Last Chance

Hawaiian wildlife managers may have as little as four years to rescue a beautiful bird from an alien-infested hell.

An ice storm that sent a truck into a plane and a plane off the runway delayed my flight from Boston, but I was colder on the Big Island of Hawaii—at least the first night on Mauna Kea. The volcano—about a thousand feet higher than Everest, if you measure from its base on the ocean floor—blocked half the sky, including the Southern Cross. Visible stars, unsmudged by full atmosphere and ambient light and reflected by snowfields, illuminated my tent.

I had come here with U.S. Geological Survey wildlife biologist Paul Banko, palila project leader, to report on the state's 30-year refusal (in violation of three court orders) to adequately protect the habitat of this forest bird, critically endangered by feral ungulates, mainly sheep, unleashed by European settlers and established in the wild on the Big Island as well as Kahoolawe (where they've been eradicated). In 1962 the state transferred wild mouflon sheep, native to Corsica and Sardinia, from Lanai (where they had been introduced as game) to the Big Island. It did this not for hunters, who generally preferred the less wary feral barnyard variety that were already trashing palila habitat, but in the belief that because mouflons have less of a herding instinct than the mouflon–feral hybrids, they would do less damage to the forest. As the managers had hoped, the mouflons hybridized the feral sheep out of existence, but the mongrels, which range higher and are able to leap the fences that had restricted their feral cousins, merely spread the damage.

Hawaii's inattention to nongame (and it has no endemic wildlife that is currently game) is standard for American wildlife management. Here, as in most states, sportsmen wield enormous political power because their license revenue feeds and clothes managers. From the start Hawaiian hunters made it clear they wanted mouflon mongrels managed for their personal sport, not removed by state sharpshooters for the benefit of some dumb bird you couldn't even kill. Typical of this mindset was the screed of Earl Pacheco, president of the Hawaii Island Fish and Game Association, in the July 10, 1974, *Hilo Tribune-Herald.* In it he scolded the "ecologically minded" for disapproving of invasive exotics, reminding them that "man too is an exotic animal in most parts of this world" and that, therefore, feral ungulates "rightfully deserve to remain part of Hawaii." And besides, he had divined that it wasn't sheep that were doing in palilas but "adverse weather" and "volcanoes."

Banko has been a resident of the state since 1965, when his father, noted biologist Winston Banko, was assigned by the U.S. Fish and Wildlife Service to determine why so many of Hawaii's birds were disappearing. Now, thanks in no small part to both Bankos, the answers are clear. Shortly after the islands rose from the sea they were colonized by sundry ducks, geese, water birds, owls, hawks, corvids, and finches—possibly house finches but more likely Eurasian rosefinches. With no mammalian predators, few parasites or pathogens, and enormous food supplies they rapidly evolved into dissimilar species that filled all available niches. Waterfowl became flightless herbivores. Corvids became fruit eaters (just one of five species survives and, as of 2002, only in captivity). A waxwing-like bird sired five species of honeyeaters (all extinct). In the most dramatic of any "adaptive radiation" among birds, including that chronicled by Darwin on the Galápagos Islands, the finch produced no fewer than 56 species of honeycreeper, each specialized to feed on various insects, seeds, or nectar (39 are definitely extinct, 4 probably extinct).

The same isolation that enabled this dazzling diversity enabled its demise. When the Polynesians arrived, about a thousand years ago, they plucked the trusting, flightless geese and ducks from grasslands, shrublands, and woodlands as if they were buffet meat, and they brought with them rats that feasted on the eggs and hatchlings of most every Hawaiian bird. The only surviving endemic goose is the nene—the one proficient flier (another may

have been able to take briefly to the air). And only two native ducks survive—the Koloa and the Laysan, both strong fliers.

Starting in the late 1700s European settlers unleashed a plague of aliens. Goats, sheep, horses, and cattle destroyed grassland and forest habitat. Norway rats, black rats, and feral cats proliferated on a solid bird diet. Pigs not only trashed habitat but devoured eggs and hatchlings of ground nesters. Avian pox arrived with chickens, avian malaria with other alien birds, and mosquitoes (which arrived as larvae in water tanks) spread both diseases. Mongooses, brought in as rat control, ate eggs and birds instead.

Because Hawaiian birds evolved with only avian predators they drop to the ground and freeze—an adaptation as effective in avoiding raptors as it is in becoming food for mammals. Today about half of all Hawaiian birds are extinct, about half the remainder face extinction, and about half of all threatened and endangered birds in the United States are Hawaiian.

