef-forming corals. "Just about everything is going down," says Simon Stuart, head of the IUCN's species-survival commission. "And when I think about the impact of climate change, it really scares me."

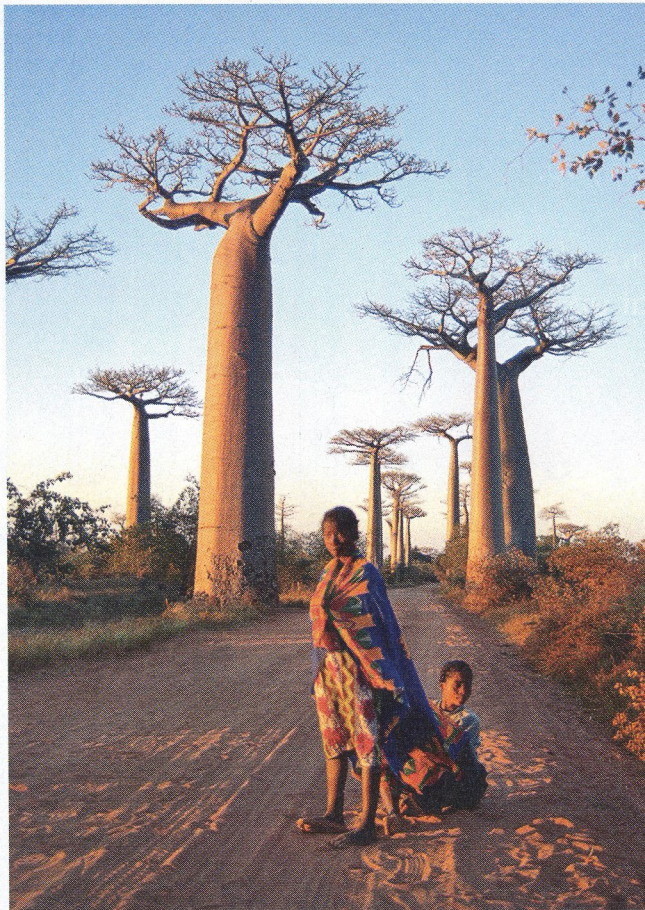
Scary for conservationists, yes, but the question arises, Why should it matter to the rest of us? After all, nearly all the species that were ever alive in the past are gone today. Evolution demands extinction. When we're using the term *extinction* to talk about the fate of the U.S. auto industry, does it really matter if we lose species like the Holdridge's toad, the Yangtze River dolphin and the golden toad, all of which have effectively disappeared in recent years? What does the loss of a few species among millions matter?

For one thing, we're animals too, dependent on this planet like every other form of life. The more species living in an ecosystem, the healthier and more productive it is, which matters for us—a recent study by the World Wildlife Fund (WWF) estimates the economic value of

the Amazon rain forest's ecosystem services to be up to \$900 per hectare (about 2½ acres). When we pollute and deforest and make a mess of the ecological web, we're taking out mortgages on the Earth that we can't pay back—and those loans will come due. Then there are the undiscovered organisms and animals that could serve as the basis of needed medicines—as the original ingredients of aspirin were derived from the herb meadowsweet—unless we unwittingly destroy them first. "We have plenty of stories about how the loss of biodiversity creates problems for people," says Carter Roberts, WWF's president.

Forests razed can grow back, polluted air and water can be cleaned—but extinction is forever. And we're not talking about losing just a few species. In fact, conservationists quietly acknowledge that we've entered an age of triage, when we might have to decide which species can truly be saved. The worst-case scenarios of habitat loss and climate change—and that's the pathway we seem to be on—show the planet losing hundreds of thousands to millions of species, many of which we haven't even discovered yet. The result could be a virtual genocide of much of the animal world and an irreversible impoverishment of our planet. Humans would survive, but we would have doomed ourselves to what naturalist E.O. Wilson calls the Eremozoic Era—the Age of Loneliness.

