

Chesterfield Skink

Oligosoma aff. *infrapunctatum* "Chesterfield"

Hiding in the background



Chesterfield Skink. Sabine Bernert

Quickfacts

A recently discovered lizard known from one very small site near Chesterfield, Westland

Habitat has too few safe places to retreat into when threatened

An unexpected diversity of lizards

Research by scientists has discovered that many of New Zealand's lizards are actually what are known as "cryptic species". A cryptic species is a group of animals that look very similar to another, already known, species, but their genes are significantly different. A cryptic species is thought to arise when a group of animals becomes isolated from the rest of their species and, over time, change sufficiently so that they cannot interbreed. Prior to 1980, only 34 lizard species were known in New Zealand, but since 1980, 24 new lizard species have been named and scientists think that there may be a further 41 species present, due to the presence of cryptic species. The diversity of cryptic species in New Zealand is a result of evolution being influenced by the interaction between New Zealand's unique geological history and the biology and ecology of the plants and animals that inhabit it.

There are two main types of lizard in New Zealand: the smooth skinned skinks and the rough skinned geckos (the tuatara is not technically a lizard, but is an ancient reptile whose ancestors arose around the time of the dinosaurs). The West Coast's Chesterfield



skink, discovered in 1992, is one of the 56 skink species. It has yet to be officially named by scientists, hence the current name of *Oligosoma* aff. *infrapunctatum* "Chesterfield", which translates to 'the skink similar to *Oligosoma infrapunctatum* from Chesterfield'. An inconspicuous and secretive skink, it is closely related to the speckled skink (*Oligosoma infrapunctatum*), from which it can be distinguished by the scattered orange scales underneath the tail (however, individuals who have regrown tails do not have these scales). A recent study of the speckled skink and its related cryptic species has suggested a date of 5 million years ago for when the Chesterfield skink became isolated from the other speckled skinks. What caused this isolation is unknown, and this date is earlier than the ice age, which is puzzling as glaciers created during the ice ages are often thought by scientists to be a cause of some animal populations becoming isolated in New Zealand leading to their evolving into distinct races or species.

From the little we know about the Chesterfield skink itself, and from observations made on closely related skinks, we believe that the Chesterfield skink inhabits the jumbled vegetation that occurs behind beaches and also possibly in forest clearings. It probably eats a range of small insects and fruit for which it actively searches during the day. Like most skinks, the Chesterfield skink is wary – probably because it is a favoured food item for weka - and quickly retreats into dense foliage or under a rock or log when disturbed. Like most of the lizards in New Zealand, the Chesterfield skink gives birth to live baby skinks instead of laying eggs (which most tropical lizards do). They are likely to give birth to three or four babies every two years. The Chesterfield skink is likely to have always inhabited a narrow strip of land and beaches between the mountains and the sea along the West Coast. Its spread further south or north would have been limited by the West Coast's turbulent rivers and competition for food and space with its neighbours.

The loss of the Chesterfield skink

Before humans arrived, New Zealand was literally teeming with lizards. There would have been thousands of individuals of all species inhabiting every habitat apart from the tops of mountains above where plants grow. We know this because teems of lizards still occur in New Zealand, but only in a special circumstance such as on offshore islands where there are no introduced rodents or cats. Now, nearly half of New Zealand's lizard species are found only on exotic predator-free islands and it is rare to see a lizard on mainland New Zealand, although they can be reasonably common at sites like boulder banks, driftwood piles or rocky clefts which provide natural protection from exotic predators. The Chesterfield skink is likely to have been decimated by introduced predators, and we now only know of it from one small area near the town of Chesterfield, between Greymouth and Hokitika on the West Coast. This area has been greatly modified: it is farmed, storms can wash over the seaward part and State Highway 6 forms a barrier on the landward side. Like many skinks, the Chesterfield skink is particularly

vulnerable to predators when it is warming its body basking in the sun, or when foraging for food. It is also possible that mice can get into the small crevices where the skinks sleep at night, and eat them when they are cold and unable to move quickly. Much lizard habitat has been lost from the West Coast as land is developed for farming. We cannot be certain about how many Chesterfield skinks there are, or even where they are, as they are difficult to find, difficult to catch and they look very similar to the closely related speckled skink.

Chesterfield skink conservation

In 2009 the Chesterfield skink was classified as Nationally Critical (with the qualifiers of being data poor, range restricted and sparse) and in imminent danger of becoming extinct. Recent conservation efforts by DOC, supported by funding from Auckland Zoo, have centred on searching to discover where the skinks occur and to evaluate how many there are. The 2014/15 surveys, that used pitfall traps, funnel traps and artificial retreat sites made from Onduline, caught only 17 skinks over the equivalent of 10,177 days of trapping. Many mice were also caught in the survey's traps – this is a concern as we know that mice preying on the larger Macgregor's skink almost caused their extinction on Mana Island, near Wellington. No skinks have been found in the surrounding forests, although they are possibly present in very low numbers. A more comprehensive survey in 2015 found 38 skinks, all in the area from which this species is already known.

