REPTILES OF MOTUOPAO ISLAND, NORTHLAND, NEW ZEALAND

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SUMMARY

Five species of lizards were recorded from Motuopao Island and adjacent stack during 6 visits in 1988-92. Four skinks (*Leiolopisma smithi*, *L. moco*, *L. suteri* and *Cyclodina aenea*) and one gecko (*Hoplodactylus pacificus*) were identified and a further species of gecko (*H. duvaucelii*) may have occurred on the island.

INTRODUCTION

Motuopao Island is approximately 30 ha in size and lies 350 metres northwest of Cape Maria van Diemen, Northland at lat. 34°28’S, long. 172°38’E (Fig. 1). A 1.7 ha stack lies just off the northern end of Motuopao Island (Fig. 2). The main island consists of two hills composed of highly faulted, altered basaltic pillow lavas of late Mesozoic-early Cenozoic age (F Brook pers. comm.) one of which rises to 110 m at its highest point. Between the two hills there is a low saddle of Holocene dune sands and slopewash deposits overlying the basalt lava (F Brook pers. comm.).

The dominant vegetation types are mainly buffalo grass (*Stenotaphrum secundatum*) and other grasses (50%), and flax (*Phormium tenax*) (15%) with pockets of taupata (*Coprosma repens*), hangehange (*Geniostoma rupestre*) and kawakawa (*Macropiper excelsum*). The island was inhabited by Europeans from about 1879 to 1941 when the lighthouse on the highest hill was manned. The vegetation was probably grazed during this period (Forester, 1993). The stack consists of mainly bare rock with three small areas of soil supporting stunted taupata and iceplant (*Disphyma australe*).

Six visits were made to the island; 26-28 September 1988, 6-11 and 18-20 October 1989, 1-4 February 1990, 14-17 November 1990 and 21-23 January 1992. During the 1989 and February 1990 trips, short visits of less than an hour’s duration were also made to the rock stack.

In September 1988 the presence of kiore (*Rattus exulans*) was confirmed when 7 were trapped in 38 trap nights (Sherley and Parrish, 1989). It appeared that kiore had been present on the island for a long time and had reduced the flax snail (*Placostylus ambagiosus ambagiosus*) subspecies to extremely low numbers and reduced lizard numbers and diversity to very low levels. Following
this first visit recommendations were made to eradicate the kiore (Parrish, 1988 unpublished report, Department of Conservation, Whangarei; McKenzie, 1989 unpublished report, Department of Conservation, Whangarei; Sherley and Parrish, 1989). The adjacent stack was found to be free of kiore when visited on 6 October 1989.

**METHODS**

Our searches in 1988-90 involved overturning driftwood and rocks around the shoreline, rocks, sheets of metal and timber over the rest of the island and stack. We also searched the deep piles of timber at three former house sites and around the partially collapsed lighthouse (Fig. 1). During night time searches for
seabirds, shrubs and other vegetation were spotlighted for nocturnal geckos and skinks.

Ten 1 litre plastic plant pot pitfall traps were set for two nights on the first visit. These were dug into the sandy areas until the lip was flush with the ground. The traps were baited with tinned Bartlett pear pieces and partially covered with timber and stones to prevent kiore gaining access.

Day time counts of lizards seen per hour were made in February and November 1990, and January 1992 in warm sunny conditions while carrying out checks of rat bait stations in the central part of the island. In January 1992 40 rat traps baited with bacon rind and set for kiore were operated over two nights.

RESULTS

Five species of lizard were recorded from Motuopao Island and stack. Three skinks (*Leiolopisma smithi*, *Leiolopisma moco* and *Cyclodina aenea*) were found on Motuopao while two (*Leiolopisma smithi* and *Leiolopisma suteri*) and one
gecko (*Hoplodactylus pacificus*) were found on the stack. No lizards were caught in the 10 pitfall traps.

**Species Accounts**

*Leiolopisma smithi* (Gray, 1845): This species was common on the rock stack with about 5 being seen on each visit. On the main island during the 1988-90 visits, a few only were observed in the grassland, sand dunes and around the house sites. They were more common beneath the deep piles of timber in and around the lighthouse.

