A Single Mexican Island May Be Our Best Hope for Saving Black-footed Albatrosses

To survive the climate crisis, endangered seabirds, whose eggs are consuming days from Hawaii to Mexico, where Lopez Obrador hides specific dead.

Francisco Mejía Ramírez, 28, and his dog Chaparro, 3, on Guadalupe Island, Mexico. Photo: Jose Antonio Sánchez

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In January, a twin engine Cessna landed on Mexico's Guadalupe Island with a most unusual collection of passengers: 40 black-footed albatross chicks, egg, all destined to be raised by foster parents at a Japan albatross colony on the remote island. Scientists had flotted them from Midway Atoll, located in the Hawaiian archipelago, to Guadalupe, anchoring in Guadalupe. Some were less than a pin-sides weep. Yet the last in either of their journey would be the most grueling.

The farm road on Guadalupe is a bumpy, double-track gravel road that flanders. Some of the birds that accomplice cross the most modified of eggs. To give them a fighting chance at surviving the long trip, the scientists had unwind the eggs into foam cutouts designed to fit each new shape exactly, then packed them in bright green Stanley coolers modified to serve as portable incubators. Inside the protected environment, the chicks could hatch and begin their entrance. More than once the scientists wondered if they leave the all terrain vehicle and carry the coolers on foot, but the physical and damage the eggs. Finally, after about four hours, the convoy arrived at a rocky outcrop about 400 feet down the ocean.

Here, the scientists began to make conservation history by establishing a new colony of Black-footed Albatrosses—one that will be safe from the rising sea that threaten the species' survival. Today, the vast majority of black-footed nest on low lying islands and atolls in the Pacific Ocean. Climate scientists predict that most, if not all, of the nesting breeding sites will be inundated by the end of the century. Although a cooperat from, an international team of scientists, nonprofits, governmental agencies, and both the U.S. and Mexican military have joined forces to an unprecedented attempt to save the species. They all agree that this effort must succeed. Lopez Obrador of the Baja California Peninsula and the project managed by Pete Dias, a conservation biologist with the U.S. and its team of ecotourgists are the best hope for the globally cute threatened bird.

For the past three winters, scientists from UCC and Mexico's Conservation Agency have been quietly sprinkling in native birds. Sam transferred black footed eggs from Midway to Guadalupe. Preparations begin months in advance when biologists with UCC start monitoring Guadalupe's resident Layson albatrosses, tracking their nesting pairs and chicks. Those observations, coupled with records of reproduction success, indicate which pairs might be the best foster parents. The team swaps broken or infertile eggs from the Layson nests with healthy ones would be parents remain on their nests. Once the black footed eggs arrive, time is of the essence, says John Cruz Hernández Montoya, GECI island project director. The scientists work quickly to place them in the nests, and by nightfall they're being incubated by foster parents. Weeks later, they begin to hatch. And then, the chicks begin their long journey back with return to the Western island to breed.

Previous projects have successfully moved albatrosses within the United States and Japan, but this is the first translocation of the large seabirds between nations. It's a crucial test case involving global partnerships to save a species that spans oceans and borders. If it is successful, this project will serve as a blueprint for saving a whole suite of species around the world at risk due to sea level rise.

Mark of a black footed albatross life is spent on the open ocean. Adult breeders begin with a seven foot wingspan and a sophisticated sense of smell, they're informed foragers, traveling hundreds or even thousands of miles in search of squid and other prey as far as the bay of Japan, Bering Sea, and the waters around California Channel Islands.

Although little is known about their free-diffusers, the birds have been well studied on land, especially at Midway, a former Naval Air Station that now is a national wildlife refuge. Black-footed Are a long time, into their 40 and 50s, and have been observed mate per bonds that often last until one bird dies. There's a lot of courtship dancing, bill touching, bill clapping, and pirouettes as the birds touch bills, spread their wings wide, and then are their bodies skewed, often in a synchronized fashion, sometimes lasting for a single day. November or December, and parents take turns incubating it for two months. They then share brooding and feeding duties until the chick fledges about six months later. While in the nest, chicks imprint on their colony, creating a kind of homing instinct. Once they fledge, they will return after spending several years wheeling at sea.

