



In Peru's Lobos de Afuera Islands, a century of loss from guano harvesting, overfishing, and—recently—climate change lies between a 1907 photograph of a Peruvian pelican breeding... [Read More](#)  
ROBERT E. COKER, NATIONAL GEOGRAPHIC CREATIVE (ARCHIVAL IMAGE)



MAGAZINE | YEAR OF THE BIRD

## Lost at Sea: Why the Birds You Don't See Are Fading Away

Seabirds are being devastated by predators, fishing, and climate change. Saving them begins with knowing more about them.



Fishing vessels offer a bonanza of food for seabirds, but they proved fatal to these albatrosses and white-chinned petrels (black birds on perimeter) caught in 2017 on tuna longlines off South Africa's coast. Thanks to sustainable fishing practices, annual bird bycatch off South Africa now numbers only in the



hundreds. Globally, however, more than 300,000 seabirds are killed by longlines alone.



A scalped gray-headed albatross chick on sub-Antarctic Marion Island gruesomely conveys the threat seabirds face from invasive species. For reasons not entirely understood, mice brought to the island by humans 200 years ago have begun feeding on birds at night. With no instinctual fear of this new danger, a bird will sit passively while mice nibble into its flesh, until it succumbs.

This story appears in the [July 2018](#) issue of National Geographic magazine.

IMAGINE A SLENDER, mouse-gray bird, no bigger than a starling, that spends most of its life on open ocean.

In cold water and all weather, the ashy storm petrel—a warm-blooded animal that weighs less than an ounce and a half—forages among the waves for tiny fish and ocean invertebrates. Fluttering with dangled legs, its toes skimming the surface, it gives the impression of walking on water, like the biblical Peter.

Although storm petrels as a group are among the world's most abundant and widespread birds, ashies are rare and found only in California waters. They have a distinctive strong musky odor; you can

smell them in the fog. They're most at home on the water, but, like all birds, they need to be on land to lay eggs and raise their young. For this, they prefer undisturbed islands. To escape the attention of predators, they nest underground, in rock crevices or burrows, and come and go only at night.



A lone common murre flies above thousands more tending eggs and young in the Farallon Islands off California. Decimated in the 19th century by egg hunters supplying San Francisco's markets, the population suffered another collapse in the early 1980s because of gillnetting—the use of large nets that trap seabirds and other wildlife as well as the target fish. Since the mid-1980s, restrictions or outright bans on gillnetting have allowed the Farallon murres to thrive again.  
MORE FROM THE PHOTOGRAPHER

In the [Farallon Islands National Wildlife Refuge](#), 30 miles west of San Francisco's Golden Gate, a local artists' collective has built a kind of sloppy igloo out of chunks of concrete from the ruins of old buildings on the main island. A small door in the sculpture allows access to a crawl space lined with Plexiglas. If you go in on a summer night and shine a

red light (less disturbing to birds than white light), you might see an ashy storm petrel sitting patiently on an egg at the bottom of a crevice, looking even smaller and frailer than it would on the water. You might hear the nocturnal song of one of its hidden neighbors, a soft and tuneful purr that emerges from the rocks like a voice from another world: the world of [seabirds](#), which encompasses two-thirds of our planet but is mostly invisible to us.

THIS PLAN TO SAVE A RARE ALBATROSS FROM EXTINCTION  
JUST MIGHT WORK Five hundred miles off the coast of New Zealand live the last 5,000 breeding pairs of the Chatham Island albatross.

Until recently, invisibility was an advantage for seabirds, a cloak of protection. But now, as invasive predators and [commercial fishing](#) threaten their existence, they need people to protect them; and it's difficult to care about animals you can't see.

The Farallons today are a small portal to the past, when seabirds were abundant everywhere. More than half a million birds were nesting in the refuge when I visited the main island in June 2017. On steep slopes and sparsely vegetated level ground, surrounded by [deep-blue water roiling with seals](#) and [sea lions](#), were puffins and guillemots and cormorants, tiny plump Cassin's auklets, weirdly horned rhinoceros auklets, and, in my opinion, way too many western gulls. The gull chicks were hatching, and it was impossible to walk anywhere without enraging their parents, which screamed at ear-hurting volumes and jumped into the air to strafe intruders with evil-smelling excrement.

## CELEBRATING THE YEAR OF THE BIRD

National Geographic is partnering with the [National Audubon Society](#), [BirdLife International](#), and the [Cornell Lab of Ornithology](#) to celebrate the centennial of the [Migratory Bird Treaty Act](#). Watch for more [stories](#), books, and events throughout the year.





