

Chile's Pacific paradise endangered by goats, cats

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Undated picture of Chile's remote Alejandro Selkirk Island. Invasive species are crowding out the unique native plants and birds that evolved during more than a million years of isolation before the first people moved into the Juan Fernandez archipelago, composed of three remote islands; Robinson Crusoe, Alejandro Selkirk and Santa Clara, about 416 miles (670 kilometers) west of the Chilean mainland. (AP Photo/Hugo Arnal)

(AP)—It's still a natural paradise far out in the Pacific, with thick jungles and stunningly steep and verdant slopes climbing out of the sea. But much of the splendor in the tiny Chilean islands that likely inspired Daniel Defoe's "Robinson Crusoe" castaway novel is being eaten away.

Nearly four centuries of human contact have left many slopes denuded, their trees and plants lost to logging and fires, or devoured by imported goats and rabbits. Jungles remain, but invasive species are crowding out

the unique [native plants](#) and birds that evolved during more than a million years of splendid isolation.

"It's a textbook example of how to degrade an ecosystem," said Cristian Estades of the University of Chile, an expert on the islands' birds.

A handful of biologists, environmentalists, teachers and Chilean government officials are working with islanders on projects to save endangered species by eliminating non-native plants and animals. In a world full of daunting [environmental challenges](#), they say this one can be solved with enough time, effort and money, in part because the three islands are so remote—416 miles (670 kilometers) west of the Chilean mainland.

Chile has a \$12 million plan to keep more outside species from reaching the Juan Fernandez archipelago and control what's already here. Island Conservation and other nonprofit groups say \$20 million is needed just to start, by baiting the jungles with poison and flying hunters in on helicopters to eliminate animals that don't belong. Millions more would then be needed to keep invaders out and restore the natives.

Neither plan is fully funded, however, and at this point the scientists involved can do little more than document what's disappearing.



Undated picture of a male Robinson Crusoe Firecrown perched on a branch on Robinson Crusoe Island. Invasive species are crowding out the unique native plants and birds that evolved during more than a million years of isolation before the first people moved into the Juan Fernandez archipelago, composed of three remote islands; Robinson Crusoe, Alejandro Selkirk and Santa Clara, about 416 miles (670 kilometers) west of the Chilean mainland. (AP Photo/Hugo Arnal)

The islands were declared a world biosphere reserve by the United Nations in 1977. For their size, a total of just 38 square miles (100 square kilometers), they are 61 times richer in [plant diversity](#) and 13 times richer in bird life than the Galapagos, according to Island Conservation.

They still have 137 plants and a handful of bird species found nowhere else in the world, including a brilliant red hummingbird and the *Dendroseris gigantea*, a species so rare that until a few years ago, there was only a single tree left alive.

Forty-nine of the islands' plant species and seven kinds of birds are classified as critically endangered by the International Union for the Conservation of Nature. At least eight others have already become extinct.

Their main enemies are the [plants and animals](#) imported by humans: Not only goats and rabbits, but cats, rats, mice and the carnivorous coati, a type of raccoon native to the American tropics. The cats are particularly adept at hunting the hummingbirds, whose numbers have dropped to as low as 1,000, in part because they didn't evolve in ways that made them fear feline predators.



Undated picture of a male Robinson Crusoe Firecrown perched on a branch on Robinson Crusoe Island. Invasive species are crowding out the unique native plants and birds that evolved during more than a million years of isolation before the first people moved into the Juan Fernandez archipelago, composed of three remote islands; Robinson Crusoe, Alejandro Selkirk and Santa Clara, about 416 miles (670 kilometers) west of the Chilean mainland. (AP Photo/Julio Leiva)

Chilean settlers have cut down native trees and planted other types that foster wildfires and transform birds' habitats. Fast-growing blackberry brambles native to Europe and North Africa and maqui fruit trees native to mainland Chile have done the most damage, along with imported eucalyptus trees that grow as high as 230 feet (70 meters), sucking up groundwater and acidifying the soil.

"I don't want to think that this kind of cancer can't be solved," said Juan Carlos Ordenes, who teaches history and geography in the islands' only school, and regularly leads his students on root-pulling expeditions.

Skeptics wonder if it's worth spending millions of dollars to preserve a few birds and plants on islands so small that they don't appear on many maps. But Hugo Arnal, the South America director for Island Conservation, says "the cost of inaction is much more expensive."



Undated picture of the only remaining *Dendroseris gigantea* on Robinson Crusoe Island. Invasive species are crowding out the unique native plants and birds that evolved during more than a million years of isolation before the first people moved into the Juan Fernandez archipelago, composed of three remote islands; Robinson Crusoe, Alejandro Selkirk and Santa Clara, about 416 miles (670 kilometers) west of the Chilean mainland. (AP Photo/Hugo Arnal)

Without the dense jungles and unique trees and hummingbirds, tourists won't come, topsoil will blow away and fresh water for the 700 islanders will dry up. Supplying their town with food and essentials would become much more expensive for Chile's navy, which currently sails to the island once a month.

