



SAVING RAT ISLAND

The first step? Getting rid of the rats that infest it.

by HEATHER MILLAR | Illustrations by JILLIAN TAMAKI





Rats from a 1780 whaling ship that ran aground made themselves at home on the island, taking over the beaches, hills, and fields, and eventually destroying the native seabird population.

Even though biologist Gregg Howald grew up in the Pacific Northwest, he says that every visit to Alaska's Aleutian Islands feels like a homecoming. "The diversity of wildlife is incredible. It's everything — from [the] whales to the seabirds to the abundance of fisheries," Howald, one of the world's foremost ecotoxicologists, says. "Landing on an island with an active seabird colony is amazing. The birds almost darken the sky; there are clouds of them flying by. The sheer vastness of numbers ... it's a real treat."

Landing on Alaska's aptly named Rat Island, though, is completely different, Howald says. It's eerily silent, stripped of plants and riddled with burrows. "The rats have just wiped out the seabirds," he tells me.

The Island Conservation organization estimates that rats are responsible for 40 to 60 percent of all bird and reptile extinctions on most islands. Land predators — rats, snakes, foxes, and even cats, for that matter — don't naturally inhabit islands, though. They hitch rides with humans, and in doing so, they have managed to colonize nearly 80 percent of the world's isles.

"Ecologically, rat spills are a lot worse than oil spills," says Vernon Byrd, supervisory wildlife biologist for the Alaska Maritime National Wildlife Refuge, which administers Rat Island. "Oil spills can be really bad, but the effects of rat spills last much longer."

For a long time, no one really thought there was anything that could be done about the rodent infestations. While in the 1970s and '80s, conservationists began coming up with ways to remove introduced

species such as snakes and wild pigs from small islands, removing rats from larger islands still seemed impossible. But then, in the 1990s, the New Zealand Wildlife Service started to experiment with different techniques — like newer poisons and pressed-grain bait — for removing rats. In 2003, a team from New Zealand proved that rats

could be removed from a large area, finding success on Campbell Island, north of Antarctica. When bird species returned quickly to Campbell's 44 square miles, scientists began to wonder whether a similar project would work in the Aleutians.

Now a coalition of federal and state wildlife officials, scientists, and conservationists has formed in an attempt to rid Rat Island of its rodent infestation. It will be the third-largest and the northernmost island rat eradication ever attempted. And if it works, it could lay the groundwork for helping other nearby islands that are currently overrun with various species of the genus *Rattus*.

You might be wondering why all this is so important. According to scientists, the Northern Pacific Ocean and the Bering Sea remain unbelievably productive ecosystems. As Howald explains, seabirds occupy the apex of this system, and animals at the top of the food chain are always crucial to the whole. Recent surveys estimate that as many as 40 million seabirds — not seagulls but less-common species like puffins, auklets, and shearwaters — nest and breed in the Alaska Maritime National Wildlife Refuge, which includes the Aleutian Islands. In fact, about 80 percent of North America's seabird species reproduce there.

"A couple of years ago, we decided that working in the Bering Sea was really im-



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portant. It's one of the most productive ecosystems in the world. But sea-mammal populations are down, seabirds are down, and fisheries are changing. The blue-king-crab fishery crashed and shows no signs of reovery. There's climate stress for all the systems," explains Steve MacLean, Bering Sea program director for the Nature Conservancy, one of the partners in the Rat Island project.

"This threat to seabirds is something we could do something about. It's something we could address with new technologies that haven't been tried in this challenging an environment before," MacLean says. "We want to show that it can be done."

WHILE RODENT INVASIONS and seabird extinctions have been a problem in more southerly Alaskan towns like Ketchikan, the harsh climate of the mainland and of the islands has kept the state relatively rat-free. Anchorage, for instance, is the country's largest rat-free port.

To make sure it stays that way, the state Fish & Wildlife Department has just in-

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stituted a bunch of new, stringent anti-rat regulations. The Stop Rats Now campaign, funded and administered by a loose coalition of about 15 nonprofits and government agencies, hopes to hold the line against rodents by distributing educational materials and rat traps to citizens and sea captains.

Today, the seabird breeding colonies that do exist are mostly continuing to thrive. However, wildlife officials worry that they're threatened by the high volume of shipping traffic between North America and Asia.

"The [most likely way] that rats would be introduced to a new island would be a shipwreck," explains Byrd. Increasingly, cargo ships are taking a great-circle route that goes from Seattle or Vancouver up to Alaska, where it skirts the Aleutians, and then down to Japan and the rest of Asia. More than 3,000 container ships and freighters

pass the islands each year, and about 400 make a port of call at one of them. The weather is legendarily bad in this part of the world, where the Alents call their islands "the birthplace of the wind."

Add more ships to stormy conditions, and each year, one or two will run aground. When that happens, nearby islands risk rodent infestation. Most ships have rats on them, and rats can swim almost a quarter of a mile before tiring and drowning.

That's exactly how rats made it to Rat Island. In 1780, a Japanese whaling ship ran aground, and the ship's rodents swam to shore and then made themselves at home among the island's dramatic hills, fields of moss five to 10 feet thick, and crescent beaches.

Though there's no way to pinpoint exactly how many seabirds were nesting on Rat

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Island in those days, it's known that there were vast numbers. But it wouldn't have taken long for the rodents to change that. Nature has blessed rats with amazing fertility: The animals quickly reach sexual maturity, breed with abandon, and show little hesitation to mate with relatives. Theoretically, one founding couple could result in 5,000 rats within 12 months.

