

WHEN WORLDS COLLIDE

IN SPRING 1998, I flew to Hawaii with a film crew to tape a segment on a critically endangered songbird, the puaiohi (*Myadestes palmeri*), a member of the thrush family. When we landed in Hawaii, I knew I'd arrived on an island that was home to—among other magnificent wildlife—some of the most endangered birds in the world. In fact, if you were to make a list of the 10 most endangered birds in our 50 states, 7 would be native to Hawaii—which is why the National Audubon Society (NAS) gives Hawaiian birds their own endangered list. These incredibly rare, ancient birds merit special attention and protection.¹

The number of puaiohi in existence dropped to between 200 and 300 by the 1970s, and I knew that the population had declined even further by the late 1990s, when I was there. The puaiohi population faced a number of threats from *nonnative species*, or animals that are not native to a specified habitat. The puaiohi had to compete for food and habitat with nonnative birds, became infected with malaria borne by mosquitoes, and was losing parts of its habitat due to the destruction of vegetation by nonnative pigs and goats.

When my crew and I arrived at the Keauhou Bird Conservation Center, which is part of the San Diego Zoo's Conservation and Research for Endangered Species department, we were met by Alan Lieberman, an enthusiastic biologist who was not only this

species' caretaker but also clearly its biggest fan. He ushered us to the field station and proceeded to give us a list of the dos and don'ts regarding our contact with the extraordinary bird we were about to meet. After a lengthy orientation, we were finally given permission to take our film equipment to the aviary.

It was beginning to feel like we were visiting a prison rather than an animal preserve. After making our way through the gate of an electrified fence, we encountered a 6-foot-tall concrete perimeter wall. These barriers had been constructed to keep out the puaiohi's predators—feral cats and the Indian mongoose. Like cats, mongooses aren't native to the Hawaiian Islands, but they're both adept at hunting thrushes and other Hawaiian birds. Without the electric fence and concrete barrier, the puaiohi wouldn't have stood a chance.

Once we were allowed through the concrete perimeter, we stood outside a wire-mesh enclosure with yet another set of security doors. Before unlocking them, we slipped into sterile surgical jumpsuits and stepped onto a spongy pad saturated with antiseptic solution. With a finger to his lips, our somewhat anxious guide reminded us to keep quiet—one of the do's on the list.

After traveling a great distance to arrive at this island sanctuary, this was the moment I'd been waiting for. I was trembling with excitement—I was finally about to set eyes on an extremely rare creature that few others have seen, which is always an incredible thrill for a wildlife biologist. Standing before the small hatch door concealing this endangered species, Lieberman whispered, "Okay, guys, here's the scoop. I can only give you about 20 minutes in here, so you'll have to be quick about it." Twenty minutes was barely enough time to get our equipment set up, but it was a privilege to be there, and we'd known before arriving that there would be strict limitations on our visit.

When the moment arrived for me to step in front of the camera and take a look at the bird for the first time, I did a double take. It was one of the most ordinary-looking birds I'd ever seen. I'd intended to deliver a few witty remarks and avian factoids, but what came out was, "This is it? I came all the way from Massachusetts to see this?" I had to admit that I was expecting something a little more interesting. This ordinary-looking creature wasn't much bigger than a sparrow, and its plumage was a dull brownish gray—the same dull shades worn by any number of birds I'd seen in my own backyard.

In the puaiohi's defense, it could carry an interesting tune. It varied from a squawk to a warble to a labored wheezing sound to a metal-on-metal screech. And with breeding season approaching, this male was singing nonstop. So I remarked on the song and expounded on the biology of this particular thrush on camera for about 10 minutes before I ran out of words. Then I looked at Lieberman and, unable to entirely keep the sarcasm out of my voice, asked, "So tell me, what makes the puaiohi different from any other species of thrush? What's the big deal about this bird, I mean?"

He paused for a moment, and when he spoke, the words were simple but astonishing: "He may be one of the last of his species."

I looked at the puaiohi again, and it had transformed into the most vivid bird I'd ever seen. Every little feather, every twitch of its head seemed as vital an expression of life force as I'd ever witnessed.

Lieberman explained, "There are only about 15 in captivity. We collected 10 eggs in the wild, and these are the survivors and their offspring. If these birds don't breed, they will be no more."

It was stupefying. I struggled for an appropriate response. What was there to say about the fact that, by destroying its habitat and introducing nonnative species, man had forced the puaiohi into its

twilight on Earth—and very possibly into extinction. Paralyzed by our sense of helplessness, we watched as the cheerful bird eagerly hopped through the branches, oblivious to his potential doom. He was even proudly singing out an invitation for a mate, an invitation that could well go unanswered.

Our crew was quiet as we made our way back to the pier for our return trip to Maui. Although the little thrush was ignorant of his prospects, I could think of little else. As the sky and the sea glowed orange under the weight of the setting sun, I found myself hoping against hope that the puaiohi wouldn't meet the same fate that the po'ouli, a fellow island bird, had met just 31 years after its discovery.

The po'ouli (*Melamprosops phaeosoma*) had gone unrecorded until University of Hawaii students discovered it in 1973. It was the last native Hawaiian bird to be scientifically classified. The students first spotted this relatively brawny honeycreeper—a small, tropical bird in the finch family—in the rainforest wilderness of Haleakala Volcano on Maui. Because the likelihood of discovering a new animal species on a relatively small island that's been populated by humans for more than 14 centuries is incredibly low, the discovery was big news. It turned out that this newly listed species—which the students named *po'ouli*, or “dark head,” for the black ski mask it seemed to wear—was very rare, with an estimated population of fewer than 200.

Sightings of the bird had declined steadily since 1976, and by 1997, there were just three known birds remaining. The population had struggled against the same threats posed by nonnative species that currently imperil the puaiohi. Ultimately, the po'ouli population of three was simply too tiny to prevail against such a daunting challenge.

What finally sealed the fate of the po'ouli? Consider this sce-

nario: The small bird is sleeping soundly on a twisted forest branch when a furtive assassin, drawn to the gaseous beacon of carbon dioxide and heat continuously radiating from the bird's body, lands softly on it. Driven by an innate hunger for blood, the killer robs its unsuspecting victim of its future in a matter of seconds. The bird doesn't even put up a struggle.

The assassin in this scenario is nature's most resilient vampire, a creature with a miraculous ability to adapt to the ecological challenges of diverse habitats, from the Arctic tundra to the humid rainforests of the tropics: the tiny and sometimes-deadly mosquito. As the insect siphons an insignificant droplet of the bird's blood, it simultaneously passes a microscopic creature into its bloodstream. That microorganism, a plasmodium parasite, effortlessly squeezes through the mosquito's proboscis on its way into the welcoming corporeal fluid of its new avian host. The parasite multiplies exponentially, and within just a few days, millions of its kind are thriving in the warm, viscous habitat of the bird's bloodstream. As the colony of plasmodium microorganisms prospers, the health of its host rapidly declines. Ultimately, the bird succumbs to a disease that, over the course of 30 million years, has infected countless vertebrates, including humans: malaria.

The last surviving po'ouli died of complications related to advanced age at the Maui Bird Conservation Center. While the case of malaria it was carrying at the time was benign, the disease had no doubt played a large role in the events that decimated the species. That's what happens when worlds that nature never intended to meet collide. The po'ouli was native to the Hawaiian Islands; the mosquito is not. How, then, did this bird become the target of an alien parasite? The answer can be traced back to what was probably the first nonnative species to arrive in the Hawaiian Islands, more than 1,300 years ago: *Homo sapiens*.