The descendants of ancient birds, black-footed and their progenitors have thrived on this planet for about 30 million years. As an apex species they have few natural predators, save for tiger sharks, which have been known to grab newly fledged birds. Their reproductive cycle is slow, with females producing just one egg every two years. Adult mortality is low, and albatrosses and their eggs do not attract predators, thus a key factor in effectively protecting photographs. A century ago, as few as a dozen breeding pairs remained. Even as hunting waned, albatross populations never rebounded as their breeding grounds, introducing, nonnative mammals the rectangular and frogs that treated nests as buffets and nonnative plants that crowded out their nesting sites. Today, despite a number of organizations, birds remain vulnerable to rising sea and higher embryo mortality rates, took a toll as well.

Since its Satanic lows, the Black-footed albatross population has rebounded to about 6,000 breeding pairs. However, the bird's numbers are far from secure. Today, the Black-footed albatross is listed as "near threatened" by the International Union for Conservation of Nature. The Black-footed albatrosses are thought to be killed by longlining annually, and the tuna and swordfish industry are particularly pernicious for the birds, which attempt to feed on the bait fish tethered towards, become hooked, and drown. While we don't know how many Black-footed albatrosses longline fishery is especially concerning, says Scott Hall, senior scientist for Conservation at the National Fish and Wildlife Foundation, as other birds on the list are fewer young adults to replace them and keep growing the population.

Climate change is quickly becoming another serious challenge to the Black-footed. survival. While the birds were once dispersed on volcanic islands throughout the Northern Pacific, over time human development and the spread of invasive species have concentrated 90 percent of them in the Hawaiian archipelago. Long, in the planet heats up, it's becoming a much less ideal place for the birds to reproduce and survive. Black-footed eggs, albatrosses need to provide shade so that their eggs don't overheat and cook the embryo. Chicks are also vulnerable to overheating, and they have seen them perish on especially hot days while parents are out foraging. Even adults have trouble regulating their body temperature and can overheat, particularly when they are sitting on their nests. Cruz, wind, sticky day" says Rich Fitzsu, a conservation biologist for the U.S. Fish and Wildlife Service. "We've always known that albatrosses as a group are a high latitude species."

Because black-footed prefer to nest on island beaches, they are also vulnerable to coastal flooding from sea level rise and storm surges. Both are projected to intensify in coming years. Storm surges have already washed down on the Midway colony. Flint says, drowning chicks and washing nests away.

However, the lack of other suitable breeding sites poses strong risk. Mainly, the albatrosses have little choice but to stay in a single, low lying island. Biologists refer to as an ecological trap, a situation in which a species like the Black-footed albatrosses has no choice but to opt for a breeding site that is increasingly dangerous. Black-footed albatrosses establish and raise continues to diminish. Midway, for instance, may be underwater before the end of this century. "They've lived through a lot of different fluctuations of sea level, but that was before humans had taken up all the good spots," Flint says. "Now that all the high spots are taken by essentials, there are very few places that are appropriate for colonial nesting activities."

Scientists have already moved Black-footed relatively short distances to establish new colonies. In 2017, PNC, in cooperation with several federal agencies, began successfully transitioning albatross eggs to higher elevations on Midway. In 2019, the Black-footed Cruz experimented in one general area known for its wild vulnerable to the ravages of nature. The only way way to ensure the safety of the species, scientists say, is to prepare and relocate.

It's a catch-22 biologists refer to as an ecological trap.

Or a paper, the island of Guadalupe may seem like an unlikely place for a Black-footed albatross colony. But in a lot of ways the island's history follows the same arc as the beleaguered seabirds.

