

## Rare Close-up

A radio-collared female ocelot, her ear torn from battles, trips an unmanned camera that captures this unusually close view of an ocelot in the wild. By using radio-telemetry to track the elusive cats in Panama, scientists are discovering how ocelots live in tropical forests.

# Following the Stealth Hunter

Six months on the trail of ocelots yields just six quick sightings. Why are these shy predators so tough to spot?

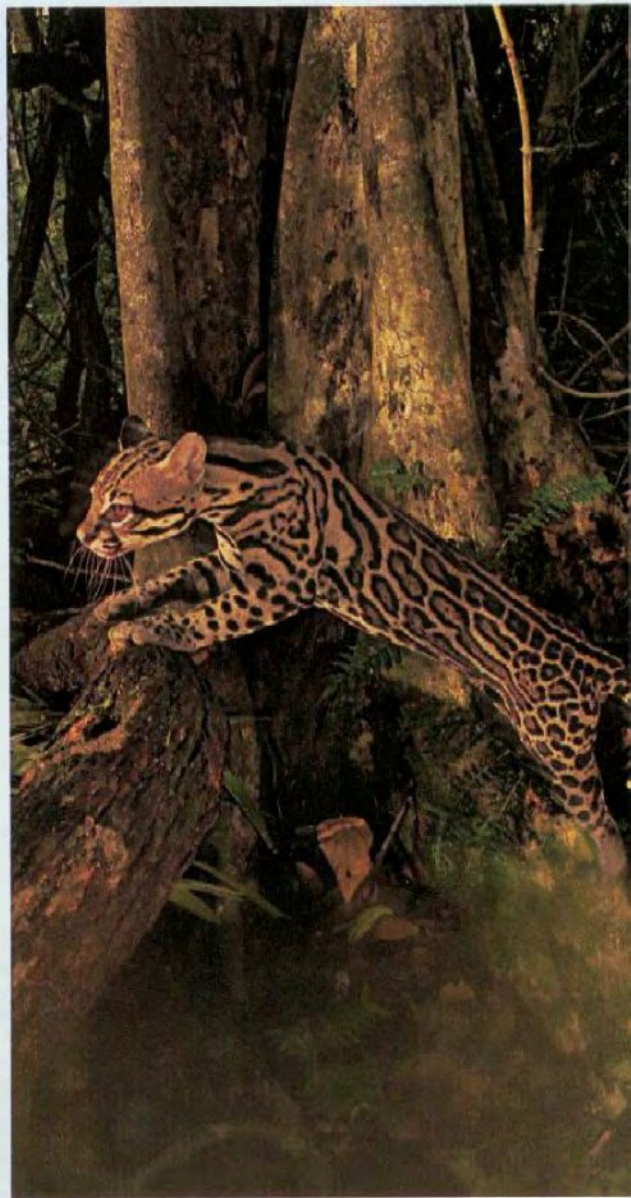
By Chris Carroll NATIONAL GEOGRAPHIC WRITER