So if you care about tigers and tamarins, rhinos and orangutans, if you believe Earth is more than just a home for 6.7 billion human beings and counting, then you should be scared. But fear shouldn't leave us paralyzed. Environmental groups worldwide are responding with new methods to new threats to wildlife. In hot spots like Madagascar and Brazil, conservationists are working with locals on the ground, ensuring that the protection of endangered species is tied to the welfare of the people who live closest to them. A strategy known as avoided deforestation goes further, incentivizing environmental protection by putting a price on the carbon locked in rain forests and allowing countries to trade credits in an international market, provided that the carbon stays in the trees and is not cut or burned. And as global warming forces



The upside-down tree The *Dr. Seussian* baobab is a symbol of Madagascar, one the government hopes to use to attract ecotourists

animals to migrate in order to escape changing climates, conservationists are looking to create protected corridors that would give the species room to roam. It's uncertain that any of this will stop the sixth extinction wave, let alone preserve the biodiversity we still enjoy, but we have no choice but to try. "We have a window of opportunity," says Kassie Siegel,



#### Birds of Paradise

At least 32 species of birds have already become extinct in Madagascar, where nearly 60% of avian species are endemic. The departed species include the exotic elephant bird, a 10-ft.-tall specimen that was the largest bird in history. The last one likely died around the 16th century.

director of the climate, energy and air program of the Center for Biological Diversity (CBD). "But it's slamming shut."

### To Save the Species, Save the People

MADAGASCAR, WHICH Mittermeier calls the "hottest of the hot spots," is where all the new strategies can be road-tested. In 2003, after decades when conservation was barely on the government's agenda, then-President Marc Ravalomanana announced that the government would triple Madagascar's protected areas over the following five years. That decision helped underfunded parks like Andasibe's, which protects some of the last untouched forest on the island. "You can't save a species without saving the habitat where it lives," says WWF's Roberts.

Do that right, and you can even turn a profit in the process. In Madagascar, half the revenues from national parks are meant to go to the surrounding communities. The reserves in turn help sustain an industry for local guides like Razafindrasolo. In a country as poor as Madagascar—where 61% of the people live on less than \$1 a day—it makes sense to give locals an economic stake in preserving wildlife rather than destroying it. "If you don't get the support of the people living near a conservation area, it's just a matter of time before you'll lose [the area]," says Steven Sanderson, president of the Wildlife Conservation Society (WCS).

Well-run ecotourism can provide support for conservation, but even the best parks might be hard pressed to compete with the potential revenues from logging, poaching or mining. The strategy of avoided deforestation, however, offers much more. Rain forests like those in Madagascar contain billions and billions of tons of carbon; destroying the trees and releasing the carbon not only kills local species but also speeds global warming. Proposals in the global climate negotiations would allow countries to offset some of their greenhouse-gas emissions by paying rain-forest nations to preserve their trees. It's win-win, with both the climate and the critters getting a boost. In eastern Madagascar, WCS and WCS are working together to protect about 865,000 acres in the Makira Forest with a range of carbon investors that include Mitsubishi

and Pearl Jam. Closer to Andasibe, CI and its partners are hiring villagers to plant trees on eroded land, which creates corridors to connect fragmented habitats, may earn carbon revenues and provides needed employment. "We're bringing back the shelter of the forests, and we don't have to cut trees," says Herve Tahirimalala, a Malagasy who is paid \$100 a month to work on the project.

The corridors created by CI's Andasibe tree-planting program show how a small tweak can reduce the species-killing effects of climate change-but also how longer-term fixes are needed. Fragmented habitats are problematic because many endangered species wind up trapped in green oases surrounded by degraded land. As global warming changes the climate, species will try to migrate, often right into the path of development and extinction. What good is a nature reserve-fought for, paid for and protected-if global warming renders it unlivable? "Climate change could undermine the conservation work of whole generations," says Larry Schweiger, president of the National Wildlife Federation. "It turns out you can't save species without saving the sky."

That will mean reducing carbon emissions as fast as possible. In the U.S., the CBD has made an art out of using the Endangered Species Act, which mandates that the government prevent the extinction of listed species, to force Washing-



**Undersize Hippos**

*Unlike its African neighbors, Madagascar was never home to large mammals such as elephants, lions and cheetahs. The one exception is the dwarf hippopotamus, which swam to the island millions of years ago, before it was probably hunted to extinction by humans.*

ton to act on global warming. The CBD's Siegel led a successful campaign to get the Bush Administration to list the polar bear as threatened by climate change, and she expects more species to follow. "Polar bears are the canaries in the coal mine," says Siegel.

