

REPTILES OF TAWHITI RAHI ISLAND, POOR KNIGHTS ISLANDS, NEW ZEALAND

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SUMMARY

Seven reptiles were recorded from Tawhiti Rahi Island, Poor Knights Group; two geckoes (*Hoplodactylus duvauceli*, *H. pacificus*); four skinks (*Cyclodina aenea*, *C. oliveri*, *Leiolopisma moco*, *L. suteri*) and the tuatara (*Sphenodon punctatus*).

INTRODUCTION

Whitaker (1968, 1978) described the lizard fauna of the Poor Knights. His research was centred on Aorangi Island and the data was collected during the summer. This study concerns the reptile fauna of Tawhiti Rahi Island during winter (6-12 September 1980), when activity was at a generally low level and provides information on habitat preferences and ecological relationships. Field studies included day and night searches in accessible habitats and examination of captured individuals. Taxonomy follows Hardy (1977) for the Scincidae and Robb (1980) for the Gekkonidae.

SPECIES ACCOUNTS

Sphenodon punctatus Gray 1842.

Few tuataras were observed, presumably because the low temperatures restricted their activity. Those seen were near burrow entrances during daytime. Two tuatara skeletons were found together with numerous remains of seabirds and giant wetas (*Deinacrida fallai*) in a harriers' roost above Shag Bay.

Hoplodactylus duvauceli (Dumeril and Bibron 1836).

Only one Duvacel's gecko was found, despite intensive searching. Whitaker (1968) failed to find any on Tawhiti Rahi Island although it has been identified since (Whitaker 1978).

H. pacificus (Gray 1842).

High population densities occurred in most habitats. Individual geckoes within a colony showed a wide range of

body colourations. These geckoes spent considerable periods on tree trunks and rocks.

Cyclodina aenea Girard 1857.

Several skins of this species were located in areas with dense ground cover, but it was rare under the forest canopy where the forest floor is open due to seabird activity.

C. oliveri (McCann 1955).

These skins were abundant in most vegetated areas. They emerged soon after dark (Fig. 1), even during stormy weather. Daytime retreats, such as rotten logs and boulders, were often shared with *H. pacificus*.

Leiopisma moco (Dumeril and Bibron 1839).

L. moco was widespread in open habitats, including areas which had been burnt and those above the coastal splash zone. It is possible that this diurnal species, which is restricted to the less-vegetated areas, will become more confined as the forest regenerates to cover the sites of Maori occupation and the more recently burnt slopes above Shag Bay.

L. suteri (Boulenger 1906).

A population was located on a boulder beach in "Slip Bay". This is the first record from Tawhiti Rahi Island.

DISCUSSION

The reptile fauna of the Poor Knights Islands may be considered one of the most dense and diverse in New Zealand, despite large-scale disturbance during the Maori occupation. This is attributed to the absence of introduced predators, especially rats.

The habitats, activity times and prey of several species overlap. Interspecific competition may be avoided by niche exclusion using temporal and spatial distribution, and species size differences. In the forest and coastal vegetation, *H. pacificus* would often be found hunting on rock faces and in trees, while *C. oliveri* would forage in the leaf litter. Although reptile activity is generally lower during winter, Table 1 indicates the habitat in which a species will most likely be successful. Results from summer investigations could show differences related to the life cycles of prey species or more intensive competition as reptile activity increases.

Despite a long period of isolation from adjoining land masses, there are no currently recognised endemic reptile species from the Poor Knights Islands. Size differences are noted throughout the range of

Table 1. Habitat preference of lizards on Tawhiti Rahi Island, September 1980.

Key: ● - abundant, > 10 lizards found per hour
 ● - frequent, 2-10 lizards found per hour
 ● - rare, < 2 lizards found per hour

HABITAT	TOTAL SEARCH TIME (minutes)	<i>H. duvauceli</i>	<i>H. pacificus</i>	<i>C. aenea</i>	<i>C. oliveri</i>	<i>L. moco</i>	<i>L. suteri</i>
SHORE	30		●				●
CLIFF	120		●				
OPEN HERBACEOUS	85		●	●	●	●	
COASTAL VEGETATION	290	●	●		●		
FOREST	370		●	●	●		

C. oliveri, with Poor Knights' specimens as the largest (Hardy 1977). Towns (1975) suggests a similar trend in *L. suteri* was due to temperature variations, availability of food, and population dynamics in marginal habitats.

Since Whitaker (1968), changes to the lizard taxonomy include the division of *Sphenomorphus pseudornatus* McCann 1955 to *C. aenea* and *C. ornata* (Gray), and *H. pacificus* (Gray, sensu McCann) to *H. maculatus* (Boulenger) and *H. pacificus* (Gray). Neither *H. maculatus* or *C. ornata* was located during September 1980, although the latter occurs on Aorangi Island and all are known to occur sympatrically.

Table 2. Size of lizards on Tawhiti Rahi Island.

Species	sex	N	$\bar{X} \pm \text{S.D. (mm)}$	range (mm)
<i>H. duvauceli</i>	female	1	136	-
<i>H. pacificus</i>	male	52	77.6 \pm 10.1	88 - 40
	female	48	72.9 \pm 10.3	88 - 40
<i>C. aenea</i>	male	2	49 \pm 1.4	50 - 48
	female	1	54	-
<i>C. oliveri</i>	male	20	93.0 \pm 12.1	106 - 62
	female	24	93.8 \pm 16.7	113 - 44
<i>L. moco</i>	female	1	65	-
<i>L. suteri</i>	male	1	110	-
	female	3	63.0 \pm 2.6	65 - 60
	juvenile	6	47.7 \pm 11.5	63 - 40

The presence of *L. smithi* on Tawhiti Rahi Island (Whitaker 1968) is based on a single specimen. Its rarity would explain its absence during this survey.

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