

SURVEY AND DISEASE SCREENING OF REPTILES ON MOTUORA ISLAND

A Report Prepared for
MOTUORA RESTORATION SOCIETY

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EXECUTIVE SUMMARY

This report details the findings of two lizard surveys conducted on Motuora Island in the Hauraki Gulf. The initial survey was carried out during February 2005 – May 2005. The aim of the initial survey was to determine what reptilian species resided on Motuora Island.

A follow up survey was carried out in light of the compilation of a translocation plan for the island and as a permit requirement for the translocation of Shore skinks (*Oligosoma smithi*) and Duvaucel's gecko (*Hoplodactylus duvaucelii*) to Motuora Island. This second survey was completed during 5 days of searching in November 2006.

The results of both surveys and analysis of by catch data from Robin Gardner-Gee's invertebrate work indicates a widespread distribution of copper (*Cyclodina aenea*) and moko (*Oligosoma moco*) skinks throughout most habitat types on the island.

The New Zealand Department of Conservation (DoC) requires reasonable evidence for the local absence of a species before that species can be reintroduced from elsewhere to recreate a population. It is still possible that a relict population of another native lizard species is present on the island, however it is with reasonable confidence that the conclusion that moko and copper skinks are the only resident species present on Motuora Island is made.

Disease screening was undertaken of all copper and moko skinks caught to identify diseases that may pose a risk to newly introduced individuals. One skink was tested positive for *Salmonella*. This finding did not threaten the recent translocation of Duvaucel's gecko and shore skinks.

A similar survey and screening programme was undertaken on Tiritiri Matangi Island (October 2006), on which Duvaucel's gecko and shore skinks were also released. The results of that survey are not reported here.

1.0 INTRODUCTION

The lizard fauna of New Zealand has undergone dramatic reductions in abundance and distribution due to anthropogenic impacts such as habitat fragmentation and introduced mammalian predators. As a result, many native lizard species are restricted to isolated locations, with approximately nineteen species currently identified as requiring conservation management intervention.

Offshore islands play an important role in conservation within New Zealand and Motuora Island is no exception. With ecological restoration underway and the reasonably low abundance of birds (natural predators of lizards), Motuora has high potential as a translocation site for some of New Zealand's more endangered species of lizard.

Translocation is a widely accepted conservation management tool, and can be simply defined as the movement of organisms from one area to another. Before a translocation is carried out a number of variables must be considered. In the case of the lizard survey's reported here, it is important to realise what species are present at the site individuals are going to be translocated to. This is not only to prevent translocating a species that may already be present, but also to establish whether there is any chance of competition occurring between resident species on the island and the newly translocated species. A number of different factors can cause competition between two species. One could be that preferred habitat types are very similar, or that population densities of resident species are so high, they will indirectly outcompete new species to the area. It is therefore important to establish what species are occupying different habitat types as a minimum prerequisite to any translocation being carried out. From this kind of information the most appropriate species for translocation can be assessed.

There are a number of skinks and geckos that could be present, or may have previously inhabited Motuora. On Motutapu Island for example, fossil evidence suggests that up to 13 reptilian species were once present. Possibilities for Motuora include common gecko (*Hoplodactylus maculatus*), pacific gecko (*Hoplodactylus pacificus*), shore skink (*Oligosoma smithi*) and ornate skink (*Cyclodina ornata*). If such species were present, it is likely that the significant amount of habitat modification, stock farming and perhaps a temporary invasion of mammalian predators has reduced these species to very small remnant populations or caused local extinction.

2.0 SURVEY OBJECTIVES

A survey of Motuora Island was conducted from December 2004 – August 2005 and again from the 4th November – 8th November 2006 in order to:

1. Determine what native lizards inhabit Motuora Island.
2. Survey for shore skink and Duvaucel's gecko.
3. Determine the diseases present in the reptiles on the island.
4. Identify release sites for native lizards proposed for translocation in the Motuora Island Native Species Restoration Plan.
5. Identify release sites for the shore skink and Duvaucel's gecko translocation scheduled for December 2006.

3.0 METHODS

A number of methods were utilised during both survey efforts including handsearching, artificial cover objects and pitfall trapping.