The palila—the last finch-billed honeycreeper on the eight main islands from an original array of something like 20, is sustained mostly by seeds of the mamane tree. Before humans arrived it also occurred on Oahu and Kauai; now it exists only in the subalpine forest of Mauna Kea—about five percent of its original habitat. Since 2003 the estimated population has dropped from 5,354 to 2,640. There's time to save the palila, but if the trend is allowed to continue, it could be extinct in four years.

Earlier in the day Banko and I had climbed Mauna Kea's north slope, stopping in mamane groves to suck in thin air and listen for palilas. The black, cinder sand was laced with the tracks of alien wild turkeys. To our south, and almost as high as Mauna Kea, loomed the former palila stronghold, Mauna Loa, the planet's biggest volcano with a mass far in excess of the entire Sierra Nevada range. Thirty-five miles to our north rose the jagged peaks of Maui. Below us and to the east—in the cattle pastures where palilas used to shuck mamane seeds—a century-old, olive-green lesion of alien gorse metastasized toward the bird's remaining habitat. Further east and below us the "trade wind inversion"—a thick band of clouds formed when descending cold air meets ascending, moisture-laden sea winds—obscured a montane forest of ohia and koa trees.

Downslope from the inversion, habitats are wet. At 3,000 feet, the montane forest receives 250 to 300 inches of rain a year. But above 6,000 feet the subalpine forest gets only about 24 inches. Mamane and naio trees start petering out at about 9,000 feet and at 9,500 give way to lava, cinder, and a few puakeawe shrubs. Above 11,500 feet about the only plant that can make it is the silversword, just as endangered as the palila and for the same reason. Like mamane it is relished by sheep.

Banko froze on lava. "Listen," he intoned when the rubble stopped rolling. From a mamane grove 100 yards upslope I could just make out a palila's whistled *bedeleeep.* The bird kept calling and moving from tree to tree, but at length we homed in on it. It was about the size of a robin, with a thick, hooked beak, gray back and underparts, and a striking yellow head and breast. Banko picked up a yellow mamane flower it had dropped. While palilas depend on mamane seeds, they eat other parts of the tree, too—buds, leaves, pollen, nectar, even immature seedpods. The stamens' pollen-bearing sections were intact, which meant our bird had bitten through the flower and fed on nectar.

Bands—pink over white on the left leg and pink over aluminum on the right—told us this was one of two survivors, both males, from 21 birds reared in captivity and hacked to the wild by the Zoological Society of San Diego. These, together with 9 to 15 wild palilas (all that remain from 188 caught in mist nets on the west slope) comprise the total north-slope population, not sustainable but a start if habitat recovers. The Zoological Society, which is trying to learn how to better condition birds to the wild, will have released an additional seven captives by the time you read this.

The higher we climbed, the more hideous the sheep damage. Browse lines were stark; smaller trees were ragged, sickly, or dead. Mouflon mongrels like to stay high, and they've learned to avoid parts of the mountain easily accessed by sport hunters. The court has required the Division of Forestry and Wildlife (DFW) to conduct helicopter shoots twice a year for the past decade. So there has been some forest recovery. But because the division has dilly-dallied in construction of a mongrel-proof fence around palila critical habitat, mongrels keep filtering back in. It's like trying to bail a screen-bottomed boat.

Next day we ascended the west slope, having driven out of the montane forest, where it was raining, and up into the subalpine forest, where the sky was blue save for the trade wind inversion and "vog"—volcanic smog from lava and gases venting from the Kilauea volcano on the island's southeast coast. Alien fireweed spilled through mamane stands in yellow stains, competing with it for scarce moisture and drastically increasing its vulnerability to fire. The state's consistent argument that sheep serve the ecosystem by removing the fire hazard of alien grasses was never a good one, but now, with fireweed displacing other aliens, it's not even an argument. Sheep won't touch the stuff. Many trees were dead or moribund, victims of mouflon mongrels, fireweed, or alien root fungus (possibly brought in with alien plum trees), or all three.

Banko plucked a mamane pod and cut open the seeds with his thumbnail. In one we found a cydia caterpillar, important sustenance for juvenile palilas. But cydias are being eaten by the larvae of alien wasps brought in to control pests of alien sugarcane in the days when biocontrol was guesswork. The drought had rendered most of the seedpods brown and useless to palilas. No year is a good year for these birds, but 2009 will be horrible.

Near the summit, inside a more or less mongrel-proof fence, we found endangered silverswords—shaped like pineapple tops and as metallic as aluminum Christmas trees. Mauna Kea means "white mountain," a name that more likely derives from its once prolific silverswords than its snow. Old Hawaiians say that from the city of Hilo, 25 miles east, you could see the moonlight flashing on them.