## ALGOA BAY, SOUTH AFRICA

A national park along South Africa's southern coast protects key breeding grounds for more than a dozen seabird species. But dangers remain

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The gulls were a gantlet worth running to reach the island's colonies of common murre. One morning, Pete Warzybok, a biologist with [Point Blue](#), the conservation group that helps the U.S. Fish and Wildlife Service monitor wildlife on the Farallons, led me up to a plywood blind overlooking a murre metropolis. Like a blanket of coarsely ground pepper, 20,000 black-and-white birds covered a sloping spit of rock that bottomed out in surf-splashed cliffs. The murrees were

standing shoulder to shoulder, pointy billed, penguin-like, and [incubating an egg](#) or guarding a tiny chick on territories as small as a few square inches. The colony had an air of quiet industry. There were occasional outbursts of gentle clucking, and the menacing gulls kept sailing over, scanning for breakfast opportunities, and sometimes a murre landing awkwardly or scrambling to take flight would scuffle with a neighbor. But the disputes ended as suddenly as they started, the birds resuming their grooming as if nothing had happened.

“Murres do what murres do,” Warzybok remarked. “They aren’t the brightest birds.”

What murres do is exercise devotion. Although divorce is not unheard of, they form strong pair bonds and may live for 30 years or longer, returning every year to the same tiny territory and raising one chick. Parents share incubation duties equally, one of them remaining in the colony while the other ranges over the ocean and dives underwater for anchovies, juvenile rockfish, or whatever else is available. When a bird returns from a long foraging trip, the parent that has stayed behind—increasingly hungry and streaked with guano—is still reluctant to leave the egg. In the local lore of murres, there’s an anecdote of a mother whose egg rolled downhill as soon as she laid it. A gull came by and swallowed it, stood for a moment with an enormous lump in its throat, and then regurgitated the egg, which rolled farther downslope and hit a standing murre, which promptly climbed onto it and began to incubate it.



**ALGOA BAY** After hitting the water at 60 miles an hour, plunge-diving Cape gannets feast on high-calorie sardines, their preferred prey. This photograph captures the first evidence (top) of underwater kleptoparasitism among Cape gannets: one bird caught heisting a fish from another.

“If they don’t have an egg,” Warzybok said, “they’ll incubate a stone or a piece of vegetation. They’ll lay a fish on an unhatched egg, trying to feed it. And they won’t give up. They’ll sit on a dead egg for 75 or 80 days.”

Murre chicks take to the water when they’re barely three weeks old, too young to fly or dive. Their fathers go with them and stay by their side for months, feeding them and teaching them to fish while their mothers, which have made a heavy caloric investment in producing eggs, go off by themselves to recover. Parental devotion and the equal division of labor pay dividends. The reproductive success rate of



Farallon murre is very high, typically above 70 percent, and they're one of the most abundant breeding seabirds in North America. Immense though it was, the colony that Warzybok and I were visiting held less than 5 percent of the islands' murre.

The murre population today represents a provisionally happy ending to a long, sad story. Two hundred years ago, as many as three million murre bred in the Farallons. In 1849, when the gold rush made San Francisco a boomtown, the islands became an inviting target for a city without a poultry industry. By 1851, the Farallone Egg Company was gathering half a million murre eggs a year for sale to bakeries and restaurants. Its eggers arrived by boat in the spring, crushed the eggs that had already been laid, and proceeded to collect every freshly laid one. Over the next half century, at least 14 million murre eggs were harvested on the Farallons. The birds' fidelity to their nest sites kept them coming back, year after year, to be robbed of the objects of their devotion.





Seventy miles south of Cape Town, South Africa, albatrosses and shearwaters find plenty to eat; sardines tossed from a vessel chartered for seabird photography have momentarily trumped the discards thrown from a longline fishing vessel. Thanks to cooperation in recent years between local fishermen and Birdlife South Africa, the number of seabirds inadvertently caught on longlines has been greatly reduced.

By 1910, fewer than 20,000 murres remained on the main island. Even after eggging stopped, they fell victim to the cats and dogs introduced by the keepers of the island's lighthouse, and large numbers were killed at sea by oil flushed from the tanks of ships entering San Francisco Bay. The murre population didn't seriously recover until after 1969, when the main island became a federal wildlife refuge. And then, in the early 1980s, the population plunged again.

The problem was the indiscriminate fishing method known as gillnetting. Hauling a huge net to the surface of the ocean sweeps up not only the target fish but also porpoises, otters, turtles, and diving seabirds. Today at least 400,000 seabirds are killed worldwide every year in gill nets—murres and puffins and diving ducks in northern waters, penguins and diving petrels off the coast of South America. The annual toll on murres alone may equal the 146,000 killed in the [1989 Exxon Valdez oil spill](#) in Alaska.



African penguin chicks nest in guano on Mercury Island off the coast of Namibia. On most southern African islands, where guano has been harvested down to bedrock, scientists must provide artificial nests. Mercury Island's remoteness and forbidding slopes have discouraged intensive guano harvesting, and seabirds have clustered here in recent years, giving chicks a natural layer to burrow into.