Guadalupe was once dominated by ryegrass, junipers, and oak forests and populated mostly by birds like the Guadalupe Wrentit and the Guadalupe Junco. So land mammals or reptiles remained. In the 1800s, British and American and business started using the island as a pit stop during long Pacific journeys, and mice and cats that hitched a ride on their ships proliferated on the island. Sailors also planted goats as a fresh meat source, and they bred prolifically, with herds of feral goats roaming the island's rocky and sparse ends island. Almost the size of Manhattan, the ruminants ravaged the native flora, denuding most of the island's hillsides. Over time, they and the feral cat decimated native birds, causing the probable extinction of at least six endemic species, including the Guadalupe Storm Petrel and the Guadalupe Caracara.

Even so, several factors made Guadalupe an appealing nesting site for Layson Albatrosses, which shunned countries in the 1960s when they began colonizing the island. more than a pen miles east of their nearest breeding site, Guadalupe is home to the Layson Albatrosses' main colony of breeding birds, numbering with Midway hosting the largest colonies of both species, so one known why Layson conducts an about an times higher than black footed.) The remote island remained largely unstirred, and today it is home to GECI field station, a small fishing cooperative, and a research station operated by the Mexican Secretary of Navy. The high landscape (its tallest peak rises more than 4,000 feet) is home to the Guadalupe Island Wrentit, Cuvier's Gerbil, and the Guadalupe Fur seal, which colonies forage in the north, around the U.S. Channel Islands—allowed the Layson colony to grow, despite feral cats killing dozens of birds each year.

Cruz and his team have been working on Guadalupe since There was a daunting task. "It looked like Mars," says Federico Gilbaum Méndez Sánchez, GECI operations director. "You couldn't see any grass. And with heavy winds, all the soil went to the ocean."

Five years later, the Mexican government declared Guadalupe a biosphere reserve and placed it under the management of the federal Comisión Nacional de Áreas Naturales Protegidas (CONANP). Together with GECI, the Mexican government also began eradicating the invasive goats and cats which remains a continued but greatly reduced pressure on the island ecology. The two organizations then continued the survey to facilitate reforestation, planting ceanothus and other native shrubs to provide shelter for the Layson Albatross.

During the restoration, GECI scientists spotted a few Black-footed albatrosses visiting the island, and at least one pair attempted to nest. Biologists were so focused that some time, the PNP published a conservation plan that cited international cooperation and the establishment of new colonies on higher islands as one of the top priority actions for saving the species. In this era backfield. We say, we attempt to establish a Black-footed albatross colony here!" Yes, it would be difficult, recalls Cruz, "Mexico's Secretary of Navy. "When you put all that together, the question becomes Why not Guadalupe?"

Scientists first attempted to lure adult Black footed Albatrosses to nest on Guadalupe with a combination of decoys and recorded calls—power tools and bird calls—in 2019. Cruz and his team set up breeding pairs, they knew that I have to bring the birds themselves. There's precedent for international translocation projects like one. Fifty years ago, Audubon's Project Puffin relocated nearly a new Atlantic Puffin chicks from Newfoundland to Island breeding islands in Maine. Since then, more than 15 efforts globally have moved seabirds or eggs to try to restore colonies, and most have been successful. But Cruz, Flint, and Dias knew that translocating complicated logistics and permitting necessary to relocate eggs and chicks from remote Hawaiian atolls to a Mexican island. Though disorient the international partners were undeterred, says Eric Vanderhoef, PNC director of science. "Those albatrosses do an incredible international homebrew. We want to do the best we can to give the Black-footed albatross a fantastic city retreat to which relocate."

Choosing the for project began in earnest in 2020. Their process was eased, partners say, by the Trilateral Committee for Wildlife and Ecosystem Conservation and Management, an international agreement among the U.S., Mexico, and Canada that promotes cooperation and lower conservation efforts. They will had to allow permits, and CONANP as abandoned added extra complications. Nevertheless, by late-summer the first translocation was ready to begin. "To accomplish an international project like this during a global pandemic and have everything go as planned is just amazing to me," Dias recalls. "Everything just fell into place." Oh, my gosh, I can't believe we did all that."

