

# Lizards on the ‘Kapiti Mainland Island’



Source: Wellington Region: Gecko Identification Card, Greater Wellington Regional Council



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## **Our ‘Kapiti Mainland Island’ area**

The area covered by the ‘Mainland Island’ comprises Queen Elizabeth Park, Whareroa Farm Reserve and the Paekakariki-Pukerua Bay escarpment.<sup>1</sup>

### **Vision**

In the next decade lizards will become abundant within this Kapiti Mainland Island.

### **Goals**

- to gain an understanding of lizard diversity and abundance in Queen Elizabeth Park, Whareroa Farm Reserve and on the Paekakariki-Pukerua Bay escarpment through lizard surveys and monitoring programmes..
- to improve animal pest control regimes so they protect existing lizard populations and allow these populations to stabilise or recover based on the surveys and expert advice from herpetologists..
- to assist the recovery of lizard populations by improving their habitat.

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<sup>1</sup> The escarpment commences near Muri Station and finishes at Paekakariki. It excludes the escarpment above Pukerua Bay beach.

## **Introduction**

Lizards are New Zealand's largest terrestrial vertebrate group with more than 100 species (and counting!). They occupy almost all available ecosystems from coastal shores to mountain peaks. Lizards play an important role in ecosystem processes and function as predators, pollinators, frugivores and seed dispersers. Despite 85 percent of this fauna being threatened or at-risk, lizards are everywhere around us and can be exceptionally abundant when released from mammalian predation pressure. Lizards are emerging as iconic flagship and indicator species in conservation and ecological restoration.

In 2012 the Wellington Regional Lizard Network published a lizard strategy for the Wellington region (Romijn et al. 2012). This document brought together the views of lizard experts (Herpetologists) along with a variety of other stakeholders, including the Department of Conservation and local authorities.

This report painted a picture of significant lizard diversity in the Wellington region. However, it also identified a range of threats to these populations. Balancing these factors, the study also identified opportunities to support gecko and skink populations in the Wellington region.

Three main restoration groups operate on the southern end of the Kapiti Coast. These are Friends of Queen Elizabeth Park, Guardians of Whareroa Farm, and Nga Uruora. For a number of years these groups have been active in a range of restoration activities, including significant planting programmes. There has been a major focus on increasing bird populations, with a key goal being to bring back the dawn chorus to the Kapiti Coast. However, relatively little attention has been paid to lizards. This project aims to bring lizards to the fore in restoration work in this area of the coast.

## Lizards of the Wellington region

The lizard fauna of the wider Wellington region is recognised for its diversity. This diversity is noteworthy for a region with a large urban population. Seventeen lizard species that have been recorded in the region (Table 1).

**Table 1: Summary of known lizard species in the Greater Wellington Region (Miskelly, 1999), their threat status (Hitchmough et al., 2013) and distribution. Gecko genera are in accordance with latest genetic research (Nielson et. al., 2011).**