Lower on the mountain, in the heart of critical habitat, we heard palilas all around us. In one tree we found three. Suddenly they dipped from high boughs, sculled east in tight formation, then circled back over our heads, backlit by the noonday sun—a vision from a younger, better, uninvaded Hawaii.

Even half a century ago, when the state was conserving feral domestic sheep as game, anyone with even a rudimentary grasp of ecology could see what was happening. The March-April 1960 issue of *Pacific Discovery* ran a piece entitled "A Forest Dies on Mauna Kea," in which Richard Warner, later a National Audubon consultant, wrote: "Continued neglect of the present situation can have only one outcome: the ultimate and complete destruction of the habitat. . . . The mountain will then no longer support either sheep or native plants or birds." And in 1971 the state's own biologists warned that Mauna Kea's subalpine forest was "deteriorating, largely as a result of the accumulated impact of browsing by feral sheep and goats."

Leading the charge to save bird and forest was vertebrate zoologist Alan Ziegler of Honolulu's Bishop Museum. The Hawaii Endangered Species Act directs the state to " 'formulate programs for the conservation, management, and protection of indigenous birds and mammals,' " he noted in 1975 testimony to the Hawaii House of Representatives. "[But] not a single specific program has yet been formulated—or even publicly suggested. . . . Instead, each year [managers] spend thousands of dollars of state tax money to manage and maintain the Mauna Kea feral sheep herds, which continue to destroy the mountain."

Six weeks earlier National Audubon's executive vice president, Charles Callison, had complained in writing to the U.S. Fish and Wildlife Service, which had been helping fund the sustained management of feral ungulates, about the "absurdity of having this bird done in by a flock of sheep." He received a boilerplate brush-off advising him that "the situation may not be as critical as some would have us believe" and instructing him to go talk to the division, which "we feel . . . is making a sincere effort to resolve the conflict."

The palila recovery plan, hatched in August 1977, was approved by the Hawaii Audubon Society, National Audubon, the Smithsonian's International Council for Bird Preservation, and the U.S. Forest Service. But the state, possessive of its mouflon mongrel "resource," opposed it. When the U.S. Fish and Wildlife Service approved the plan anyway, the state refused to implement it. Ziegler, the Sierra Club, Hawaii Audubon, and National Audubon had had enough. With the palila as the lead plaintiff, they filed suit in U.S. District Court.

It was a slam dunk. Judge Samuel King ordered "complete and permanent removal" of feral goats and sheep. The state appealed and lost. But the mouflon mongrels—which had slipped under the plaintiffs' radar because of the state-generated superstition that they were less destructive than their feral cousins—proved *more* destructive. They ranged higher, and they could jump the fence erected around Mauna Kea in the 1930s to prevent feral ungulates from competing with livestock. The state rebuffed a mediation attempt by the plaintiffs, so in 1986 they went back to court, easily winning an order for removal of the mongrels, too. Intervening for the state were the Sportsmen of Hawaii Inc., the Hawaii Island Archery Club, the Hawaii Rifle Association, and four mongrel hunters. Again, the defendants appealed and lost.

Pressured by hunters, the state stopped removing ungulates in 1995. And in 1998 Hawaii Governor Benjamin Cayetano ordered the DFW to continue ignoring the court and the state and federal Endangered Species Acts. So the plaintiffs and the defendants worked out an agreement (approved in a court order) by which they convinced the governor that Judge King hadn't been kidding. The intervening hunter groups and individuals appealed and lost. The DFW resumed ungulate removal.

Today the goats are virtually gone, but the mouflon mongrels are multiplying. According to division administrator Paul Conry, the fence, partially up, will cost $8 million to $15 million to complete. Conry avers that the state is "fully committed" to obeying the law. But he told me this: "We're going through our budget-cutting process here with the economy." Even before that cutting, the division's annual budget didn't reach $25 million (about what the New York Yankees pay Alex Rodriguez a year), and the legislature declines to vote appropriations. Such are the priorities of the American public.

"You can't just snap your fingers and have sheep disappear," Conry continued. True enough. On the other hand, if the state had started building a new fence 30 years ago, maintained the old one, and not flouted the court order to remove ungulates, adequate fencing would now be in place and the mouflon mongrels might be gone. Instead the mongrels have proliferated and spread from Mauna Kea to many other sensitive areas.