Beginning in the mid-1980s, many American states, including California, took note of the ecological havoc and imposed severe restrictions or outright bans on gillnetting. The result, in the Farallons, was a surge in seabird numbers. In the past 15 years, safe from gillnetting, and free to do what they do, the murre have quadrupled their population. The only threat to their survival in the Farallons now is the disruption of their food source by [climate change](#) or overfishing.

Pete Warzybok, perched in the blind, was writing down the species of fish that the murre in his study plot brought back to their nests. To a California fisherman asked to share the ocean's bounty with seabirds—Farallon murre consume more than 50,000 tons of fish every summer—the argument for murre conservation isn't just ethical or aesthetic. The birds that Warzybok studies function like airborne fishery-monitoring devices, a fleet of living research drones. They scour thousands of square miles of ocean and are expert at finding where the food is. Using only binoculars and a notebook, Warzybok can gather better data about current anchovy and rockfish populations, for much less money, than California's fishery managers can gather from a boat.





Farallon murrelets are the lucky ones. They've survived most of the major threats to seabirds, and a case can be made for their economic utility. Elsewhere, globally, in the past 60 years, the overall seabird population is estimated to have fallen by 70 percent. This figure is even worse than it sounds, because a disproportionate number of seabird species are at risk of extinction. Of the world's 360 seabirds, a larger percentage is listed as endangered or threatened than of any comparable group of birds. [Parrots, as a group, have troubles of their own](#), but they're also widely admired. [Game birds](#) are valuable to hunters; [eagles](#) and other [raptors](#) are conspicuous and iconic. Seabirds breed on remote, forbidding islands and spend most of their lives in waters inhospitable to us. If they disappeared entirely, how many people would even notice?

Imagine a young [albatross](#) in the South Atlantic Ocean. It's following the circumpolar winds, gliding 500 miles a day on its 10-foot wingspan, using its nose to track the smell of fish or squid or crustaceans near the water's surface. Often the best place to find food is in the wake of a deepwater fishing vessel. The albatross glides in circles around a trawler and eyes the chaos of smaller seabirds tussling over the fish scraps thrown overboard. When it plunges into the scrum, it brings a size advantage: a massive bill and a wingspan that announces, I am huge! The other birds scatter, but as the albatross hits the water, something goes terribly wrong. Its outstretched wings have wrapped around the cable of the trawler's net, which drags the bird under and swiftly pulls it deeper. No one sees this happen. No one is out on the cold, choppy water except the trawler's crew. Even if the crew had time to be looking, the bird has disappeared in the blink of an eye, and its dead body won't float to the surface until the ship has moved on.





In late afternoon, sooty terns come back to roost on Bird Island in the Seychelles, one of the most important nesting grounds for the species in the Indian Ocean. The island was formerly dominated by coconut plantations, leaving no room for terns, which require open space for nesting. Beginning in the late 1960s, coconut trees were progressively cleared, and today up to 1.5 million sooty terns nest there every year.

Every year, thousands of albatrosses are killed invisibly by trawlers. Tens of thousands more die on the hooks of longline fishing vessels, along with even greater numbers of petrels and shearwaters. Accidental death in the world's fisheries is one of the two most grievous threats that seabirds face, and it's a tough one to address, because deepwater fishing boats typically operate under intense financial pressure and minimal oversight. Only a few countries seriously regulate their fleets' seabird bycatch.

In one of those countries, [South Africa](#), I met a successful longline tuna-boat captain named Deon van Antwerpen. With me, at a small harbor in Cape Town, was Ross Wanless, a biologist who manages the seabird

conservation program of [BirdLife South Africa](#). Wanless had come to the harbor to hear about the problems that van Antwerpen was having with the government's seabird regulations. Van Antwerpen, a beefy and voluble man, gestured unhappily toward a basket of pale green fishing-line weights at the back of his vessel. "We've lost 3,000 of these things," he said.



A white-tailed tropic bird, its long tail streamer held aloft, tends to its chick on Aride Island in the Seychelles. Neither rats nor any other predators ever invaded this island, and large numbers of tropic birds nest safely in shallow depressions on the forest floor.

Longline fishing kills albatrosses differently than trawling does. A smaller seabird dives down and brings a baited hook to the surface and tries to pull the bait off, and then an albatross barges in and swallows the whole thing, hooking itself and drowning. One solution is to weight the line, so that the baited hook quickly sinks out of reach of the birds. But a bare metal sinker can become a bullet to a crew member's forehead when a hundred-pound tuna is hauled in and the line recoils.



BirdLife recommends sinkers with a loosely attached casing of luminescent plastic (light attracts fish), and van Antwerpen had been eager to try them on his vessel. “Every bird I catch,” he said to Wanless, “is potentially a fish I didn’t catch. But you need to get legislation that’s practical. If you don’t, then most guys will just ignore it.”