Once established, rats wreak havoc on an island ecosystem. Since they're generalists, they eat everything — berries, leaves, invertebrates, bird eggs, and chicks included. They quickly unravel food webs that have taken millennia to evolve. A recent study from the University of California, Santa Cruz, showed that an island rat infestation even changes the ecology of the intertidal zone near shore: When seabirds disappear, the populations of the invertebrates that form their diet (snails, barnacles, and the like) explode, eating seaweed and stripping the tidal pools of vegetation.

No one's sure how many island seabird colonies have suffered a fate similar to that of the Rat Island colonies, but a recent Yale University review of scientific literature states that 25 percent of seabird species have been observed to suffer rat predation.

"The numbers are likely an underestimate. The short answer is that rats pose a significant threat to any seabird that nests on islands," says Holly Jones, a Yale PhD candidate who was the lead author of the predation study. "Because most islands are naturally free of land-based predators, birds have not evolved any defenses. And they can't just move to another island, because many seabirds are genetically programmed to return to breed where they were born, whether there are rats there or not."

Howald says that even when rats attack adult birds, the birds don't fight back. In one dramatic account, a small Pacific rat chewed a hole in a Laysan albatross's neck over two nights, eventually killing the much larger animal. "They [the birds] will just take it; it just doesn't compute for them," he explains.

SCIENTISTS HAVE CONFIRMED that there are rat infestations on 17 of the more than 300 islands. They've chosen Rat Island for the first removal not because of its appropriate name but because it's only 200 miles from Adak Island, the westernmost municipality in the United States and a source of

help and supplies in the event of an emergency. Plus, Rat Island is relatively small, just upward of 6,800 acres (so almost 11 square miles), while other infested islands are as large as 100,000 acres.

The team plans to use the same methods that were used (and developed) in New Zealand: First, they will spread bait, made of compressed grain laced with blood thinners. Grain hoppers suspended from helicopters will drop these lethal green cakes in a grid pattern that covers the island but avoids fresh water. Then the team will wait a few days, set several series of traps, and then run the traplines to see how many rats survive to be trapped.

Some have criticized the procedure of wiping out an entire colony of animals and using poison to do so in a national refuge, but Howald defends the goal and the methods. "I don't have anything against rats per se," says Howald. "But removing rats from the Aleutian Islands is the single most important conservation measure the Fish and Wildlife Service can take."

"The idea is to put every rat in jeopardy, to spread the bait in sufficient density so that every rat will consume a lethal dose," explains the Nature Conservancy's MacLean.

While the underlying idea is relatively simple, carrying it out will be a logistical nightmare. First of all, the Alaska Maritime National Wildlife Refuge is almost unimaginably large: Its 2,000 islands arc into the Arctic like a giant Nike swoosh that's 1,800 miles long. (Flying from one end to the other would be comparable to doing so from Georgia to California.) Rat Island lies 650 miles west of Dutch Harbor, a hard-scrabble fishery and canning town on the island of Amaknak. Because helicopters can't fly that distance in one stretch, they will have to hopscotch from Homer, Alaska, refueling every 300 miles, including one stop on a remote island group, where a fuel cache will be dropped off in advance. All the while, the pilots will have to be alert for the fog and wind that can down helicopters.

The rest of the eradication team will arrive by boat and set the bait in the early fall, when rodent mating has slowed. The hope is that the rats will be more interested in the bait and in eating than in mating. But this also means the weather could be terrible: The Bering Sea, after all, is the backdrop for the Discovery Channel show *Deadliest*

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Catch, which is about crab fishermen. In this region, winds can reach 90 to 100 mph, 40- and 50-foot seas are a matter of course, and a "storm of the century" blows through every three years or so.

"When people ask how to prepare, I tell them to put on all their rain gear and then step in the shower and turn it on full blast for about 15 or 20 seconds. That gives you

an idea of what it's like and whether your gear will keep you dry," says Stacey Buckelew, the Island Conservation project manager who's arranging all the logistics.

The helicopter pilots will need to be able to manage precision flying in these difficult conditions in order to follow the bait grid precisely. "One gap might be the home range of a pregnant female, and that could jeopardize the whole project," Buckelew explains.

Buckelew and the team are hoping for 12 days of good flying weather, but they're bringing enough gear to stick it out for 45 days. Not only could the project be delayed, depending on when helicopters can fly, but the boat's return to pick everyone up could be, too — boats can't anchor in the Aleutians in the fall, so there won't be one ready and waiting in port at Rat Island.

All that necessitates a lot of gear: two weather ports (supersturdy, semicircular tents that resemble Quonset huts); sheets of plywood to floor the tents and keep mud at bay; kerosene heaters for drying socks and other gear; power sources for computers and lights; thick, ratproof tubs for storing food and garbage; 100,000 pounds of bait; mountain-climbing tents, in which to sleep; and Gore-Tex and rubber fisherman's gear to keep the water out. At night, despite the cordon of spring traps that will be set around the camp, rats will scuffle between the rain flies of the tents and gnaw on anything exposed.

"We're going to have a camp cook, and I'm even thinking of hiring a camp entertainer," Buckelew says. "All these folks are really dedicated, but it's important to keep up morale."

The next year (and each year for three years after that), a smaller team will return to Rat Island to monitor the results. Not until the rats are gone for two years will they consider the project a success.

When all is said and done, scientists aren't sure at what pace — or to which level — Rat Island will recover. "There's a small, rocky island about a kilometer away with remnant populations of puffins and shearwaters as well as land birds like sparrows and winter wrens," says MacLean. "The land birds are more mobile, with faster breeding cycles. We expect them to return first. We're not sure if the seabirds will recolonize, since they usually return to the islands where they fledge. If the seabirds don't return, we might consider bringing some birds there and letting them hatch and fledge there."

One thing is certain, though: When Rat Island is finally free of the rodents, it will need a new name. **EW**

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