Scientific name	Common name	Threat status	Regional Distribution
<i>Oligosoma alani</i>	Robust skink	Recovering (Conservation Dependent, Range Restricted)	Regionally Extinct
<i>Oligosoma aeneum</i>	Copper skink	Not Threatened	Widespread
<i>Oligosoma lineocellatum</i>	Spotted skink	Relict (Conservation Dependent, Partial Decline, Sparse)	Sparse, scattered populations
<i>Oligosoma ornatum</i>	Ornate skink	Declining (Conservation Dependent)	Widespread
<i>Oligosoma macgregori</i>	McGregor's skink	Recovering (Conservation Dependent, Range Restricted)	Mana Island
<i>Oligosoma</i> aff. <i>polychroma</i>	Northern grass skink	Not Threatened (Conservation Dependent)	Widespread
<i>Oligosoma</i> "Southern North Island"	Kupe skink	Nationally Vulnerable (Conservation Dependent, Data Poor, Sparse)	Wairarapa
<i>Oligosoma infrapunctatum</i>	Speckled skink	Declining (Conservation Dependent, Partial Decline, Sparse)	Mana Island*
<i>Oligosoma whitakeri</i>	Whitaker's skink	Nationally Endangered (Conservation Dependent, Range Restricted)	Pukerua Bay
<i>Oligosoma zelandicum</i>	Glossy Brown skink	Declining (Conservation Dependent, Partial Decline)	West of Tararua Range
<i>Dactylocnemis pacificus</i>	Pacific gecko	Relict (Conservation Dependent, Partial Decline)	Upper Hutt
<i>Hoplodactylus duvaucelii</i>	Duvaucel's gecko	Relict (Conservation Dependent, Range Restricted)	Mana Island
<i>Mokopirirakau</i> "Southern North Island"	Ngahere gecko	Declining (Conservation Dependent, Data Poor)	Widespread
<i>Naultinus punctatus</i>	Barking gecko	Declining (Data Poor, Sparse)	Widespread
<i>Woodworthia chrysosiretica</i>	Goldstripe gecko	Relict	Mana Island

Scientific name	Common name	Threat status	Regional Distribution
		(Conservation Dependent, Partial Decline)	
<i>Woodworthia maculata</i>	Raukawa gecko	Not threatened (Conservation Dependent, Partial Decline)	Widespread
<i>Woodworthia</i> "Marlborough Mini"	Marlborough mini gecko	Not Threatened (Data Poor)	Wellington south and west coast

\* Species translocated outside its known natural distribution.

The designated Kapiti Biodiversity project area extends from Pukerua Bay to Raumati. Much of it is a holocene coastal plain of dune sequences enclosing peat swamps. Natural boundaries are formed by the sea to the west and a steep escarpment to the east. There are five ecological districts: the Cook Strait district covering the escarpment and rocky shores, the dunelands of Foxton and Manawatu, and the forest areas of Wellington and the Tararuas. These areas include a mix of farms, urban settlements, two significant farm parks and a large covenanted area of escarpment. This area contains two Key Natural Ecological sites and a landscape of regional significance. There is a mix of mature forest, regenerating forest, grass and dune lands, as well as wetlands.

To date, lizard conservation and research in the Wellington region has been conducted at a few sites only and fewer have been monitored to determine the impacts of management on lizard populations. However, there have already been a number of studies undertaken at Pukerua Bay (Towns, 1992; Towns and Elliott, 1996; Hoare et al., 2007).

**Figure 1: State Highway 1 sign at Pukerua Bay**



Source: Paul Callister

Pukerua Bay already prides itself on being the home of a rare skink. This is the Whitaker's skink (*Oligosoma whitakeri*) which lives in coastal forest and scrub. The species is named after the scientist Tony Whitaker, who spent decades studying New Zealand lizards. According to the Te Ara website, this species occurs naturally on two small, predator-free islands off the Coromandel Peninsula – Middle Island in the Mercury Island group, and Castle Island. The only other population is on the mainland in a small rocky area at the base of coastal hills at Pukerua Bay, hence the national significance of Pukerua Bay for lizards.<sup>2 3</sup>

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<sup>2</sup> Kerry-Jayne Wilson. 'Lizards - Conservation', Te Ara - the Encyclopedia of New Zealand, updated 8-Jul-13, URL: <http://www.TeAra.govt.nz/en/photograph/13532/whitakers-skink>

<sup>3</sup> There are also now translocated populations, for example on Kapiti Island.