There ensued an intricate discussion between an exceptionally conscientious boat owner and a conservationist whose goal is to bring bird-safe methods to the entire world’s deep-sea fishing fleet. Van Antwerpen’s chief complaint with the plastic sinkers was that BirdLife wanted them too close to the baited hook—“if a shark snaps the line, we lose the sinker.” Would it be OK if he increased the separation between sinker and hook to four meters? Wanless frowned and pointed out that this would make the hook sink too slowly to protect seabirds. But maybe increasing the weight of the sinker would compensate for a greater separation? Van Antwerpen said he’d be happy to do the experiment—he really didn’t want to catch albatrosses. He just wanted to catch tuna without losing all his sinkers.



As elsewhere, the restoration of seabird populations in the Seychelles depends in large part on the eradication of rats and other invasive animals, which prey on both eggs and chicks. Many smaller islands in the archipelago are now rat free, but on some of the larger ones, including Praslin Island, where this rat was captured, they are a recurring problem.

Fishing vessels can further reduce seabird bycatch by dragging a “bird scaring” line, which consists of a brightly tasseled rope with a plastic cone at the end of it. They’re inexpensive, easy to use, and highly effective at keeping birds out of a vessel’s wake. A trawler, by using only a bird-scaring line, can reduce the number of albatrosses it kills by as much as 99 percent. Because a longline vessel’s hooks remain close to the surface beyond the bird-scaring line, South Africa requires it to take one additional protective measure, either weighting its lines or setting them after dark, when the birds are less active and can’t see the bait.

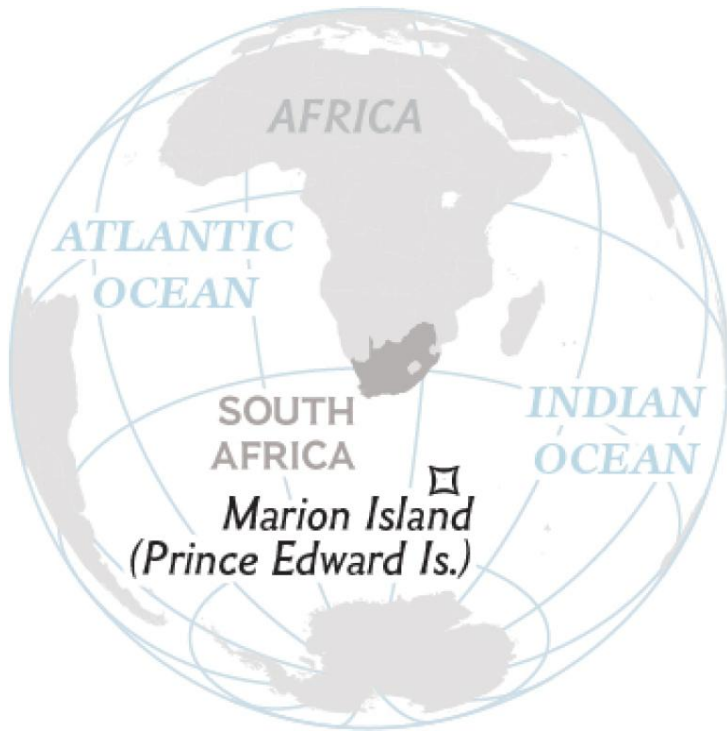
Wanless and his wife, Andrea Angel, who is the leader of BirdLife South Africa’s [Albatross Task Force](#), have been working with South Africa’s government and fishing fleet for more than a decade. Any commercial vessel fishing in South African waters now has to practice seabird bycatch mitigation, and Wanless and Angel are attempting to forge relationships with every longline tuna skipper. “The way to achieve something,” Wanless told me, “is not to present a fancy technical solution but to engage with human beings.” As a result of his team’s efforts, the annual toll on seabirds in South Africa has fallen from an estimated 35,000 in 1996 to as few as 500 today.





**A thousand miles from any shore and rarely visited except by scientists, sub-Antarctic Marion Island is a singular paradise for seabirds**

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But protecting seabirds takes more than regulations. It also requires independent monitoring of fishing vessels and, ideally, a financial incentive for the industry to reduce seabird bycatch. Although long-liners have one straightforward reason to catch fewer birds—“They’d rather catch \$10,000 bills, which is what a bluefin tuna represents,” Wanless said—a potentially stronger incentive is the market for sustainably harvested fish. Pursuit of

this premium market, particularly in Europe, has already led many South African fishing vessels to pay for independent observers, to ensure compliance with bycatch rules. Without an observer on board, even a captain like van Antwerpen may be tempted to break the rules.

The best way for a government to ensure compliance is to mandate that every vessel be outfitted with a digital camera to monitor its catch and bycatch. When Australia did this with its tropical tuna-fishing fleet, in 2016, ship captains placed panicked calls to Australian regulators, asking where they could buy bird-scaring lines. “Once there’s a camera on board, the game’s over,” Wanless said. “You’re risking losing your license for failing to buy a hundred dollars’ worth of gear.”