The future of the Chesterfield skink mainly depends on two things: increasing the number of places to hide, and reducing the number of predatory mammals.

What next?

The threats to the survival of the Chesterfield skink are:

1. Only being found at one site.
2. A very low total number of skinks.
3. Cats, mice, stoats, weasels, rats and hedgehogs and possibly magpies eating skinks.
4. The very limited amount of habitat available.
5. The scarcity of safe retreat sites.
6. Little money to pay for conservation efforts and few people with the time to dedicate to Chesterfield skink conservation.

Successfully protecting Chesterfield skinks from these threats must be achieved in order for the conservation programme to succeed. The best strategy is still being

assessed, and will be influenced by the results of research currently underway. Some possible options are:

1. Developing a captive population.

There is a long history of keeping and breeding many of New Zealand's reptiles in captivity. A small number of Chesterfield skinks should be moved into captivity and bred as an insurance against possible extinction if the conservation project does not work. This captive population could also be used to provide animals to repopulate another safe site. Auckland Zoo is currently developing a captive breeding facility for lizards such as the Chesterfield skink.

Looking after this captive population is likely to cost \$150,000 over five years.

2. Providing additional safe retreat sites.

We know that skinks that live in rock piles or driftwood jumbles are less likely to be caught by predators as they have many safe places into which to retreat if they are disturbed or feel threatened. Additional safe lizard habitat can be made by piling rocks into low mounds.

Building these rock piles is likely to cost \$18,000.

3. Integrating Chesterfield skink conservation into farm management practices.

It is possible for Chesterfield skinks to survive, and possibly thrive, on adjacent farms if the rough margins are maintained (and ideally fenced). To achieve this, the farm owner will need to agree to the farm being inspected, with areas of potential Chesterfield skink habitat mapped and a plan developed for the management of these sites (written in consultation with the farmer).

Preparing and implementing a skink farm management plan is likely to cost \$7,600.

4. Controlling exotic predators by trapping.

Cats, mice, stoats, weasels, rats and possibly hedgehogs and magpies are likely to be eating Chesterfield skinks, so removing these predators would be beneficial. However, there are few examples where lizards have been shown to increase in numbers as a result of a predator control programme, and predator control programmes are also expensive to run and need to continue over the long term. In addition, the successful programmes which have controlled predators required a large buffer zone. This may be

impossible here, where the site is adjacent to private land. For these reasons, a predator control programme should only be initiated if the other conservation techniques do not work.

Undertaking predator control for 15 years is likely to cost \$73,100.

5. Regularly counting the number of Chesterfield skinks.

It is important to know whether the techniques used in Chesterfield skink conservation projects are being successful. If something is not working then that money and effort can be better used doing something else. The best way of assessing whether the techniques being utilised are working is by regularly counting the number of Chesterfield skinks: if the project is working, then the number of Chesterfield skinks will increase. Counting Chesterfield skinks is best done over three nights each summer, at the five sites where Chesterfield skinks are known.

Fifteen years of counting Chesterfield skinks is likely to cost \$14,800.

More information

Website: NZ Lizards Database. [Link](#)

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Report: Conservation of lizards in West Coast/Tai Poutini Conservancy. By T. Whitaker & J. Lyall. Department of Conservation, Wellington, 2004. [PDF](#)

Scientific paper: Changes in habitat use by lizards on a New Zealand island following removal of the introduced Pacific rat *Rattus exulans*. By David R. Towns. *Pacific Conservation Biology* Vol. 2, pages 286-292, 1996.

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Scientific paper: Patterns of range contractions and extinctions in the New Zealand herpetofauna following human colonisation. By D.R. Towns & C. H. Daugherty. *New Zealand Journal of Zoology* Vol. 21, pages 325-339, 1994.

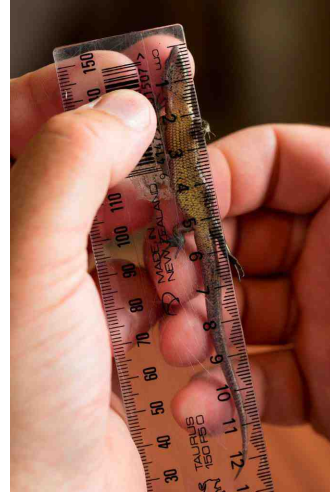
Scientific paper: Taxonomic and conservation review of the New Zealand herpetofauna. *New Zealand Journal of Zoology* Vol. 21, pages 317-323, 1994.



Photos



Inspecting captured Chesterfield skink. Sabine Bernert



Measuring Chesterfield skink. Sabine Bernert



Photographing captured Chesterfield skink. Sabine Bernert



Inspecting Onduline artificial retreat. Sabine Bernert

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