The division staffer I most needed to interview was biologist David Leonard, the DFW's leading palila authority and a tireless advocate for recovery. Before I could contact him to set up an appointment he phoned me, having learned of my project and cell phone number "through the grapevine." But at the time I was maneuvering my rental car through Honolulu traffic and couldn't talk. When I called back he told me he'd just been informed that only Conry would be speaking to *Audubon* on this highly sensitive matter.

The court has required the DFW to file biannual status reports about how it's coming along with mongrel removal. This from the most recent of these reports: "In the higher elevations, mamane appeared healthy, numerous young plants and green seedpods were observed, and browse damage appeared minimal when encountered." Recalling the devastation I'd seen, I ran the statement by bird biologist Sheila Conant, professor of zoology at the University of Hawaii and former president of Hawaii Audubon. She provided probably the kindest of all possible assessments: "They must have worked really hard to find that place."

In 1999 the Fish and Wildlife Service signed off on a deal to let the U.S. Army extend the "saddle road"—between Mauna Kea and Mauna Loa—through palila critical habitat. Mitigation included funds to hire a 17-person staff for Banko, purchase his team four vehicles and lease nine, build a camp on Mauna Kea, trap birds on the west slope and move them to the north slope, purchase and retire three cattle grazing leases in former palila habitat, and erect mongrel-proof fencing around these leases so the habitat could recover.

Like so much fish and wildlife "mitigation," this has been a sham. For one thing, it expires in 2012. After that cattle can graze again; but it takes 20 years for a mamane tree to grow large enough to attract palilas. Most of Banko's money is gone; his staff is down to two, and he won't be able to keep them on after this fall. The fence, far shorter than the mostly unfinished one around critical habitat, has been up since 2006. But the gates have been left open so that cattle come and go at will.

On Oahu I visited Special Agent Keith Swindle of the U.S. Fish and Wildlife Service's Office of Law Enforcement, a former service biologist assigned to northern spotted owls. "Absolutely," he replied, when I asked if he thought that the state was in contempt of court. When I asked why his agency hadn't taken legal action he explained that he'd recommended it but that the Department of Interior chose not to pursue the case.

On my request Swindle assessed palila mitigation graphically but dispassionately. U.S. taxpayers had paid to buy back the grazing leases and to construct high, elaborate fencing. Then at least one of the ranchers, after receiving public funds to give up his lease, grazed his cattle on it for free and inside a protective fence. Mouflon mongrels still infest the mitigation area. But he said he'd heard that the gates had finally been closed and the cattle removed.

"Well, no," I told him. When Banko and I had inspected the mitigation area on January 7, we'd encountered six cows. The grass inside was shorter than the grass outside; plantings had been heavily browsed; and the black, moldering, cow-killed mamane snags imparted the ambience of a World War I battlescape.

Conant, who has watched seven Hawaiian bird species go extinct during her 45-year career, has also watched as, in her words: "Palila habitat has gone from bad to better, back to bad, on to worse; and finally, today, surveys show that parts of palila critical habitat look like a sheep ranching operation. . . . Year after year species continue to decline and go extinct. Year after year our legislature fails to find sufficient funding for fencing and ungulate control—something the state is under court order to do." It makes her "ashamed to be a citizen of the State of Hawaii."

Still, her state's gross malfeasance is not atypical; few others would do better had their birds evolved in isolation. Nationwide, compliance with and enforcement of the Endangered Species Act is almost nil; and the departments of Interior and Commerce consistently refuse to list species that will surely vanish without aggressive intervention. Few Americans will notice the loss of another honeycreeper, but the loss of species is like the loss of rivets in an airplane—sooner or later there's a reckoning. What's more, a society that can't or won't preserve its native wildlife can't or won't preserve itself.

Saving most endangered species—Snake River salmon or black-footed ferrets, for example—is daunting, at times seemingly hopeless. But there's a huge difference with palilas. Salvation is simple and relatively cheap. Get the sheep off Mauna Kea, and the species has a future.

First, however, the state needs to be rousted from torpor and timidity. That may be about to happen. Attorney Koalani Kaulukukui of Earthjustice, representing the Sierra Club, the Hawaii Audubon Society, and National Audubon, wrote the state on November 21, 2008, requesting that it agree to make construction of mouflon-mongrel fencing around palila critical habitat a legal stipulation instead of just a stated good intention and to do so by last December 12. The deadline came and went. On January 7, 2009, the state officially declined. So on March 23 the plaintiffs went back to court.

WHAT YOU CAN DO

Urge your legislators to insist that the U.S. Fish and Wildlife Service enforce the Endangered Species Act on Mauna Kea. To learn more about the effort to save the palila click here.