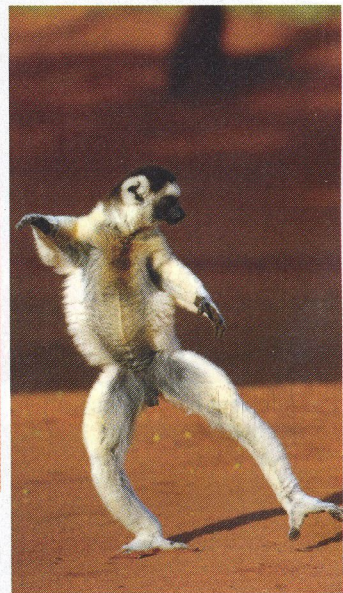
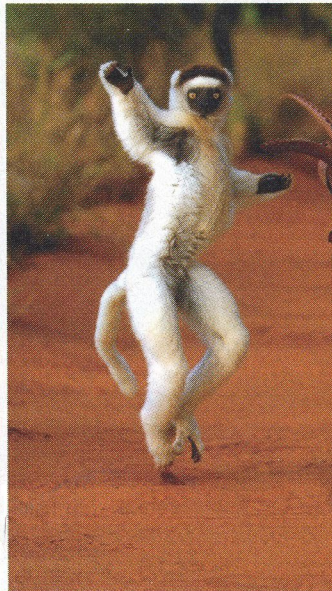
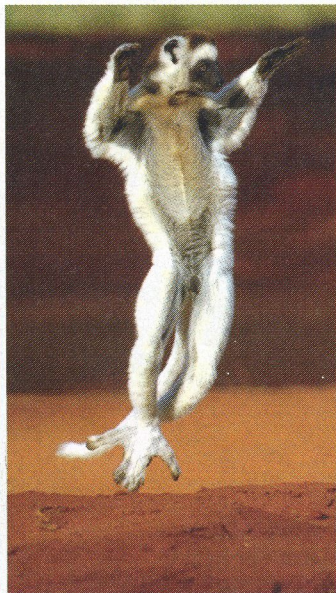
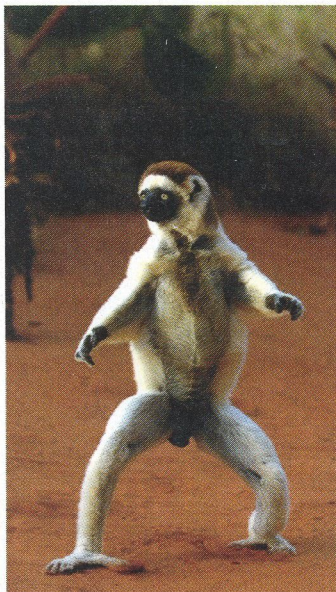
**Why We Can't Wait**

WHAT'S ESPECIALLY FRIGHTENING IS how vulnerable even the best conservation work can be to rapid changes-both climatic and governmental. Over the past couple of months, Madagascar has fallen into a political abyss, with Andry Rajoelina-the former mayor of Antananarivo, the capital-forcing former President Ravalomanana from office on

the heels of deadly protests. As a result, development aid to the desperately poor country has been halted, and conservation work has been disrupted. Reports have filtered back of armed gangs stepping into the vacuum to illegally log the nation's few remaining forests. "They're ripping out valuable timber as quickly as they can," says Mittermeier.

News like that can tempt even the staunchest defenders of wildlife to simply surrender. And why shouldn't they? In a world where hundreds of millions of human beings still go hungry and the global recession has left all but the wealthiest fearing for their future, it's easy to wonder why we should be concerned about the dwindling of the planet's biodiversity.

The answer is that we can't afford not to. The same natural qualities that sustain wildlife-clean water, untainted land, unbroken forests-ultimately sustain us as well, whether we live in a green jungle or a concrete one. But there is an innate value to untrammelled biodiversity too-one that goes beyond our own survival. When that is lost, we are irretrievably diminished. "We live on a very special planet-the only planet that we know has life," says Mittermeier. "For me, conservation is ultimately a moral obligation and simply the right thing to do." That leaves us a choice. We can save life on this special planet, or be its unwitting executioner.



**Dance, dance, dance**  
A Verreaux's sifaka lemur shows off in Madagascar

PETE OXFORD - MINDEN (4)