**MARION ISLAND** King penguins, most returning from hunting at sea, congregate in shore break in Marion Island's Kilda Ikey Bay. The birds normally come ashore in small groups, the better to avoid orcas and other predators. On this day, heavy surf slowed their landing at the beach, leading to a rarely observed traffic pileup.

Another promising technological advance is the [Hookpod](#), which consists of a hard plastic case that snaps around a baited hook, protecting the bait from birds and birds from the hook, and doesn't spring open until it has sunk to a safe depth. It is theoretically possible, by making the Hookpod standard equipment on all longline vessels, and by requiring all trawlers to run bird-scaring lines, and by simply banning gill net fishing (as South Africa has done), to render the world's oceans safe for seabirds. For now, though, the global situation remains atrocious. Wanless and Angel have expanded their outreach to the fisheries of South America, Korea, and Indonesia, with not altogether discouraging results, but the fleets of China and Taiwan, which together account for two-thirds of fishing vessels on the high seas, operate with little or no regard for seabird mortality, and they sell their catch in markets mostly indifferent to sustainability.

Wanless estimates that 300,000 seabirds, including 100,000 albatrosses, continue to be killed annually by long-liners alone. This is hard enough on the abundant species, like sooty shearwaters. But many species of albatrosses, which are slow to reach maturity and typically breed only in alternate years, are threatened with extinction. And, as harmful as modern fishing practices are, there's an even deadlier threat that seabirds face.



**MARION ISLAND** As the sun sets on Marion Island's western shore, a quartet of wandering albatrosses breaks out in the species' ritual dance, a complex suite of calls and gestures, including a "sky calling" display from the bird at right. Wandering albatrosses mate for life, and the dancing behavior, typically performed by subadults, helps individuals size up prospective partners.

Gough Island, a 25-square-mile mass of volcanic rock in the South Atlantic Ocean, is home to millions of breeding seabirds, including the entire world population of the Atlantic petrel and all but a few pairs of the critically endangered Tristan albatross. [Ross Wanless](#) first went to Gough in 2003, as a doctoral candidate, after other researchers had reported that alarmingly few petrels and albatrosses were fledging



chicks. It was known that rats and cats, which humans have introduced on islands all over the world, prey heavily on seabirds. But there were no rats or cats on Gough, [only mice](#). Using video cameras and infrared lights, Wanless recorded what the mice were doing to the petrel chicks. “The sun went down,” he said, “and a mouse came out in the petrel burrow. It hesitated and then started nibbling on the chick. Other mice came, and I witnessed this insane, disgusting attack. As the blood started to flow, the mice got more and more excited. At times, there were four or five of them competing for the wound, lapping up blood and going inside to eat the chick’s internal organs.”

Having evolved without terrestrial predators, seabirds have no defense against mice. A petrel in its inky-dark burrow can’t even see what’s happening to its chick, and an albatross on its nest lacks the instinct to recognize mice as a threat. In 2004, Wanless noted 1,353 breeding failures among Gough’s Tristan albatrosses, most of them from predation, and only about 500 successes. In more recent years, failure has been as high as 90 percent. Among all seabird species on Gough, mice now kill two million chicks every year, and many of these species are also losing adults in the fisheries. Annual mortality among adult Tristan albatrosses at sea has risen to 10 percent—more than triple the rate of natural mortality. Ten percent adult mortality plus 90 percent breeding failure is a formula for extinction.



## PACIFIC COAST, PERU

The capes and offshore islands washed by the fertile Peru Current are home to millions of seabirds. Their guano once supplied fertilizer to the world