Numbers of lizards seen per hour of daylight search increased from 0.1 and 0.2 in February and November 1990 respectively to 5.4 in January 1992. Those in January 1992 were mostly juveniles and the few captured were all *L. smithi*. In January 1992 three *L. smithi* were caught in rat traps (80 trap nights).

*Leiolopisma moco* (Dumeril and Bibron, 1839): Two were seen on the main island in buffalo grass on the September 1988 visit. One was adult size and the other a juvenile. Another *L. moco* was seen in January 1992 (P Miller pers. comm.).

*Leiolopisma suteri* (Boulenger, 1906): This species was found only on the rodent-free rock stack. Up to four were seen on each of the three brief visits. All of them were found beneath loose rocks overlying solid rock above the splash zone.

*Cyclodina aenea* (Girard, 1857): One small adult was found beneath two small rocks on the benched tramway close to the beach during 26-28 September 1988 (P Anderson pers. comm.).

*Hoplodactylus pacificus* (Gray, 1842): Like *L. suteri*, this species appeared to be restricted to the rodent-free rock stack. Ten animals in total were observed on the three visits. Nine were found beneath loose rocks, or amongst cracks, in unstable weathering bare rock. One was found under a small rock just inside an unoccupied diving petrel (*Pelacanoides urinatrix*) burrow.

**DISCUSSION**

At low tide the distance between Motuopao and the rock stack is about 5 m, while at high tide this extends to approximately 20 m. For the majority of the year the surf surge through the gap is seldom less than 1 m and there are strong
tidal rips around the island. Because of these conditions, it appears that kiore never colonised the rock stack.

There was a qualitative difference between the lizard species found on Motuopao, which had kiore present, and the rock stack, which was rodent free. No fully nocturnal species were present on Motuopao, whereas two of the three species on the stack are active at night. This is consistent with the model provided by Towns (1991) who proposed that on small islands invaded by kiore, lizard biomass would become dominated by diurnal species.

The post-eradication increase in \( L. \text{smithi} \) suggests that on Motuopao Island at least, diurnal skinks were also preyed on by kiore. This was shown to be true also on Korapuki Island (Towns, 1991).

The first signs of the benefits of the kiore eradication appeared in February 1990 when several shrub species bore an abundance of fruit (pers. obs.) and especially apparent by January 1992 when silvereyes were recorded in large numbers and breeding for the first time (Pierce and Parrish, 1993). No sign of kiore except old scats was found during visits in November 1990 and January 1992 and the eradication appears successful. The increase in skinks recorded since kiore were eradicated suggests that kiore were responsible for suppressing the number of skinks, particularly \( L. \text{smithi} \) on Motuopao and that they are now recovering following the eradication of kiore.

It is surprising that no \( H. \text{pacificus} \) were found on Motuopao although none were found on Korapuki Island in the presence of kiore (Towns, 1991). Because 50% of Motuopao is in buffalo grass it is likely that kiore densities were particularly high, and therefore lizards (geckos) and invertebrates might have been hit very hard (D Towns, pers. comm.).

Had the rock stack contained a wider range of habitats, it may have been an effective contemporaneous control. As it is, the stack provides a stark contrast in terms of lizard faunas.

The removal of kiore from Motuopao means that there is now the opportunity to reintroduce lizard species which probably occurred there before the introduction of kiore. The obvious ones are \textit{Leiolopisma suteri} and \textit{Hoplodactylus pacificus} which occur on the rock stack, although these two species may well recolonise by themselves (D Towns pers. comm.). In time, species such as \textit{Cyclodina alani} which occurs on Motupia Island 22 km southeast of Motuopao (Anderson, 1986 unpublished report, Department of Conservation, Whangarei) may be introduced once the habitat and food supply has recovered.

One further species of gecko (\textit{Hoplodactylus duvauceli}) may have occurred on the island as three specimens lodged in the Otago Museum (OM 98.93) are labelled as from Cape Maria van Diemen and it is possible that they came from
Motuopao Island (A Whitaker pers. comm. in McCallum, 1981). This fact was not known to us until after the visits so specific searches for this species were not made.

The presence of *H. duvaucelii* on Motuopao remains unconfirmed. Of all the larger New Zealand nocturnal lizards *H. duvaucelii* is one of the species least affected by kiore (Towns, 1991), and although not detected during these surveys, there is a slight possibility they still survive on Motuopao or the rock stack.

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REFERENCES


