

A preliminary analysis of habitat use of *Oligosoma nigriplantare nigriplantare* on Rangatira Island

A.B. Freeman

Ecology and Entomology Group,
PO Box 84, Lincoln University
Canterbury, New Zealand

Prepared for: Canterbury Conservancy, Department of Conservation



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**A PRELIMINARY ANALYSIS OF HABITAT USE
OF *OLIGOSOMA NIGRIPLANTARE NIGRIPLANTARE*
ON RANGATIRA ISLAND**

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1.0 Summary

1.1 Project

A study of the habitat use of *O. n. nigriplantare* on Rangatira Island was undertaken over a six day period. Transects were used to sample the lizard fauna in a variety of habitats on the island between December 11th 1996 and December 16th 1996.

1.2 Objective

- To identify habitat use in *O. n. nigriplantare* on Rangatira Island.

1.3 Methods

- Ten 15 metre transects were placed in a variety of habitats. These habitats were broadly classified into four categories on the basis of vegetation structure and type.
- Each transect was walked six times for exactly three minutes; all lizards seen and heard over this period were recorded for each transect.
- General observations were also made when lizards were encountered in the field other than during counts.
- Where possible lizards observed during the transects were identified as either green or bronze on the basis of dorsal colouration.

1.4 Results

- The majority of lizards were counted in the grassland habitats with lesser numbers being encountered in transition habitats. The smallest total was for the transects which covered coastal habitat. No lizards were recorded in transects which traversed forest.
- Of the 44 lizards which could be classified 33 were bronze and 11 were green.

1.5 Conclusion

The distribution of lizards on Rangatira is almost entirely confined to grassland and low shrubland habitats characterised by dense low vegetation. Only two lizards were observed outside of these habitat types in forest. As a result of this distribution it is likely that skink density will decline on Rangatira as grassland and scrub sites are replaced by regenerating forest. Ultimately skinks will probably become confined to the coastal strip and permanent clearings on the island. There was no evidence that there was a difference in habitat use between the two colour forms, which does not support the suggestion that they are different species.

2.0 Introduction

The Chatham Islands are an area of high conservation value particularly in relation to endemic birds and insects (Department of Conservation, 1996). Compared to these groups the reptile fauna is relatively depauperate being comprised of only one endemic sub species (*Oligosoma nigriplantare nigriplantare*). This sub species is currently confined to offshore islands in the Chathams group which lack introduced mammalian predators with possibly a small relic population also surviving on Pitt Island (T. Whitaker pers. com.).

3.0 Study Area

Rangatira Island is the third largest island in the Chatham Island group after main Chatham and Pitt Islands (West and Nilsson, 1994). At 218ha in size it is one of the few out lying islands in the Chathams group to support forest cover of any significance. Originally this forest cover would have been wind-shorn forest and shrublands. In the last 120 years this cover has been extensively modified by farming and it is only in the last few years that vegetation on Rangatira has returned to something like its original character (Department of Conservation, 1996). Today Rangatira is a mosaic of vegetation types from grassland to coastal forest.

In the absence of introduced mammals Rangatira has a diverse and unique fauna of birds and insects that is comparable to that of other major temperate island sanctuaries in New Zealand (Department of Conservation, 1996). For example, the breeding seabird population alone has been estimated at 1.3 million pairs (West and Nilsson, 1994).

4.0 Methods

Ten transects of 15m in length were placed in a variety of habitats on Rangatira Island. These habitats were broadly classified into four categories (Coastal, Grassland, Bush, Transition) (Figure 1).