Photographs by Christian Ziegler

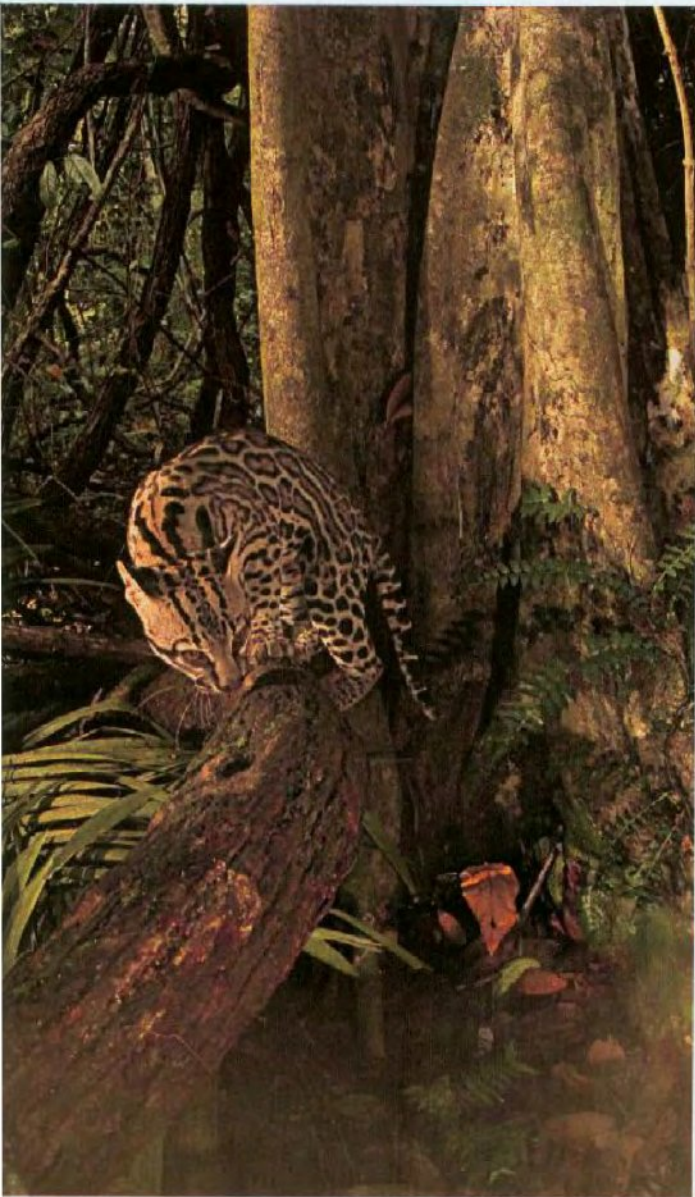












## Ghost in the Trees

Point A to point B becomes a flowing, slinky ballet as a young ocelot ascends from the forest floor onto a fallen log, then gathers herself for the next step. "They don't seem to touch the ground when they move," says photographer Christian Ziegler, who spent six months trying to make images of ocelots on Barro Colorado Island (BCI) in Panama, home to about 25 of these predators. Often his cameras caught sight of the cats even when he didn't: Ziegler made this series, and several other images in the article, with a digital camera triggered when the cat passed through an infrared beam.

Ocelots are territorial hunters that tend to follow familiar paths through the forest. A biologist by training, Ziegler followed tracks and observed scratch marks to find this fallen log, a likely sheltering place for small animals such as rodents, iguanas, and ground-dwelling birds that ocelots commonly prey on. The cats, which average 20 to 35 pounds, also take on bigger fare from time to time: Scientists have observed them eating sloths and howler monkeys, and have evidence that the largest ocelot yet found on the island—which tops 40 pounds—has even taken deer.



## Cool Cat

Alert but calm, a caged female waits to be released by scientists. Humans weren't always so benign: Hunters killed more than 100,000 ocelots a year before trade in their highly coveted fur was banned in 1973. Though illegal hunting is still a problem, as many as three million now live throughout tropical and subtropical latitudes of the Americas.









**I**t's the end of the dry season in Panama, and the jungle is parched. On a forest floor thickly littered with dead leaves, photographer Christian Ziegler stands perfectly still, listening intently to the beeping of the radio-tracking device his assistant is operating.

Nearby, perhaps only 30 feet away, an ocelot is on the move, according to the receiver's constantly shifting pattern of beeps. Yet despite the crackling ground cover and the fact that this feline predator can be as large as a medium-size dog, Ziegler can't see it or hear its steps. His human senses have been foiled by the cat, whose spotted coat helps it blend into the dappled light of the forest. The receiver gradually goes quiet as the ocelot departs, unseen and unheard.

Ziegler later comments, with mixed frustration and awe, "In six months I probably saw them with my own eyes only six times—usually for a split second as they flitted away."

The stealth of this species (*Leopardus pardalis*) and the heavy forest cover in which it often lives—its range spanning the Americas from south of the Amazon Basin north to the Rio Grande Valley of Texas—make it tough on scientists trying to observe ocelots in the wild.

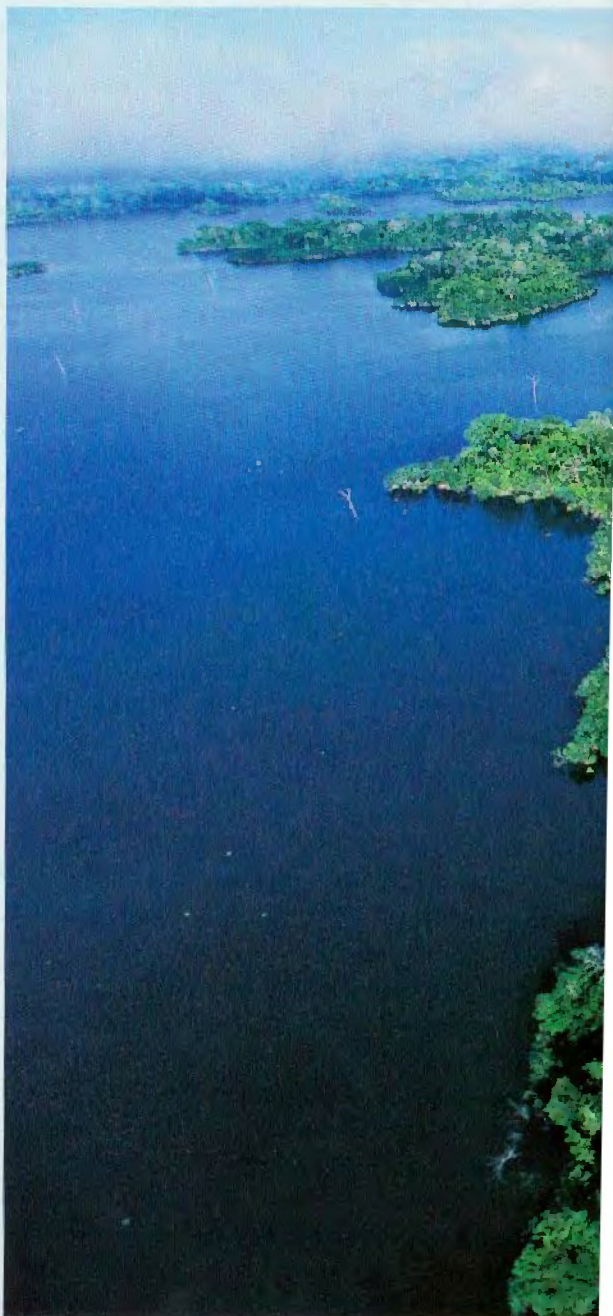
"You can't sit in the Land Rover with binoculars like you're watching a lion stalk on a savanna," says Roland Kays, curator of mammals at the New York State Museum. He is studying interactions between the ocelots of Panama's Barro Colorado Island (BCI) and the cat's favorite prey—a seven-pound rodent called the agouti.

