

# Tuatara

*Sphenodon punctatus*



## Conservation status

**Regional** | Conservation Translocation

**National** | At Risk: Relict

**Key Otago qualifiers:** Restored Native

## Description

**Body length:** adults reach 200–300 mm snout-vent length (SVL). Intact tail approximately equal to or slightly longer than SVL. Adult males reach a larger size than adult females.

The tuatara is Aotearoa New Zealand’s largest and most emblematic reptile. Although tuatara closely resemble lizards, they are the last surviving rhynchocephalians, a group of animals once globally distributed and ecologically diverse during the Mesozoic Era (250–65 million years ago), which is often referred to as the time of the dinosaurs. Molecular and fossil evidence shows that Rhynchocephalia are the closest living relatives of Squamata (lizards and snakes), with the two groups diverging about 250 million years ago. Today the tuatara is a taonga or taoka (treasure) to Māori and an iconic species for all New Zealanders.

**Upper surface:** slate-grey, olive-green, or orange-yellow colouration, often with pale blotches, speckles, and lumps. Along the midline of the neck, back and tail, triangular folds of skin form a crest of spines, which the tuatara is named for (in te reo Māori, “tua” means “back” and “tara” means “spiny”). These spines are usually white and are more strongly developed in males, leading to speculation that they are used in mating and rivalry displays.

**Lower surface:** often pale grey, typically with speckles.

**Tail:** While the tuatara’s tail appears robust, it can be dropped to distract predators or rivals if attacked so the tuatara can escape to live another day (and often to grow another tail), like all other native land-based reptiles in Aotearoa New Zealand.

**Feet:** narrow digits, each toe with a large claw on the end.

**Eyes:** relatively large. The pupil is vertical with a gold-flecked iris that expands at night, giving the eyes a black appearance.

## Distribution

About 750 years ago, tuatara were widely distributed across much of Aotearoa New Zealand, including Otago. However, the arrival of humans and other foreign mammals transformed the landscape, resulting in the disappearance of mainland populations of tuatara. By several hundred years ago, breeding populations survived on just a few islands off the coast of the northeastern North Island and in the Cook Strait.

Since the mid-1990s, conservation translocations have mostly focused on re-establishing populations of tuatara in parts of the Cook Strait and further north. These translocations were primarily within the ecological region of source populations and the latitudinal range of remnant populations. In 2012, a translocation of tuatara to Orokonui Ecosanctuary – Te Korowai o Mikiwaka, near Ōtepoti/Dunedin, was the first to a large, secure site on the South Island. This site is considerably further south than remnant populations, with a cooler climate.



## Ecology & natural history

Unlike most reptiles globally (but not some lizards from Aotearoa New Zealand, including certain alpine geckos in Otago), tuatara can remain active at body temperatures as low as 6°C, with their preferred range being about 21–23°C. They spend the majority of the day in burrows or basking in the sun and are mainly active at nighttime, which is when they typically hunt. Using their large eyes to detect movement, tuatara hunt darkling beetles, wētā, spiders, snails, lizards, and sometimes smaller tuatara, among other prey. In the past, tuatara were themselves food for other native creatures, such as the now extinct whekau or laughing owl.

Remnant tuatara populations on islands benefit from the presence of large numbers of breeding seabirds, which provide food directly in the form of hatchlings and eggs. Seabirds provide food indirectly as well: their waste (e.g. excrement, carrion) contributes marine resources to island food webs, enhancing the number and size of invertebrate prey for tuatara. Additionally, while tuatara can make their own burrows, they often use those made by seabirds. The birds seem to get nothing in return.

Tuatara can potentially live for more than 130 years according to a recent study. Sexual maturity occurs after about 10–14 years (but later at locations with cooler climates and fewer resources). Females nest only once ~2–9 years (with a regular high frequency of about two years in some populations in warmer locations) and they lay approximately eight eggs (the range is 1–17), which can take 10–16 months to hatch. The sex of hatchlings is temperature dependent: the pivotal temperature is 21.6–22°C, with a difference of just 1.1°C between production of all-female and all-male hatchlings. This form of temperature-dependent sex determination (which see females produced below, and males above, 22°C) is unique within reptiles.

## Conservation

Tuatara have a relict distribution and there is growing concern that some of their island habitats will become less suitable with human-induced climate change and as sea levels rise. With tuatara having temperature-dependent sex determination, there is also a concern that sex ratios will become male biased as local temperatures warm. Conservation work such as the translocation of tuatara is seeking to broaden and eventually restore the latitudinal range within which tuatara once lived, including sites with cooler climates like Orokonui Ecosanctuary. All monitoring of tuatara at Orokonui Ecosanctuary involves consultation with Ngāti Koata, kaitiaki of tuatara from Takapourewa / Stephens Island, and mana whenua Kāti Huirapa Rūnaki Puketeraki, and future translocations to re-establish populations should consider locations that will continue to be suitable under climate change.