

The Fourth Wave of Extinction

Stephens Island, a 150-hectare rock in Cook Strait, is home to a million petrels, prions and shearwaters. Before the arrival of kiore and humans, New Zealand's forests and subalpine areas were home to billions of these seabirds, many nesting far inland. Evidence of petrel colonies has been found in inland Hawkes Bay, on Tongariro, in Canterbury and even in the Kaweka Ranges. Only a ghost of this remarkable world remains.

Through painstaking research, Dr Richard Holdaway and Trevor Worthy have recently given us a fresh perspective on the extinction process in New Zealand.*

It seems we are in the midst of the fourth wave of extinction since human arrival.

Extinction occurs in two ways. The first is swift — all adults are wiped out along with any offspring they might have. The Stephens Island wren fell in this way, to a lighthouse-keeper's cat.

The second process is a 'slow burning' form of extinction that takes much longer, where some adults get killed, but many still manage to reproduce. Most of their chicks are killed and only a few reach adulthood. The population slowly dwindles, however, until there are none left.

Holdaway and Worthy's painstaking work shows that humans and kiore caused the rapid extinction of most of our large and small bird species respectively, through predation of adults, chicks and eggs. Eleven species of moa, two adzebills, a giant eagle, two flightless geese, giant swan and a range of flightless wrens quickly disappeared. This was the first wave of human-induced extinction to sweep New Zealand.

The second wave occurred gradually over centuries as the native crow, owl nightjar, giant coot and Dieffenbach's rail were lost. These were extinctions of the 'slow burn'

kind. Many seabird populations diminished in this way, too.

When Europeans arrived bringing Norway and ship rats, cats, stoats, ferrets, and weasels, a new third wave of extinctions occurred. A combination of severe habitat destruction and the new mammalian predators drove the laughing owl, native quail and native thrush, piopio, to extinction.

Today we are witnessing the fourth wave of extinction. Eighty years ago, when Forest and Bird was formed, there were around 5,000,000 kiwi in New Zealand. Now there are less than 50,000 kiwi left on the mainland and numbers are decreasing by around 3000 per year. Species like kiwi, takahe, kakapo, blue duck, and some tiny populations of burrowing seabirds that survived the first three waves of extinction, are being whittled away by predators.

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The difference between this fourth extinction phase and the previous three, is that we now know what is happening and we have the means to do something about it.

DoC scientists and conservation managers have achieved some outstanding results, offshore, and are experimenting with pest control in their 'mainland islands'. But the challenges are immense. Stoats are proving to be formidable killers of native birds.

To defeat the fourth wave of extinction, the Department of Conservation needs to change gear and apply the lessons learned from its 'mainland islands' and other

experiments to larger areas of the conservation estate. And this change in gear needs to happen very quickly to save our remaining bird populations.

DoC must also face some hard realities. At this point, 1080 poison, applied from the air, is the best tool we have to control possums. 1080 can also kill rats and stoats which eat the poisoned carcasses. The result is a massive increase in survival rates for kiwi chicks and a range of bird species.

Aerial application of 1080 is also substantially cheaper than ground-based control methods. The cost of around \$10 a hectare is likely to be around a tenth of the cost of equivalent ground-trapping and means potentially the whole DoC-managed estate could be treated for pests without a major increase in DoC's present level of funding. Until we develop better pest control tools 'aerial 1080' is going to be the leading weapon in the fight to defeat the fourth wave of extinction.

Aerial 1080 will need to be applied over large areas frequently — perhaps every few years — to keep predator numbers low. DoC must not shy away from using 'aerial 1080' in the face of opposition from elements in the hunting community.

Our seabird populations may never return to the mainland but let's not allow our kiwi, kaka, blue duck etc., to follow the same fate. Unprecedented and bold action by DoC and the broader community could head off the fourth wave of extinction. We must win this — the biggest battle Forest and Bird has faced in its 80 proud years.

— ERIC PYLE is the conservation manager of Forest and Bird.

* *The Lost World of the Moa: Prehistoric Life of New Zealand*, Canterbury University Press, Christchurch 2002.

Royal Forest and Bird Protection Society of New Zealand Inc. (Founded 1923)

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