Here on BCI, Kays and Martin Wikelski of Princeton University are testing a groundbreaking animal-tracking system called the Automated Radio Telemetry System, or ARTS. With funding from the Levinson Family Foundation and the National Science Foundation, the system was installed by the Smithsonian Tropical Research Institute, which has run a research station on BCI for 82 years. Ocelots and agoutis were the first species to put ARTS through its paces.

Traditional wildlife radiotelemetry requires several researchers to scramble about with receivers to triangulate

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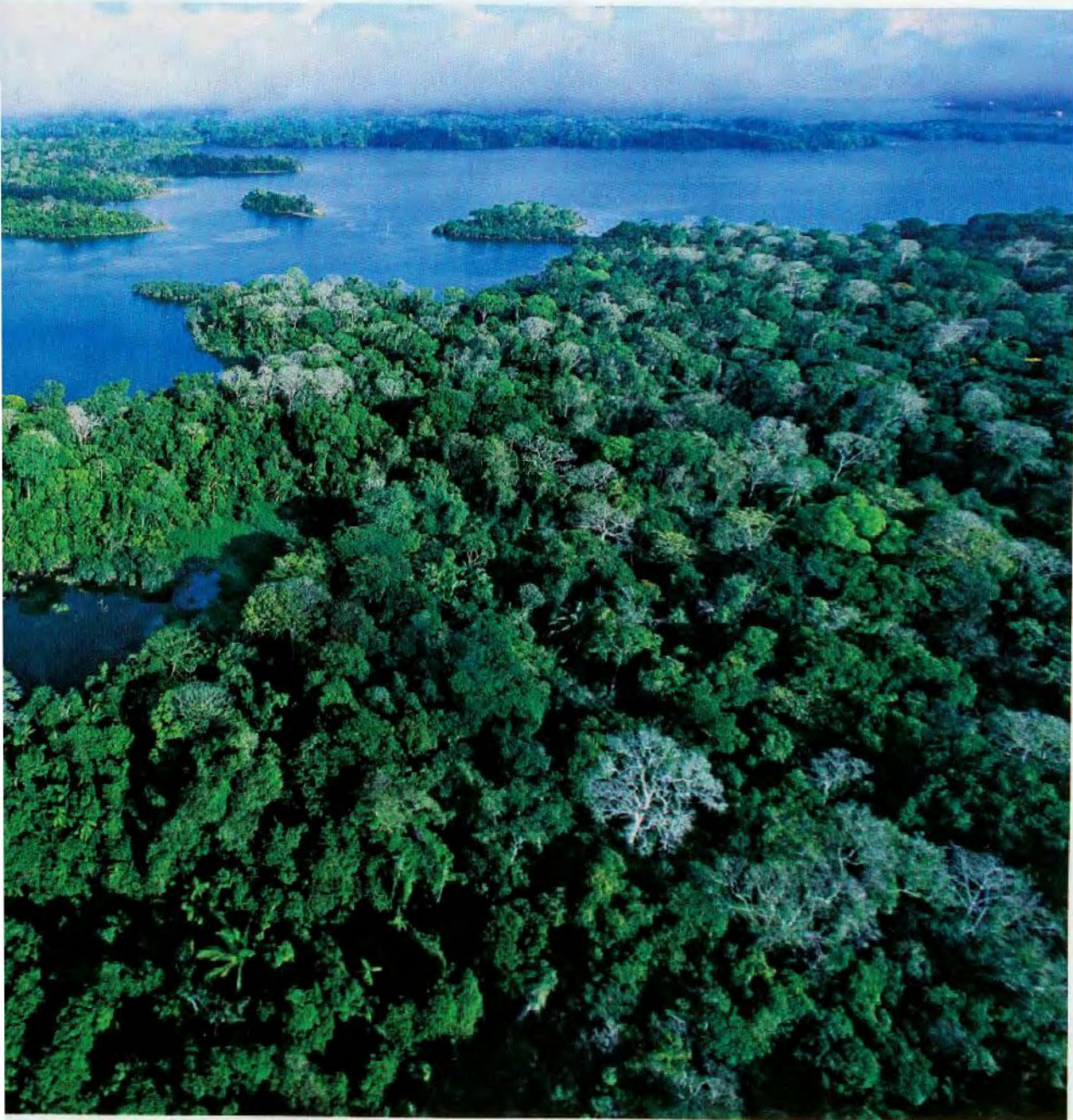
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the position of an animal that had previously been trapped and collared with a transmitter. In contrast, ARTS consists of seven permanent radio towers positioned across the island. They pick up and relay signals to computers that constantly monitor dozens of animals. "You can gather more data in one week than you can in years of traditional telemetry," says Kays.

