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Success in Galapagos is never ensured

Isolation, inhospitable terrain have protected species for millennia

Introduced plants, animals are biggest threat to natural selection, species diversity

Española tortoises exemplify a recovery effort that gives hope to others

These Española tortoises are part of a Galapagos National Park captive breeding program that has saved the species from extinction. **Jane Braxton Little** Special to The Bee

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SANTA CRUZ ISLAND, GALAPAGOS

At dusk in a secluded area encircled by lava rocks, a giant tortoise is patiently building a nest. First, one 6-inch-diameter hind leg, then the other works at the soft soil, methodically digging and tamping until the hole is deep enough to hold 10 eggs the size of tennis balls.

The female is a survivor: an Española tortoise whose numbers plummeted to 15 in the 1960s. Today they have expanded to more than 2,000. These eggs are this tortoise's most recent contribution to saving her species from extinction.

In Galapagos, the place that inspired Charles Darwin, evolution is palpable. A new species of giant tortoises was announced last month and a new iguana species in 2009. Peter and Rosemary Grant, who have spent decades studying Galapagos finches, have demonstrated how new species arise and explained how they maintain genetic diversity in natural populations.

This is a raw, newly formed archipelago created about 5 million years ago by a geological hotspot, where the Earth's crust is melting and thrusting up one volcano after another. The creatures that swam, floated or flew here were all castaways – an odd lot that found a way to survive under harsh conditions that often seem to defy life. There are Godzilla-like lizards with blue-green heads that forage in the sea; birds with blue feet – and red; penguins that live at the equator.

Distance, strong ocean currents and inhospitable terrain have protected these species for millennia. Today, however, introduced plants and animals represent the single biggest threat to the continuing natural selection and species diversity that has distinguished Galapagos' endemic plants and animals. It was habitat destruction by goats that brought the Española tortoises to death's door.

Fortunately for these species – and the world – Ecuador is a place where politicians take science-based conservation seriously. Galapagos National Park protects 97 percent of the archipelago. Park officials work closely with scientists on management decisions designed to conserve species and their habitat.

Quarantine is more than a concept. Just before arriving by airplane, flight attendants come through the cabin, open the overhead storage bins and spray them with fumigants. Tourists are strictly kept on designated trails to prevent leaving – or removing – invasive seeds, pests or pathogens. Even scientists permitted to travel to remote islands must subject their baggage to fumigation and 48 hours in a freezer.

Despite these efforts, more than 1,000 introduced species plague the archipelago's 13 major islands: rats, goats, fire ants, wasps, blackberries and geckos. The World Heritage Committee named controlling invasive species among the most urgent challenges in its recommendation that Galapagos be placed on its danger list. Many undertakings have focused on eradicating invasive species, including the 2006 Project Isabela, which successfully rid goats, donkeys and pigs from several islands.

Española tortoises exemplify a recovery effort that gives hope to the others. Fifty years ago, with the population in the 1960s at a meager three males and 12 females, all were captured and brought to breeding pens near Galapagos Park headquarters. The numbers rebounded, and in 1975 park officials began releasing 2- to 5-year-old tortoises back onto Española Island. Last year scientists reported that more than half the repatriated animals survived and are breeding successfully on their native island.

"This is a rare example of how biologists and managers can collaborate to recover a species from the brink of extinction," said James Gibbs, a professor of conservation biology at State University of New York in Syracuse and the report's lead author.

In Galapagos, where life is in constant flux, today's successes are never assured tomorrow. The destruction goats caused to the habitat of Española is limiting tortoise expansion and the species' contribution to restoring the island's ecosystems, said Gibbs, a science partner with the Galapagos Conservancy. "Population restoration is one thing, but ecological restoration is going to take a lot longer."

The nesting Española tortoise is doing her part.

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