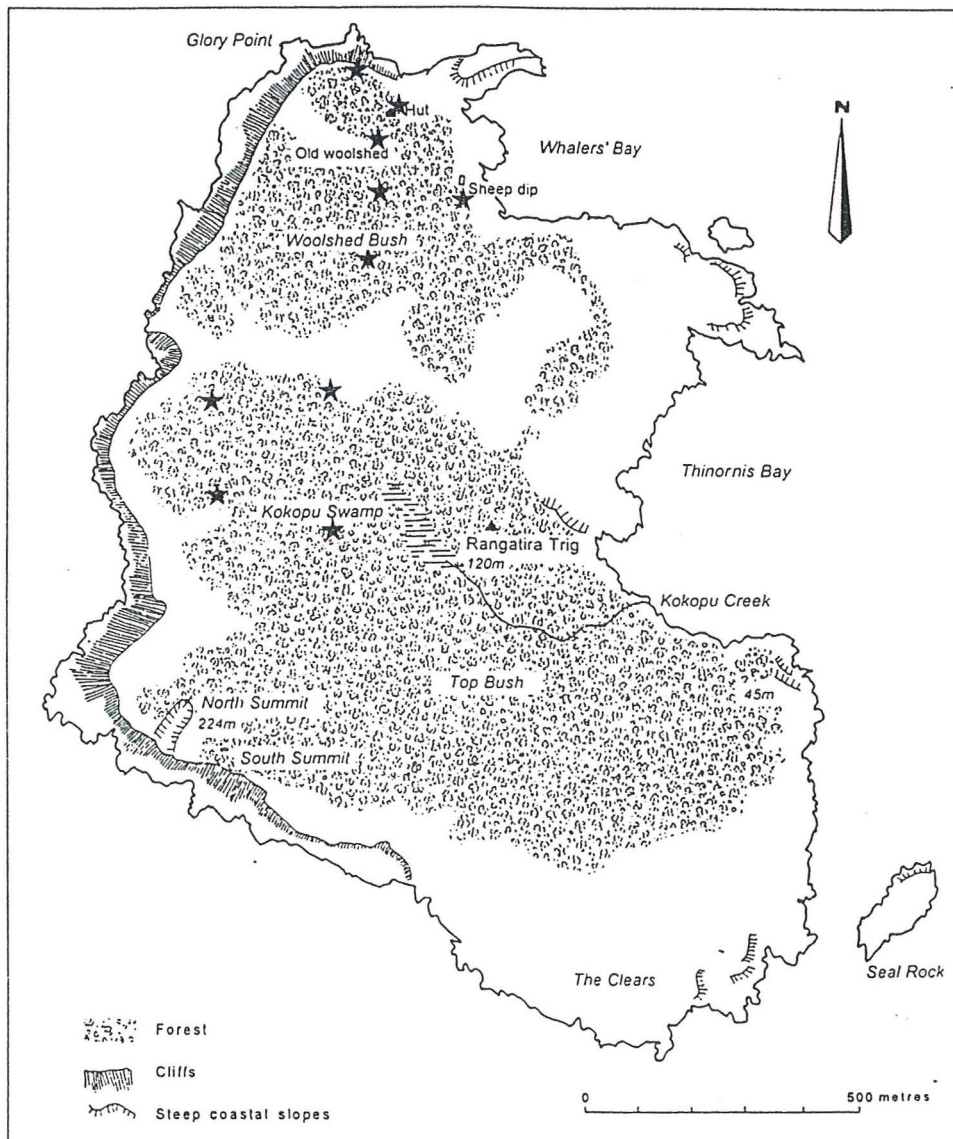


Figure 1: Locality of transects on Rangatira Island (transect sites= ★).

- **Coastal:** two transects were placed on the coastal strip a few metres above the high tide mark. These transects were characterised by a short dense sward of grass less than 0.5m in height and rocky open areas.
- **Grassland:** two transects bisected grassland habitat present in clearings and round the bush edge. These transects were dominated by rank introduced grasses, bracken *Pteridium esculentum*, water fern *Histiopteris incisa* and *Muhlenbeckia australis*. One of the transects also had an extensive area of blackberry. This vegetation formed a dense sward and was generally less than 1m in height.
- **Bush:** four transects were established in bush; two in the modified forest of Woolshed Bush, two in the unmodified Top Bush. Prominent species in this habitat include; *Melicytus chathamicus*, *Plagianthus betulinus* var. *chathamicus*, *Myrsine chathamica*, *Macropiper excelsum*, *Coprosma chathamica* and *Olearia traversii*. These habitats were characterised by a tall canopy > 2m in height with little understorey regeneration. The forest floor was largely bare, friable soil as a result of the very high density of seabird burrows.
- **Transition:** two transects started in forest and finished in grassland taking in the transition zone between these two habitats. This transition zone of approximately 2-3 metres was characterised by a dense understorey.

All but two of the transects were along tracks. This prevented damage to seabird burrows which cover most of the island.

Transects were walked in the afternoon once per day for a total of six days. Each one took exactly three minutes during which time all lizards observed and heard were recorded. The lizards observed were divided into two categories (bronze and green) on the basis of their dorsal colouration (Fig. 2) as it has been suggested that differences in colouration and patterning in Chatham Island skinks may indicate that there is more than one species on Rangatira Island (M. Bell pers. comm.). Much of the time lizards were observed but could not be classified according to the above criteria; these animals were recorded as “heard”. No lizard was knowingly counted twice.



Figure 2: Examples of the two morphs of *O. n. nigriplantare* identified on Rangatira Island. Copper morph (top), green morph (bottom).

5.0 Results

A total of 150 observations of skinks were made (84=grassland, 47=transition 19=coastal). The majority of lizards were counted in grassland habitats (mean=14) followed by transition habitats (mean=7.8) and coastal habitats (mean=3.2) (Figure 4). No skinks were counted in forest habitats (but see discussion) (Figure 3).