**Figure 2: A letterbox lizard in Pukerua Bay**



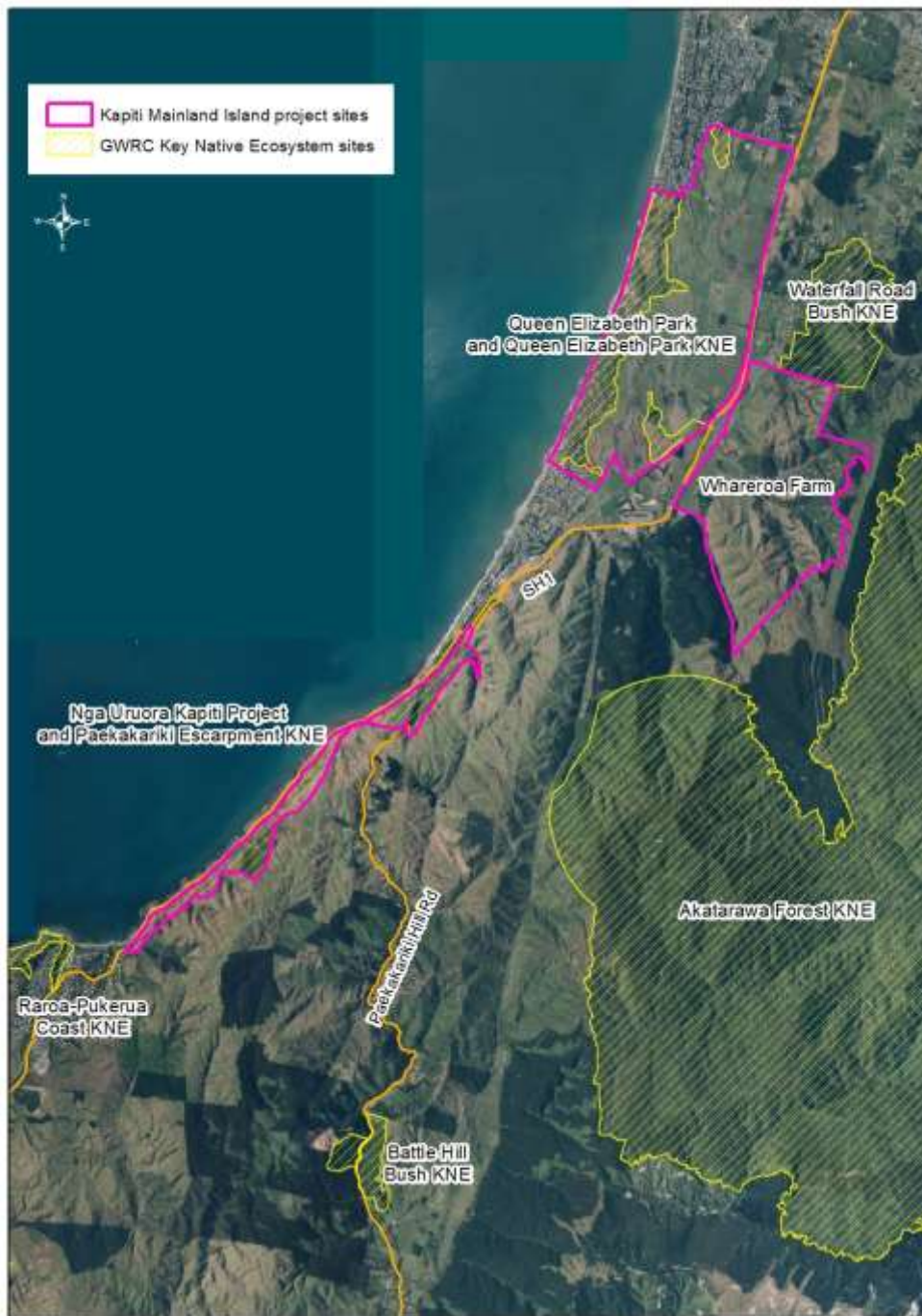
Raukawa gecko (*Woodworthia maculata*). Source: Gay Hay

### **Current threats to lizards in the region**

Primary threats to lizards are introduced mammalian predators and habitat destruction. Animal pests have led to a reduction in diversity, abundance and the range of lizards. The Wellington Regional Lizard Network report notes that geckos and skinks on the mainland often occur in low numbers in the presence of introduced mammalian predators (eg. mice, rats, hedgehogs, mustelids, cats and possums) and, in many cases, are still declining.