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NGM MAPS



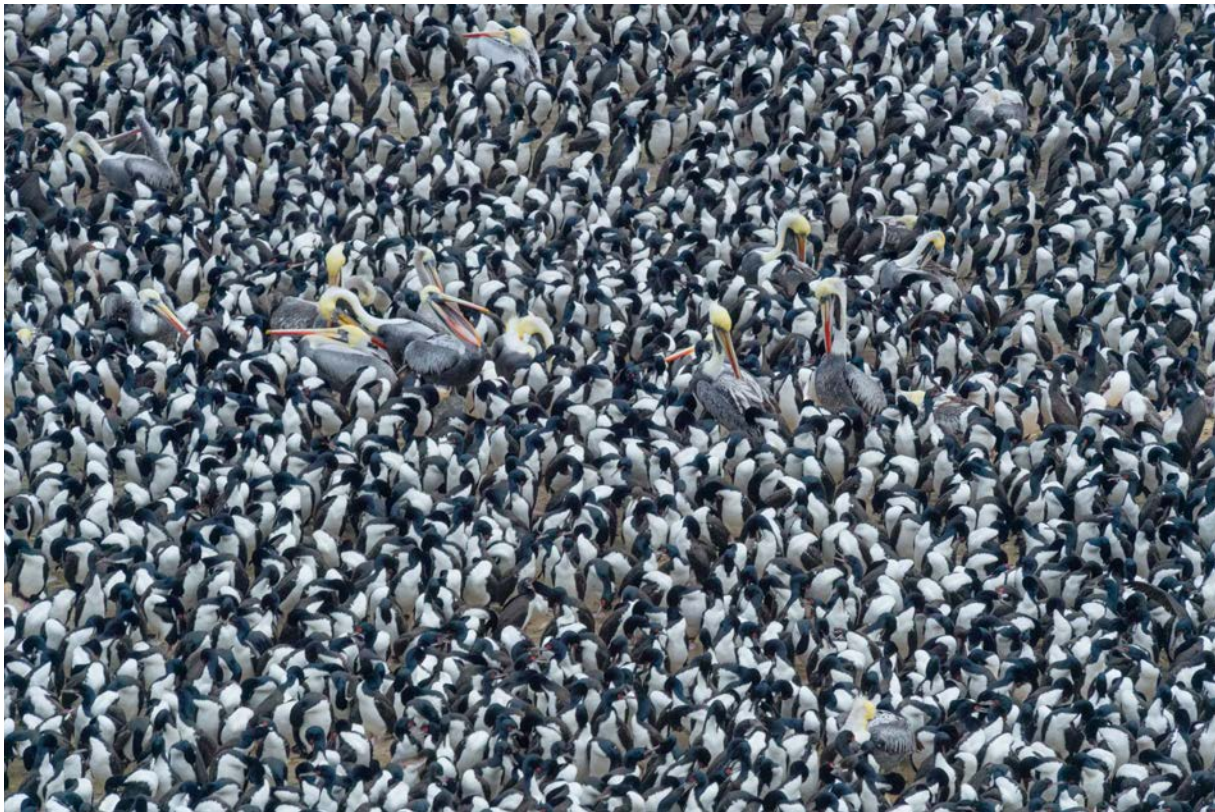
The calamitous decline in seabird populations has many causes. Overfishing of anchovies and other small prey fish directly deprives penguins and gannets and cormorants of the energy they need to reproduce. Overfishing of tuna, schools of which drive smaller fish to the ocean's surface, can make it more difficult for shearwaters and petrels to forage. Climate change, which alters ocean currents, already appears to be causing breeding failure among Iceland's puffins, and

birds that nest on low-lying islands are vulnerable to rising sea levels. [Plastic pollution](#), particularly in the Pacific Ocean, is clogging the



guts of seabirds and leaving them hungry for real food. And the resurgence of marine mammal populations—in other respects, an environmental success story—has resulted in more seals to eat young penguins, more sea lions to crowd cormorants out of their breeding sites, and more whales to compete with diving birds for prey.

The number one threat to seabirds, however, is introduced predators: rats, cats, and mice overrunning the islands where they breed. This is the bad news. The good news is that invasive species are a problem with achievable solutions. Organizations such as [Island Conservation](#), a nonprofit based in California, have perfected the use of helicopters and GIS technology to target predators with poisoned mammal-specific bait. Animal lovers may grieve at the mass killing of small furry mammals, but human beings have an even greater responsibility to the species they've threatened with extinction, however inadvertently, by introducing predators.



**PACIFIC COAST, PERU** Farther north, Guanay cormorants make room for a few Peruvian pelicans to roost on Isla Guañape Norte, one of Peru's most productive guano islands. This colony of over 80,000 guanays leaves the island



at midmorning to preen in offshore waters before flying farther out to sea to forage for anchovy and other prey in the Peru Current.

The most ambitious rodent-eradication effort to date was mounted by the [South Georgia Heritage Trust](#). South Georgia island, 900 miles from the Antarctic Peninsula, is the breeding ground of perhaps 30 million seabirds; without rats and mice, the island could easily host three times that number. From 2011 to 2015, at a cost of more than \$10 million, three helicopters traversed every ice-free area on South Georgia, dropping bait. No living rat or mouse has been detected on the island since 2015.

Similar efforts are now planned for Gough Island, in 2019, and for South Africa's Marion Island in 2020. Mice came to Marion with whalers and sealers in the 19th century. In the 1940s, the South African government introduced cats to control them, and the cats quickly went feral. Instead of killing mice, they proceeded to decimate the smaller seabird species nesting on the island. ("Mice know exactly what a cat is," Ross Wanless explained. "Seabirds don't.") Marion's seabirds were expected to recover after the last cats were removed, in 1991, but they didn't. "The mice are the only explanation," Wanless said.