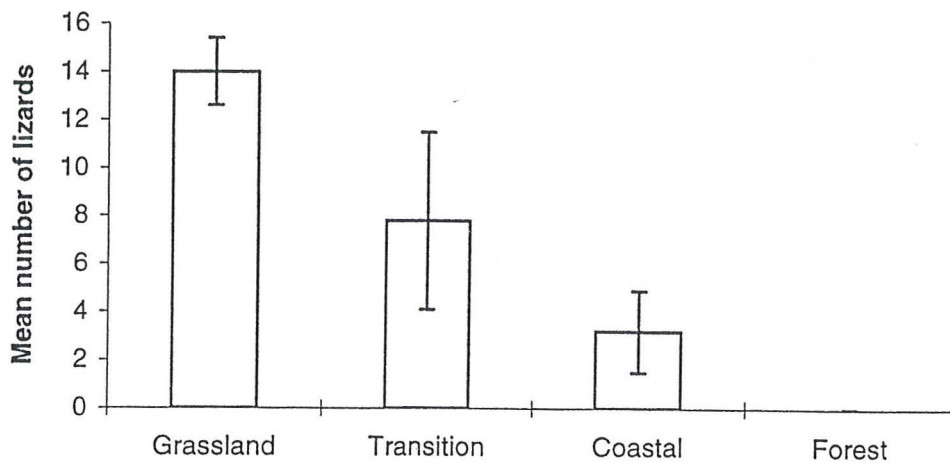


Figure 3: Mean number of *O. n. nigriplantare* recorded in each habitat (n=6).

Forty four of the lizards seen were identified as either a bronze (n=33) or green (n=11) form (Fig. 4).

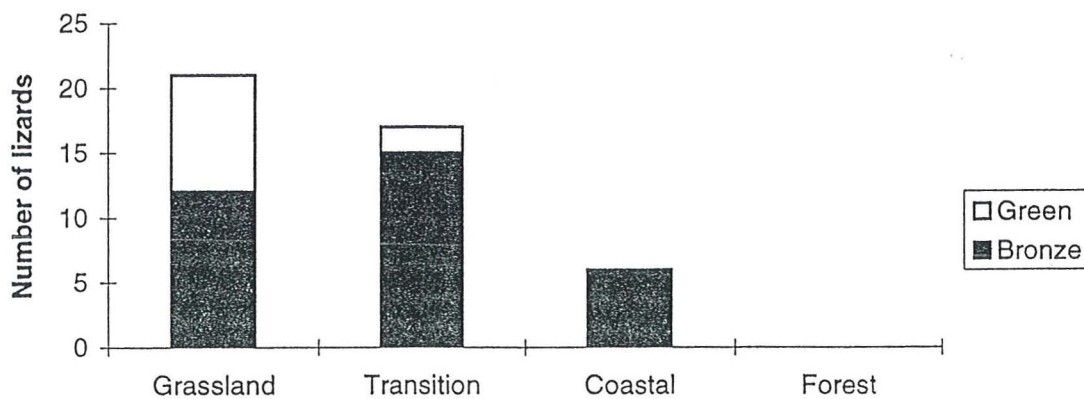


Figure 4: Ratio of green to bronze forms of *O. n. nigriplantare* in the respective habitats (n=6).

In the transects through the transition habitats all the skinks were observed in the grassland half of the transect. This meant that lizards recorded in this habitat were recorded in half the distance of the other two habitats where lizards were present.

6.0 Discussion

The distribution of *O. n. nigriplantare* on Rangatira Island is largely in grassland and shrub habitats. These habitats are characterised by dense low vegetation. Only two lizards were observed outside of these habitats in the forest; both were sited near clearings where fallen vegetation had created light gaps. Both these animals used storm petrel burrows as retreats when disturbed.

The current policy of the Department of Conservation is to allow the natural regeneration of vegetation on the island to continue (E. Kennnedy pers. com.). This has already resulted in many areas which were once grassland now being forested (for example around the woolshed). As this process of succession takes place dense low vegetation will be replaced by tall forest with an open understorey, a process which has already occurred in Woolshed Bush. This will almost certainly lead to a decline in lizard numbers on Rangatira Island. Ultimately the skinks will probably become confined to the coastal strip and permanent clearings, with the odd individual intruding into the forest where light corridors create suitable basking sites. This distribution may more closely reflect the prehuman distribution of this species in the Chathams.

There is no evidence that there is a difference in habitat use between the two “forms” supporting the view that these two forms are not different species. The presence of animals that appeared to be intermediate between the two forms in colouring and patterning (pers. obs.) further supports this view. During the current fieldtrip four lizards (2 copper form and 2 green form) were collected for analysis by researchers at Victoria University in Wellington. This research should confirm the taxonomic status of these forms in the near future.

7.0 Acknowledgements

I would like to thank Amanda Freeman for her comments on the draft.

8.0 References Cited

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