Return of the wild

A radical way of reviving ecosystems is beginning to catch on, finds Sara Reardon

JOEL SARTORE/NGS CREATIVE

Top predators like wolves can shape entire ecosystems

THE sky is purple and the wind is fierce on top of the cliff. David Burney has to shout as he explains what we're looking at. Below us is the Makauwahi Cave, which contains the remains of plants and animals going back thousands of years. It is revealing what the Hawaiian island of Kauai was like before people arrived. Here you can find the bones of moa-nalo, the giant flightless ducks that once ruled Hawaii.

For millions of years, these plant-eating fowl roamed the islands, taking their pick of the lush vegetation. There were no large predators to threaten them. Then came the Polynesians. They probably started feasting on the plump, defenceless birds as soon as they had jumped out of their canoes. "It was an instant luau" – a feast – says Burney.

The ducks were soon wiped out, and the onslaught was only just beginning. European settlers introduced rabbits and goats to Hawaii, and the defences that native plants had evolved against the ducks' thick beaks were little use against sharp teeth. Today, many of the original plant species of Kauai are extinct, replaced by invasive weeds. "For years, I documented extinction," says Burney, who has spent much of the past two decades unearthing fossils here with his wife Lida Pigott Burney. "I felt like the county coroner."

Then, a few years ago, the Burneys decided to go beyond studying the past, to recreating it. They searched for surviving native plants and began to plant them on disused farmland near the cave. The Makauwahi Cave Reserve was born. Here, endangered yellow hibiscus flowers called ma'o hau hele, brought from nearby islands and from Kew Gardens in London, stand out starkly against the dark sky. Burney points out a lone loulu palm tree, one of the last of its kind, which he planted after finding it in the cave's fossil record.

But even on this small site of just a few acres, keeping weeds in check is a major battle. What if, Burney wondered, the giant ducks were still around. They might feast on the weeds in preference to the beak-resistant native plants. So he decided to try a little experiment. As we arrive at an enclosure, one of his surrogate ducks comes to meet us. It is a giant tortoise named Cal. Burney says Cal and his fellow duck impersonators are doing what he hoped. They prefer to eat non-native plants, and they are thriving and laying eggs.

The Makauwahi Cave Reserve is a tiny example of what's come to be known as "rewilding". The term means different things to different people, and in the widest sense of putting aside land for wildlife, it has been going on for more than a century. But the rewilding movement now springing up around the world is a bit different. Its supporters almost all agree on two things. First, that many supposedly wild areas are actually a mere shadow of what they were before our ancestors arrived on the scene. Second, that we cannot restore these ruined ecosystems to their former glory without restoring the animals that shaped them – especially the big animals at the top of the food chain.

This is where it gets controversial. In Britain, for instance, there has been opposition to reintroducing the beaver, never mind the wolves and bears that once roamed the island. What's more, most of the world's large animals have gone the way of the moa-nalo over the past 10,000 years or so. Undeterred, rewilding enthusiasts want to replace them with substitutes just as Burney is doing – which in North America might mean letting African cheetahs, lions and elephants loose on the

great plains. Is this madness or genius?

Surprisingly, one of the most densely populated continents has taken the lead on rewilding. An initiative called Rewilding Europe has set aside ten areas of 1000 hectares that it aims to rewild by 2020. Some of these projects are well under way – red deer and ibex roam sites near the border of Portugal and Spain, for example. Director Wouter Helmer envisions these reserves becoming Europe's version of the national parks in North America and Africa. "We are not looking backward, we are looking forward," he says. "It's the future harmony between man and nature in which we are interested."

"The moa-nalo were giant flightless ducks that once ruled the Hawaiian islands"

Yet it is easy to forget that nature is red in tooth and claw. Since the 1980s, researchers in the Netherlands have been slowly introducing large grazing animals to a reclaimed marshland, about 40 kilometres from Amsterdam, called the Oostvaardersplassen. But in a particularly harsh winter in 2005, many animals died of starvation, prompting protests from the public and debate in the Dutch parliament over whether this constituted animal cruelty. But feeding the animals, the rewilders argued, would change their behaviour.

As a compromise, the site's managers now shoot any starving animals they see and leave