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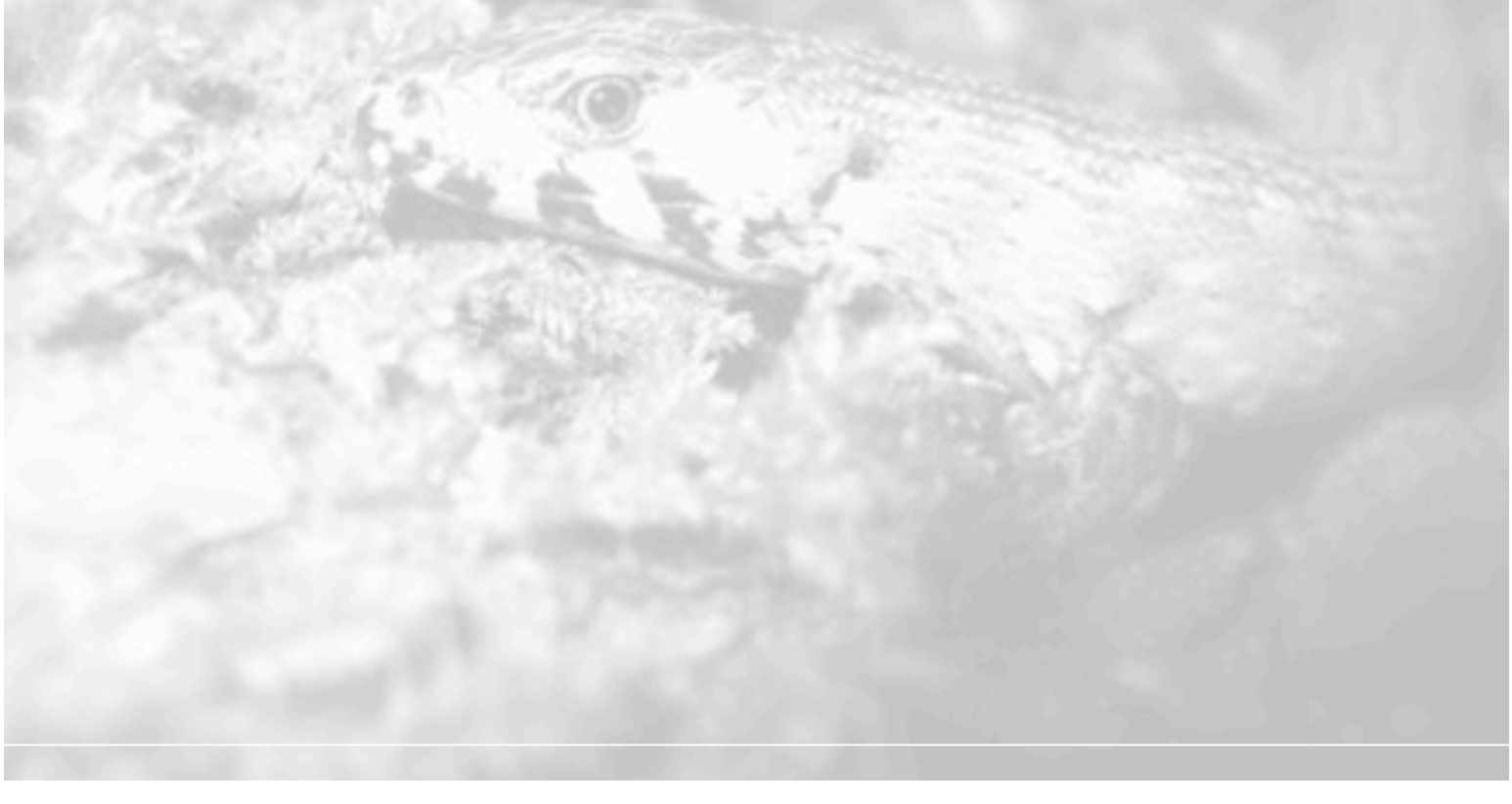
Report on the Lizard Survey conducted at Pt Hauhungaroa 6A Block, Whareroa North March 2008



1.0 Introduction

A comprehensive lizard survey was carried out at Whareroa North – Pt Hauhungaroa 6A block – on the western side of Lake Taupo during November and December 2007 under permit number TT-20781-FAU. Taupo District council speculated that native lizards may possibly be present on the block, however there had never been an official reptile survey of the area. The objective of the survey conducted in November and December 2007 was to determine if native geckos and/or skinks were present, and if so their extent considering the potential development of the site, and options for mitigation.

2.0 Methodology

2.1 Gecko Survey

Spotlighting
Nighttime spotlighting was the primary method employed to survey for geckos. Transect walks were undertaken in all areas and habitats, while areas with the most suitable habitat were surveyed on multiple occasions. The survey effort for each transect was increased by being surveyed by two people simultaneously. Both diurnal and nocturnal geckos can be located by spotlighting as their eye-shine and silhouette is relatively easy to detect. Nocturnal geckos are often seen on the bark and branches of trees, or in the foliage foraging for insects. Diurnal geckos often stay out in the foliage overnight and therefore can be located in a similar manner to nocturnal geckos.