During the initial 2005 search Robin Gardner-Gee's data was used as starting points for each search. (See Appendix A for a record of Robin's by-catch of copper (*Cyclodina aenea*) and moko (*Oligosoma moco*) skinks during her invertebrate studies).

3.1 Survey - handsearching

All personnel undertaking the survey were experienced in the detection, capture and handling of New Zealand reptiles. Beach debris, coastal vegetation and fallen vegetation (e.g. pine branches) were systematically hand searched for lizards. Crevices in coastal cliffs and rock shelves were searched using a torch by day to detect resting geckos. Night surveying was undertaken in all remnant bush patches (e.g. above Pohutukawa Bay and gullies between Home Bay and Macrocarpa Bay) and along the entire coastline (see Figure 3.1) using head-mounted spotlights to detect active individuals.

Nocturnal species (geckos in particular) can be detected by the reflection of their eyes when searching at night with a torch. Geckos often reflect back an orange colour compared to the white of a spider and pink colour of moths. This enables individuals to be detected from a distance and up trees. This is particularly useful when using spotlights mounted onto binoculars, as was the case for the initial survey work, when this equipment was available.

The location of each reptile captured was noted and a selection of individuals were weighed and measured.

3.2 Pitfall trapping

Pitfall trapping is a long established method that involves burying a bucket (commonly approximately 4L) with the lip flush with the ground. This works on the principle that lizards will passively fall into the bucket and be trapped there until the trap is cleared. To prevent any harm or overheating to captured lizards, the lid is placed over the trap for shade and to prevent aerial predation. Shade and shelter is also provided by a mixture of vegetation, rocks and soil placed at the bottom of the bucket. Small drainage holes are also required, however these should only be small (approx. 4mm diameter) to ensure individuals cannot escape. Pitfall traps can also be baited to increase capture rate. Cat food or pear is often used depending on the diet of the focal species. Cat food was the preferred bait during the initial survey. Pitfall traps were not used during the second survey in November 2006 as they are labour intensive and of limited value when the survey is only for a short period of time.

See Table 3.1 for a summary of each site. In December 2004, two sites were established with a grid of five pitfall traps each. The first site was one of the older planting sites, dominated by dense kanuka (see Figure 3.1). The second site was an area of younger plantings, with a significant amount of grass and herbaceous species still present. Seven pitfall traps were installed within kikuyu at the top of the kiwi track in February 2005 (site 3). Site 4 and 5 were also established in February 2005 within old plantings near 'snake gully' and remnant forest respectively.

Table 3.1: A summary of pitfall traps established for the initial survey conducted from February 2005 – May 2005.

Site no.	Date established	No. of pitfall traps	Habitat type	Total no. of nights pitfall traps were open.
1	December 2004	5	Old planting/ kanuka dominated	10
2	December 2004	5	Young planting	10
3	February 2005	7	Kikuyu grassland	9
4	February 2005	4	Old planting	9
5	February 2005	7	Remnant forest	9

Artificial covers

Artificial covers are a less labour intensive method of survey and unlike pitfall traps where geckos can generally climb out, are more successful for gecko detection. Covers can be made from a variety of substrates however corrugated iron or 'tins' are often used. They work on the principle that when discovered by a lizard they can be observed either basking on top or underneath the cover. Most covers become ineffective at high temperatures therefore all efforts were made to check tins during early morning or late afternoon. During the initial survey ACOs were laid out within various suitable habitats including the road behind the potting shed and the top of gullies of remnant vegetation, plantings towards the southern end of the island, around the pond, around look out points, snake gully and along coastal vegetation (See Figure 3.1).

In contrast only eleven ACOs were set out for the second survey, as they generally require to be installed for three weeks so were of limited use. In November 2006 ACOs were only placed along the northwestern cliffline from Home Bay to the northern tip of the island (See Figure 3.1).

3.3 Disease screening

In the 2006 survey, cloacal swabs were taken from all caught reptiles. When possible, blood smears and faecal samples were also collected from all species. Cloacal swab and faecal samples were kept chilled and couriered to the New Zealand Wildlife Health Center, Palmerston North, to test for presence of *Salmonella*, *Cryptosporidia* and *Giardia*. Blood smears can only be analysed if sufficient funding is available.