A key feature of the Kapiti Coast Biodiversity project is an increase in animal pest control within the ‘Kapiti Mainland Island’ area. Figure 3 shows the area where pest control is undertaken on the southern Kapiti Coast.

**Figure 3: Animal pest control areas on the southern Kapiti Coast, November 2015**



Source: Greater Wellington Regional Council

Information on increased pest control strategies may be found in the document entitled *Creating a Kapiti Mainland Island* (2015).<sup>4</sup> While this enhanced pest control is not specifically targeted at supporting lizard populations, it will help reduce predators of lizards. One goal of

<sup>4</sup> <http://www.naturespace.org.nz/documents/project-reports>



the lizard research is to provide advice on how to better manage and expand the pest control work so as to support lizard populations.

This effort will be in addition to the intensive pest control regime aimed specifically at protecting Whitaker's skink which occurs at one site in Pukerua Bay..

For a number of years local Kapiti restoration groups have also been reversing habitat destruction to support local bird populations. However, there is the potential to fine tune restoration work to better support lizard populations.

### **Opportunities to conserve and restore local lizard communities**

A number of factors provide opportunities for conserving and restoring local lizard communities. These include:

- The sixteen species of lizards still present in the wider Wellington region.
- The many sites throughout the region (offshore islands and mainland) that still have lizard communities.
- The large areas of good habitat (coastal and forest) throughout the region.
- The strong community support for conservation and restoration as can be seen by the abundance of community care groups.
- The large urban populations of lizards.
- The active involvement in conservation efforts in the region by local councils, Greater Wellington Regional Council (GWRC), DOC, Forest & Bird and Queen Elizabeth Trust.
- Victoria University of Wellington's strong herpetological team and good post-graduate programmes in Conservation Biology and Restoration Ecology.
- The wealth of herpetological knowledge in the region, including lizard experts, and lizard breeders who could support captive breeding for release.

The lizard strategy report by Romijn et al. (2012) suggests that potentially important sites should be surveyed for lizards (eg. historic lizard sites to confirm continued presence, areas of good lizard habitat that have not been searched and areas that receive intensive predator control for other purposes). This will assist with determining distributional ranges of species and will help to identify priority sites for lizard conservation. The authors argue that management of

sites should complement other biodiversity values because lizard conservation does not operate in isolation with habitat and ecological restoration being required concurrently.

This report also recommends that monitoring programmes be implemented to determine the impacts of human management on lizards. Research to investigate the main issues threatening lizards in the region also should be undertaken. The report notes that public education and involvement in the conservation and restoration of lizard communities is essential and should include a tangata whenua perspective.

According to Romijn et al. (2012), all lizard sightings should be regarded as important because of the low number of lizards reported in the region, Lizard information may come from a range of sources, including lizards observed/photographed in the field, sloughed skin found in the field, lizard tracks in tracking tunnels, and lizard remains found in the stomach contents of trapped mammals. All those involved in biodiversity projects - DOC and council staff, community group members, as well as others involved in the outdoors (eg trampers, hunters, farmers and botanical gardens staff) - should be aware of the importance of lizard observations and be trained to gather and record appropriate information so they could complete Amphibian and Reptile Distribution Scheme (ARDS) cards. This information could then be added to the Department of Conservation Herpetofauna Database.

## **Our planned work**

While the recommendations of the lizard strategy report by Romijn et al (2012) will help guide our work, the project will rely heavily on research and advice provided by the lizard consultancy group EcoGecko Consultants.<sup>5</sup> EcoGecko was contracted in late 2015 to the Kapiti Biodiversity Project to lead the lizard research. Overseeing the work with EcoGecko is Gay Hay of the Kapiti Biodiversity Project. The project will involve volunteers on some of the sites and those interested in volunteering should contact Gay Hay (ghay11@gmail.com).