"The economic development of Juan Fernandez will depend on maintaining a healthy biodiversity: controlled and sustainable shrimp fishing, and ecotourism based on its unique species," he said.

Key to any solution are the islanders who live in the neat little town of San Juan Bautista on Robinson Crusoe, the only island inhabited year-round. Domesticated cats ruled their gardens during a recent visit by The Associated Press, and while most townspeople have agreed to sterilize their pets, many more cats are loose in the jungle.



Undated picture of a Robinson Crusoe Petrel flies over the waters of Robinson Crusoe Island. Invasive species are crowding out the unique native plants and birds that evolved during more than a million years of isolation before the first people moved into the Juan Fernandez archipelago, composed of three remote islands; Robinson Crusoe, Alejandro Selkirk and Santa Clara, about 416 miles (670 kilometers) west of the Chilean mainland. (AP Photo/Karl Campbell)

U.S. ornithologist Erin Hagen, who has spent 10 years studying the hummingbirds, said few islanders are willing to abandon their pet cats or give up goat and rabbit meat for their dinners.

"There are people who are making the decision to live without these

invasive animals, and others who are very attached to their pets, and others who like to go out hunting," Hagen said.



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Chile has protected 96 percent of the territory as a national park since 1935, but the budget "is insufficient, without a doubt," said Ivan Leiva, who runs the park for the state-owned forestry corporation. "The problem is growing and defeating us."

Leiva, whose office is surrounded by small gardens and makeshift greenhouses, has made each of his eight park guards personally

responsible for two species of particularly threatened plants. The guards monitor their charges, note when they flower and seed, and confront challenges that might arise.



Undated picture of a Fardella brooding her eggs on Robinson Crusoe Island. Invasive species are crowding out the unique native plants and birds that evolved during more than a million years of isolation before the first people moved into the Juan Fernandez archipelago, composed of three remote islands; Robinson Crusoe, Alejandro Selkirk and Santa Clara, about 416 miles (670 kilometers) west of the Chilean mainland. (AP Photo/Peter Hodum)

Such tactics worked with the *Dendroseris gigantea*, a member of the asteraceae family whose broad, long-stemmed leaves were munched to the nubs by wildly propagating goats. Leiva marshaled an international group of biologists to prevent its extinction. They kept vigil throughout the year, measuring weather and soil conditions and managing to collect enough seeds to produce 50 more trees. Most now grow in the park's gardens, while 15 have been planted around the "mother" tree.

An earlier six-year, \$2.5 million effort eliminated goats and rabbits from Santa Clara, an islet not far from town. Islanders were paid for each pelt and even provided with replacement bullets.



Undated picture of a Fardella flying over Robinson Crusoe Island. Invasive species are crowding out the unique native plants and birds that evolved during more than a million years of isolation before the first people moved into the Juan Fernandez archipelago, composed of three remote islands; Robinson Crusoe, Alejandro Selkirk and Santa Clara, about 416 miles (670 kilometers) west of the Chilean mainland. (AP Photo/Peter Hodum)

Goats were introduced by the Spanish in the 1600s to provide food for passing sailors, and their meat helped save the life of Alexander Selkirk, the marooned Scottish sailor whose four-year ordeal on the main island is widely believed to have helped inspire Defoe's 1719 castaway novel.. On the island Chile later named Robinson Crusoe, goats have been contained to a manageable area, but rabbits and rats run wild.

Meanwhile, on Alejandro Selkirk, the most remote of the islands, thousands of wild goats are destroying the habitat of the Rayadito de Masafuera, a small ovenbird whose numbers have dwindled to about 550.



Undated picture of a Masafuera Rayadito on Alejandro Selkirk Island. Invasive species are crowding out the unique native plants and birds that evolved during more than a million years of isolation before the first people moved into the Juan Fernandez archipelago, composed of three remote islands; Robinson Crusoe, Alejandro Selkirk and Santa Clara, about 416 miles (670 kilometers) west of the Chilean mainland. (AP Photo/Peter Hodum)

Hunting down these animals on that island's steep slopes would be impossible by foot, but Chile can follow the lead of Ecuador in the Galapagos, where helicopters were used to eliminate wild goats and pigs from a much larger area, said Arnal.

"Using helicopters for eradication and restoration is to island conservation what the introduction of penicillin was to medicine," Arnal said. "These goats aren't going to die off naturally until they've eliminated all of the plants and the island is turned into a desert where there's nothing left to eat."

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