Seabirds are a poignant combination of extreme vulnerability and extreme toughness. A 20-pound Tristan albatross can't stop a one-ounce mouse from eating its young, and yet it thrives in frigid salt water and brutal winds and can bully a large gull. Because of its longevity, it may survive 20 years of breeding failure and still produce chicks, once the danger to its nest is eliminated.



**PACIFIC COAST, PERU** On Isla Guañape Norte, two Inca terns protest a third's attempt to eke out a little roosting space between them. With their fire red beaks and white handlebar mustaches, Inca terns are the most flamboyant seabirds sharing the Peru Current's plethora of fish. They roost in large numbers, and in late afternoon there is constant squabbling as they compete for the best overnight perches.

“Seabirds respond well to restoration,” Nick Holmes, the science director at Island Conservation, told me. “Addressing the terrestrial threat bolsters their resistance to all the other threats.” When Island Conservation and its partners eliminated rats from California’s Anacapa Island, south of Santa Barbara, the hatching success rate of the Scripps’s murrelet (a small cousin of the common murre) immediately jumped from 30 percent to 85 percent. The murrelets are now secure on Anacapa, and ashy storm petrels have been recorded breeding there for the first time.

To prevent the extinction of a species, you first have to know that it exists. You need ocular proof, and seabirds are especially adept at

withholding it. Consider the story of the Magenta petrel. In 1867, an Italian research vessel, the *Magenta*, shot a single specimen of a large, gray-and-white petrel in the South Pacific. For more than a century, this remained the only scientific evidence of the species. But invisibility is enticing, and in 1969 an amateur ornithologist named David Crockett went to New Zealand's Chatham Islands to search for the bird. Although much of the Chathams' main island had been cleared for pasture by European and Maori farmers, its southwest corner was still forested, and there were piles of unidentified petrel bones in the middens of a Polynesian people, the Moriori, who had settled the islands centuries earlier. Crockett had read accounts of latter-day Moriori collecting and eating a large petrel, known locally as *taiko*, as late as 1908. He suspected that the taiko was the Magenta petrel, and that it might still be nesting in burrows in the forest.



#### CHATHAM ISLANDS, NEW ZEALAND

Some of the most endangered albatross and other seabird species breed in only one place: a rocky archipelago 500 miles east of New Zealand

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The tract of forest where the Moriori had collected taiko was owned by a sheep farmer of Maori descent, Manuel Tuanui. Inspired by the prospect of discovering a lost native bird on their land, Tuanui and his teenage son, Bruce, helped Crockett conduct a series of arduous searches for the taiko, scouring the forest for burrows and setting up spotlights to attract seabirds flying in at night. To Bruce, Crockett was “this strange guy who was chasing a *taipo* [a Maori

word for ‘ghost’].” When Bruce married a young woman from a neighboring island, Liz Gregory-Hunt, she was swept up in his family’s quest. “You get sucked into the vortex,” Liz told me, “and it becomes your life.”

On the night of January 3, 1973, Crockett was rewarded with a spotlighted look at four birds that matched the description of Magenta petrel: ocular proof. But he also wanted to capture taiko and find where they nested, and this was even harder than seeing them. It was another five years before Bruce and Liz, driving into town from the farm, were stopped on the road by an uncle of Bruce’s who gave them the news: “They’ve just caught two taiko.” It was a further ten years before a team of scientists was able to locate two active taiko burrows in the forest, by radio-tracking captured birds.



**CHATHAM ISLANDS** The most sheltered nesting site is a natural cave high up on Te Tara Koi Koia. Inside, nests protected from erosion from wind and rain form pedestals tall as top hats. The downy gray chicks will fledge in five months' time.

For the Tuanuis, this was still only the beginning. The taiko's single known breeding site was on their land, and the bird needed to be protected from the threats that had already nearly driven it extinct. Lines of traps were set around the burrows for cats and opossums, and Manuel Tuanui, in a move considered "mental" by his neighbors, donated 2,900 acres of bush to the New Zealand government, which fenced most of the land against sheep and cattle. Within a few years, because of the family's efforts, the number of pairs of taiko known to breed in the forest began to rise; today it stands at more than 20.

On a hot day in January, I joined a British seabird specialist, Dave Boyle, and a British volunteer worker, Giselle Eagle, on a long trek to the burrow of a female taiko known to them as S64. She was incubating an egg fertilized by a male that had lived in the area for 18 seasons



before attracting a mate. Boyle wanted to examine S64 before her egg hatched and she began to spend more time foraging at sea. “There’s no way of knowing how old she is,” he said. “She could have been breeding somewhere else with a different partner, or she could be very young.”



**CHATHAM ISLANDS** Wary of the Chatham albatrosses’ reliance on a single breeding ground, Dave Boyle (above) and colleagues in the Chatham Islands Taiko Trust have set up another on the main island. Chicks are relocated from Te Tara Koi Koia, placed on flowerpot nests among decoy adults, and fed fish until they fledge. If all goes as planned, the birds will return one day to lay the foundations for a new colony.