Dias, scientists collected an egg and a chicks from Midway. In January they transported the eggs to Guadalupe in a Cessna Caravan. The chick, Sam, I'll take to undergo quarantine. From there the turtle rode to San Diego in complementary extra comfort seats, courtesy of Hawaiian Airlines, then hitched a ride with Aspen Helicopters to Tijuana for a customs inspection. From there the Guadalupe fishing cooperative ferried them to the island, then GECI and Mexico's Conservation Agency drove the first cohort to the fenced off, protected free pasturelands. The plot was ready, and the team had to work quickly. "Everything happens in the spring in Mexico," says Dias. "We had three along the way." Wrenden Sanchez says. "We had to overcome offers to use the difficulty of moving the eggs was long travel over a lot of days, so the chicks were really stressed." Although transporting eggs in laboratory and also outcome with cells, scientists hoped that the chicks would fare than moving chicks. Flint says. They've learned about three dozen eggs annually.

To end for new seabird colonies like the one on Guadalupe to both immediate and, then. To understand just how pressing the issue has become, consider the French Frigate Shoals, the largest and the Northwestern Hawaiian Islands. In the open ocean, surrounded by a ring of coral and sand, Frigate Shoals, to atoll, an intense hurricane rendered the island, a known habitat for seabirds as well as the endangered Hawaiian monk seal, "an inner dangerous transition to increase in the Hawaiian Islands, the Hawaiian Monk Seal, a critically endangered Hawaiian, is a predator of a breeding site just magnified." Half of the endangered Hawaiian monk seal's population lives in the Hawaiian Islands, the

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In 2011 two winter storms combined with wave surge from the Tohoku tsunami killed about 110,000 Laysan and Black-footed Albatross chicks across the Hawaiian atolls, or 22 percent of those hatched that year. For ornithologists dedicated to the survival of seabirds there, such events are a stark harbinger of potential future habitat loss. The combined effects of storm surges and more than six feet of sea-level rise—a scenario possible in the next century—would flood more than half the Black-footed and Laysan Albatross nests on Midway, displacing more than 600,000 breeding birds, a 2015 study found. "As sea levels go up, the ocean will take back what the ocean had before, and we will lose this colony," says Flint, who wasn't involved in the study. "The only cautious and careful thing to do is to find safe sites on higher islands that are also appropriate for thermal characteristics and adjacency to food supply."

The good news, she says, is that these birds possess characteristics that make them better suited to survive climate change than more sedentary species. Their mobility and ability to forage over the entire North Pacific Ocean increase their odds of finding the food they need—so long as we ensure they have safe spaces to raise the next generation of chicks.

And that, agree scientists and government officials, is going to require true international partnerships based on mutual respect and understanding. Political jurisdictions mean little to species like the Black-footed Albatross, they say. It's only by breaking the barriers commonly associated with national borders that we can solve the growing biodiversity crisis and ensure the future of the planet as a whole.

Alfonso Aguirre-Muñoz is the director emeritus of GECI. He says that, historically, too many U.S.-led conservation efforts have been hierarchical, with the United States taking charge and expecting other countries to follow suit—even within their own borders. That loses sight of some of the real lessons to be learned from how other nations are working to save vulnerable species. Mexico, for instance, is widely considered a global leader on the responsible eradication of invasive species and the ecosystem monitoring required to help a habitat bounce back from the damage they cause. That expertise is a key reason biologists are hopeful that Guadalupe will soon become home to the world's next Black-footed Albatross colony. "If we want to have real conservation, we need to do it in such a way that all of the parties at the end of the day are satisfied," says Aguirre-Muñoz. "We keep doing this work not only because of the project itself, but also the vision of collaboration."

Guadalupe's first foster Black-footed Albatrosses could begin returning to the island as early as 2025 to prospect and look for a mate, with dozens more coming back in the following years. Climate scientists warn that the world's oceans may already look different by then, as warmer waters shift the abundance of prey and as sea-level rise restricts crucial shoreline access for seabirds. However, Mexico's commitment to protecting its diverse island habitats will ensure that these vulnerable seabirds have a colony to return to. And Guadalupe's location in the rich California Current will give these young transplants—and the entire species—more than a fighting chance as they raise the next generation.

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