If he wants to know the daily activity schedules of his subjects (as well as of other species the system now tracks, such as sloths, monkeys, and opossums), he can simply scan the computer. One program produces a graphic





## Science Island

Construction of the Panama Canal created Barro Colorado Island (above) in man-made Lake Gatún. Home of the Smithsonian Tropical Research Institute, BCI is famous among biologists as the most studied six square miles of tropical land on Earth—a lab of biodiversity with more than a thousand plant species and a hundred types of mammals. These populations aren't static: Some animals, including ocelots, can swim the narrow gap between BCI and the mainland.





that shows when the animals are active. This allows researchers to keep track as ocelots rouse themselves, typically around 6 p.m., to go on a prowl that will likely continue until morning. ARTS also constantly maps the locations of the cats, which has helped scientists learn that the average home range of a male BCI ocelot is 1.4 square miles; for females, it's about 0.6 square miles. This spatial monitoring becomes especially exciting, and scientifically illuminating, in the rare case when two collared animals meet and interact.

Useful as it is, "technology can't replace

fieldwork," Kays says. He and his colleagues also use traditional methods like collecting scat and searching for paw prints. Their goal: to learn more about the importance of predators to ecosystem health. For instance, if ocelots were to become extinct on BCI, unchecked rat or agouti populations that devour seeds could wipe out some plant species.

Ocelots do face threats from poaching and habitat destruction. But happily, now that hunting the cats is illegal in most of their range, there's little danger the 1.5 million to 3 million ocelots living in the Americas will disappear





ROLAND KAYS, NEW YORK STATE MUSEUM, ALBANY

## Death of an Agouti

Biologist Roland Kays prepares to fit a trapped ocelot with a radio collar (facing page). He and his students have also collared many an agouti, a tropical rodent (top), here eating a spiny palm fruit. Only on BCI could the researchers do what comes next: monitor the animals' erratic trails for nine hours (above)—the ocelot's path in gold, the agouti's in purple.

Automated tracking of multiple animals is possible because receiver towers dot the island—the only system of its kind. “You can’t get this type of continuous data chasing animals through the forest with receivers,” Kays says.

The ocelot circles and finally makes a kill, shown as a red square. Seeds the agouti had buried to eat later will now have the chance to grow into trees—an example of how a hungry ocelot's nighttime hunt can affect a whole ecosystem.

anytime soon. In many parts of the tropics, hunting has decimated populations of jaguars and pumas, the Western Hemisphere's largest feline predators, raising ocelots' status a notch in the ecosystem—big shoes to fill for the forest cats.

“They may now be the dominant predators in many areas across the tropics,” Kays says. “To what extent can they play the balancing role of large predators? This is a question we want to answer.”

**▶ QUICK AS A CAT** See video of ocelots on the move and watch them being radio collared. Then discover how Christian Ziegler shot pictures in the dark—without a flash—at [ngm.com/0511](http://ngm.com/0511).



## Night Vision

On the prowl through a darkened jungle, a female ocelot hears a faint click and comes to attention, her powerful eyes scanning the night for the source of the sound. If it's prey, she's set to pounce. If it's a puma—a much larger predator that also hunts on Barro Colorado—she'll flee for her life. This time, the sound is the shutter of a digital camera specially modified for this project to shoot black-and-white infrared images in pitch blackness. Digital infrared imaging will be the future of nocturnal wildlife photography, Ziegler predicts. "The animals don't know they're being photographed," he says. "It isn't intrusive at all."

With no bright flash to spook this cat, she continues on her way, undisturbed. □