EcoGecko is designing a lizard baseline survey and monitoring programme for three sites (Queen Elizabeth Park, Whareroa Farm and the Paekakariki Escarpment), using Onduline Artificial Retreats, pitfall traps and closed-cell foam covers; all of which sample geckos and

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<sup>5</sup> <http://www.ecogecko.co.nz/>

skinks. The lizard survey and monitoring effort will be structured as a “grid-array” of traps and retreats, designed with volunteer involvement in mind. Lizards will be recorded daily for seven to eight days at Queen Elizabeth Park and Whareroa Farm over the next three years, with statistical analyses run by EcoGecko staff. Kapiti Biodiversity Project volunteers will be trained in lizard survey and monitoring by participating in the lizard work, and some will also be trained in statistical analyses. School children and their parents will be encouraged to join the EcoGecko team setting up the traps. A resource manual will be developed for these workers. The objective is for the Kapiti Biodiversity Project to eventually be able to operate lizard monitoring programmes independently.

The Paekakariki Escarpment will be surveyed by EcoGecko, but not monitored, because of the steep terrain. Instead, the objective will be to see if there are any particularly rare lizard species, such as Whitaker’s skink, along the Escarpment.

The lizard survey and monitoring efforts provide opportunities for 'Citizen Scientists'. The volunteers that EcoGecko will support to put out traps and train for monitoring will be an ongoing resource for the project and for future monitoring.

As part of the project, a school resource will be developed to provide knowledge and challenges to local schools. Support will also be given to schools interested in establishing a 'lizard friendly' space in their school grounds.

In terms of surveying and monitoring local lizard populations, the Wellington lizard strategy report acknowledges that it often takes many years of predator control before certain lizard species are detected. Glossy Brown skinks were not identified on Mana Island until six years after mice were eradicated and Raukawa geckos were not detected on Tiritiri Matangi Island until fourteen years after the eradication of kiore. In both instances, the lizards had been present all along but in such low numbers that they had never been seen. This means that a three year program to support skinks and geckos in our area may not be long enough to demonstrate an increase in numbers. However, all groups in the project are committed to on-going pest control and habitat management which will help secure and allow for the recovery of local lizard populations in Kapiti.

## References

Hitchmough, R., Anderson, P., Barr, B., Monks, J., Lettink M., Reardon, J., Tocher, M., and Whitaker, T. (2013) *Conservation status of New Zealand reptiles, 2012*, New Zealand threat classification series 2, Department of Conservation.

Hoare, J.M., Pledger, S., Nelson, N.J., Daugherty, C.H. (2007) Avoiding aliens: Behavioural plasticity in habitat use enables large, nocturnal geckos to survive Pacific rat invasions, *Biological Conservation*, 136 (4): 510-519.

Miskelly, C. (1999) *Mana Island ecological restoration plan*. Department of Conservation, Wellington.

Romijn, R., Adams, L., Hitchmough, R. (2012) *Lizard strategy for the Wellington region 2012-20*, Wellington Regional Lizard Network.

Nielsen, S.V., Bauer, A.M., Jackman, T.R., Hitchmough, R.A., Daugherty, C.H. 2011: New Zealand geckos (*Diplodactylidae*): Cryptic diversity in a post-Gondwanan lineage with trans-Tasman affinities, *Molecular Phylogenetics and Evolution*, 59: 1-22.

Towns, D.R. (1992) *Distribution and abundance of lizards at Pukerua Bay, Wellington: implications for reserve management*. Department of Conservation science and research internal report no.125, Wellington.

Towns, D.R. and Elliott, G.P. (1996) Effects of habitat structure on distribution and abundance of lizards at Pukerua Bay, Wellington, New Zealand. *New Zealand Journal of Ecology*, 20: 191-206.