

Should We Change Species to Save Them? (abridged)

Chang With. Lee, Emily Anthes, *The New York Times*, April 14th, 2024

For tens of millions of years, Australia has been a playground for evolution, and the land Down Under lays claim to some of the most remarkable creatures on Earth. Nearly half of the continent's birds and roughly 90 percent of its mammals, reptiles and frogs are found nowhere else on the planet.

Australia has also become a case study in what happens when people push biodiversity to the brink. Habitat degradation, invasive species, infectious diseases and climate change have put many native animals in jeopardy and given Australia one of the worst rates of species loss in the world.

In some cases, scientists say, the threats are so intractable that the only way to protect Australia's unique animals is to change them. Using a variety of techniques, including crossbreeding and gene editing, scientists are altering the genomes of vulnerable animals, hoping to arm them with the traits they need to survive.

"We're looking at how we can assist evolution," said Anthony Waddle, a conservation biologist at Macquarie University in Sydney.

It is an audacious concept, one that challenges a fundamental conservation impulse to preserve wild creatures as they are. But in this human-dominated age the traditional conservation playbook may no longer be enough, some scientists said.

"We're searching for solutions in an altered world," said Dan Harley, a senior ecologist at Zoos Victoria. "We need to take risks. We need to be bolder."

The helmeted honeyeater is a bird that inhabits the dense swamp forests of the state of Victoria. But over the last few centuries, humans and wildfires damaged or destroyed these forests, and by 1989, just 50 helmeted honeyeaters remained.

Intensive local conservation efforts helped the birds hang on. But there was very little genetic diversity among the remaining birds and breeding inevitably meant inbreeding. Without some kind of intervention, the helmeted honeyeater could be pulled into an "extinction vortex," said Alexandra Pavlova, an evolutionary ecologist. "It became clear that something new needs to be done."

A decade ago, Dr. Pavlova and several other experts suggested an intervention known as genetic rescue, proposing to add some Gippsland yellow-tufted honeyeaters and their fresh DNA to the breeding pool.

But the approach violates the traditional conservation tenet that unique biological populations are sacrosanct, to be kept separate and genetically pure.

Some environmental groups and experts are uneasy about genetic approaches for other reasons, too. "Focusing on intensive intervention in specific species can be a distraction," said Cam Walker, a spokesman for Friends of the Earth Australia. Staving off the extinction crisis will require broader, landscape-level solutions such as halting habitat loss, he said.

Chris Lean, a philosopher of biology at Macquarie University, said he believed in the fundamental conservation goal of "preserving the world as it is for its heritage value, for its ability to tell the story of life on Earth." Still, he said he supported the cautious, limited use of new genomic tools, which may require us to reconsider some longstanding environmental values.

In some ways, assisted evolution is an argument — or, perhaps, an acknowledgment — that there is no stepping back, no future in which humans do not profoundly shape the lives and fates of wild creatures.

To Dr. Harley, it has become clear that preventing more extinctions will require human intervention, innovation and effort. "Let's lean into that, not be daunted by it," he said. "My view is that 50 years from now, biologists and wildlife managers will look back at us and say, 'Why didn't they take the steps and the opportunities when they had the chance?'"