Gecko spotlighting was undertaken in November and December to cover a range of suitable climatic conditions, while a calibration (see below) was undertaken in November.

Total hours spent gecko spotlighting = 45 hours over 8 nights. See appendix 1 for gecko spotlighting transect locations.

Mean hourly temperature was suitable for gecko spotlighting and can be seen graphically in appendix 2. Overall the weather conditions ranged from clear to light intermittent showers, with mainly light winds.

Handsearching
In addition to spotlighting, hand searching was conducted during the day in suitable refuges by investigating under bark and logs, in crevices and woodpiles, and on foliage for the presence of geckos. At all times "sign" of geckos, such as skin and scat (faeces) was searched for in suitable and likely locations.

Total hours spent gecko and skink handsearching = 50 hours over 5 days.

See appendix 3 for details of hand searching transects.

Calibration
To calibrate the survey effort at Whareroa North, a nearby location in Tongariro National Park where geckos were known to be present was surveyed for a duration of two hours using the same spotlighting techniques as those employed at Whareroa. The purpose of the calibration

was to highlight that the timing and methods employed at Whareroa were adequate to detect geckos if they were present.

Total hours spent gecko spotlighting in calibration = 2 hours over 1 night.

2.2 Skink Survey

Artificial cover objects (ACO's)
Artificial cover objects (ACO's) work on the basis that lizards (and in particular skinks) seek out refuges that offer them warmth and protection. If skinks are present they will be found basking under or on the ACO's. 88 ACO's were installed in a variety of suitable habitats – grass, shrub, forest (edge and internal). Most ACO's were in edge habitat, as they need sun to heat up and therefore be attractive to skinks. ACO's were left to settle for 1 month before being checked to give skinks the opportunity to find them. Artificial cover objects were checked 5 times during mid December.

Hand searching
Hand searching for skinks was focused on internal forested areas where ACO's were not suitable for use, due to lack of sun. Hand searching involves investigating suitable habitat/refuges for skinks or skink sign including leaf litter, under logs and rocks, in wood and debris piles, in crevices or moving around on the forest floor. All disturbed items were returned to their original positions.

See appendix 3 for locations of ACO's and hand searching transects.

3.0 Findings

Whareroa North was subject to an intensive and comprehensive lizard survey during ideal weather conditions during November and December 2007. *There was no lizard species or sign of any lizard (gecko or skink) found during this time.*

During the survey at least 6 pigs were seen and they were often heard during night surveys. The forest had extensive pig damage particularly on the flats above the lake and stream scarps, which in places left the forest floor completely devoid of natural cover or debris (see appendix 4 for photos). In addition, two mice were found under ACO's during checks and there is almost certainly a high rat population.

The forest at Whareroa North is mixture of young and low regenerating scrub and tall regenerating scrub, which suggests a history of disturbance and/or clearance. This disturbance coupled with the ongoing habitat destruction from pigs and predation from introduced predators has probably rendered the local population of lizards extinct.

In contrast, during the calibration in Tongariro NP two forest geckos (*Hoplodactylus granulatus*) were discovered during 2hours of searching using the same methods used to survey the Whareroa North block (Table 1). These discoveries occurred on the evening of the 14th November despite the fact that conditions were the least suitable for spotlighting in terms of temperature conditions (appendix 2). This indicates that the time of year selected to undertake the reptile survey was suitable and validates the claim that the Whareroa North lizard population is either very small or locally extinct.

Table 1. Survey effort and findings at Whareroa North, Pt Hauhungaroa Block 6A and calibration site in Tongariro National Park.

Location	Activity	Search hours	Lizards found
Whareroa North	skink and gecko handsearching	50	0
Whareroa North	skink ACO's	15	0
Whareroa North	Gecko spotlighting	45	0
Tongariro NP	Gecko spotlighting	2	2

4.0 Conclusion

No lizards were found in the proposed development site of Pt Hauhungaroa 6A Block during the survey conducted in November and December 2007. These findings show that further development of the site will have no more than a minor impact on any resident population of lizards should a small undetected population exist.

5.0 Personnel

Melinda Habgood BSc, MSc (Environmental and Marine Science)

- conducted lizard surveys in a commercial environment for private developers on the Whangaparaoa Peninsula, New Zealand Royal Navy and Ihumatao Quarries Ltd.
- previously been involved in lizard surveys on offshore islands (Tiritiri Matangi, Motuora and Whale Islands) and Tawharanui Regional Park
- secretary for SRARNZ (Society for Research on Amphibians and Reptiles in New Zealand)
- currently working as a senior ecologist/herpetologist at Te Ngahere, Native Forest Management
- ongoing involvement with ecological assessments (of which lizard surveys are a component) for various clients
- conducted Masters thesis research on the behavioural interactions between copper and moko skinks on Tiritiri Matangi Island
- compiled reptile section of the Motuora Island Translocation Plan

Ben Barr BSc (Wildlife Biology)

- five years experience working with endangered New Zealand wildlife
- conducted lizard surveys on Motuora, Tiritiri Matangi, and Motuihe islands and Tawharanui Regional Park
- involved with skink and gecko reintroductions to Motuora and Tiritriri Matangi Islands
- currently studying endangered chevron skink (for MSc)