4.0 RESULTS

4.1 General

Bad weather often hampered efforts during the initial survey, however finer weather with light winds throughout most survey times in November 2006 offered excellent conditions for lizards to bask on beaches and debris throughout coastal fringes and for reptile activity at night.

On completion of the two surveys, a large proportion of the island was surveyed for native lizards.

The areas covered are detailed below: (See Figure 1 for place names):

Initial Survey – c. 6 weekend visits with 2 people:

- Coastline from 'the hole' round clockwise to Still Bay.
- Remnant gullies between Motuora Wharf and Macrocarpa Bay.
- Selected plantings at the Southern end of the island.
- Vegetation from Home Bay though to Snake Gully extending from the beach up to the pasture.

- Vegetation in the region of Pohutukawa Bay from the shoreline up to pasture where practical.
- Plantings surrounding the lookout/high point of the island.
- The slopes and behind the potting shed.

November 2006 Survey – 4 days and 4 nights with 4 people:

- Entire coastline.
- All cliff vegetation where safely accessible.
- All gullies containing remnant vegetation.
- Entire cliffline (i.e. remnant vegetation at the top of cliffs until the edge of pasture or young plantings) e.g. pa site and Pohutukawa Bay.
- Random transects through planting sites of various ages (e.g. young plantings in the north, above Still Bay and plantings north of the pa site.)

4.2 Survey results

Habitats covered during these surveys included rank grassland, young plantings, older plantings (starting to create shade), remnant forest/shrub habitat, grazed pasture and the coastline.

No new species were recorded. Figure 4.1 displays the locations of all lizards sighted, and/or caught, and Appendix B records details of reptiles caught.

Copper and **moko skinks** were found throughout the island. Moko skinks were less prevalent than copper skinks. Four moko skinks were discovered during the initial survey, while 5 were found in November 2006. Twenty-nine copper skinks were identified during the initial survey, and 46 were found in November 2006.

Moko skinks were found in recently sprayed pasture in the north, at the top of kiwi track, and south of the southern pond. The survey in November 2006 discovered moko skinks at the top of the gully behind the potting shed, towards the shoreline in snake gully, within remnant vegetation on the northern cliff line, and below the main lookout south of the pond (see Figure 4.1).

Copper skinks were widespread throughout the island, with the exceptions being 1999 plantings dominated by kanuka, and young plantings.

Neither **shore skinks** nor **Duvaucel's geckos** were found despite extensive searches of the coast. Suitable habitat and/or release sites were identified in Macrocarpa Bay, Home Bay and Pohutukawa Bay for shore skinks. The most suitable release site for Duvaucel's gecko was identified as the

mosaic of vegetation and excellent rock crevices and refuges around the pa site/ coastline around the vicinity of 'the hole'.

4.3 Disease screening results

Of the 32 lizards that samples were taken from, 2 copper skinks from different sides of the island are recorded as positive for *Salmonella*. One of these individuals was caught in Still Bay, while the other was caught above Home Bay. The samples are re-tested at ESR for confirmation and identification. One copper skink was confirmed to carry *Salmonella* subspecies IV 40:g,t:.

5.0 SUMMARY AND RECOMMENDATIONS

Copper and moko skinks were the only lizard species found on Motuora Island despite two separate surveys of the best habitat by experienced herpetologists on the island during 2005 and 2006. Shore skink and Duvaucel's gecko were not found on Motuora Island.

Lizards caught on the island during the second survey were sampled for disease to create a profile of disease prior to the reintroduction of shore skink and Duvaucel's gecko in December 2006.

Recommendations from this survey are:

1. That the reintroduction of shore skinks and Duvaucel's gecko proceed as planned.
2. That this translocation is monitored into the future.
3. That further revegetation efforts consider the habitat requirements of the resident and translocated lizards on the island.
4. That a complete survey of the island is conducted in 5 years time to help assess the migration of lizards into newly planted areas and the possible impacts of translocations on resident lizards.

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