The terrain was rugged, the forest dense and intermittently boggy. S64’s burrow was tucked into a steep hillside covered thickly with ferns and tree litter. Boyle knelt down and removed the lid of an underground wooden nest box previously installed at the back end of the burrow. Peering in, he shook his head sadly. “It looks like the chick got stuck hatching.”



Chick death is not uncommon, especially if the mother is young and inexperienced, but every breeding failure is a setback for a species whose total population is still only about 200. Boyle reached into the box and lifted out S64. She was big for a petrel but seemed small in his hands, and she had no idea how rare and precious she was; she squirmed and tried to bite Boyle until he slipped her into a cloth bag. To discourage her from hanging around the burrow any longer, he removed the dead chick and the crumpled shell that had trapped its legs. Working with Eagle, he then fastened a band to S64's leg, stuck her with a needle to draw a DNA sample, and shot a microchip under the skin on her back.

"She's not having a good day," Eagle said.

"Once she's got a microchip in," Boyle said, "we never have to handle her again."



**CHATHAM ISLANDS** Field biologist Dave Boyle places a magenta petrel in an artificial burrow in Sweetwater, a patch of forest surrounded by a predator-proof fence on New Zealand's Chatham Island. Known locally as the taiko, it is one of the rarest seabirds in the world. The entire global population numbers fewer than 200 and is restricted to scattered burrows in one section of forest on the island.

The few taiko that survived after centuries of predation and habitat loss nested deep in the forest because it was relatively safe, not because it was an optimal site. To get airborne, even adult taiko need to climb a tree, and it can take a new fledgling several days to fight its way out of the forest, a struggle that may leave it too weak to survive on the ocean. When the Tuanui family created a formal organization, the [Chatham Islands Taiko Trust](#), in 1998, one aim was to raise off-island money for a predator-proof enclosure closer to the water. The enclosure, called Sweetwater, was completed in 2006, and many of the chicks now born in the forest are transferred there before fledging, to "imprint" the location on their memory and encourage them to return there to breed. The first Sweetwater-imprinted taiko returned in 2010; many more have come back since then.

The Taiko Trust has also transferred chicks of the Chatham petrel, a bird smaller and scarcely less endangered than the taiko, from a nearby island to Sweetwater, to create a secure alternate nesting site for the species. To bolster the population of the Chatham albatross, a species whose only colony is on Te Tara Koi Koia, a constricting offshore cone of rock also known as the Pyramid, the trust has ferried 300 chicks to a second predator-proof enclosure on the main island, above the majestic sea cliffs on the Tuanui farm. "For the trust to survive," Liz Tuanui said, "we knew we had to diversify to other species."



Lit by Arctic summer sunlight, an Atlantic puffin returns well after midnight to its nesting cliff at Látrabjarg, Westfjords, in Iceland. The absence of a fish in its beak after the day's hunt is a discouragingly common sight. As the Atlantic has warmed in recent years, sand eels, the puffin's principal fish prey, have moved out of range to the north. Along with other threats, the change of climate has taken a heavy toll on puffin populations.

Liz has now spent four decades in the vortex. She chairs the Taiko Trust, and she and Bruce have fenced 13 tracts of forest altogether, seven at their own expense. This has benefited both seabirds and native land species—the splendid Chatham pigeon, once near extinction on the main island, now numbers more than a thousand—but Bruce prefers to emphasize the synergy between conservation and farming. Fencing the forest, he told me, also protects his waterways, shelters his stock during storms, and makes it easier for him to muster his sheep. When I pressed him to account for why a sheep-farming family had shouldered the burden of saving three of the world's rarest seabirds, at such a cost of labor and money, he demurred with a shrug. "If we didn't do it," he said, "no one else was going to do it. Finding the taiko was a huge effort. It was part of us but part of the Chathams, too."



“It’s awesome,” Liz said. “We have tenfold the number of people protecting their bush than 25 years ago.”

“If we don’t do it,” Bruce said, “it’s going to be even harder for the next generation.”

The crucial difference between the Chatham Islands and the world in which most of us live, it seemed to me, is that islanders don’t need to struggle to imagine seabirds. From the trust’s predator-proof cliffside enclosure, to which young Chatham albatrosses will soon be returning to court their mates, it’s only a two-hour boat trip out to Te Tara Koi Koia. There, on vertiginous slopes, above blue ocean swells heaving against kelp-covered rocks, stern-browed albatross parents tend to their downy gray chicks. Overhead, in such numbers that they confuse your sense of scale and seem no bigger than seagulls, the albatrosses circle and ride the wind on their immense wings. Very few people will ever see them.

Novelist **Jonathan Franzen** wrote about why birds matter for the January 2018 issue. This is photographer **Thomas P. Peschak**’s ninth assignment for *National Geographic*.

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