Survey of the lizard fauna of Travis Wetland, Christchurch.

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Prepared for: Christchurch City Council

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1.0 Summary

1.1 Project
This survey was undertaken to determine which lizard species are present at Travis Wetland, Christchurch. As well as a general search, pitfall traps were used to sample the lizard fauna at two sites in the wetland from February 11th to March 2nd, 1996.

1.2 Objective
• To determine which lizard species are present at Travis Wetland, Christchurch.

1.3 Methods
• Pitfall traps were placed at two sites, with 20 traps at each site. Traps were placed in a variety of habitats. The traps were baited with a tinned-pear lure and traps were set for 21 days. They were checked seven times over this period.

• A systematic search was made of likely retreats at the two sites.

• General observations of the lizard fauna were recorded when lizards were encountered in the field.

1.4 Results
• A total of 16 lizards were captured in pitfall traps. Approximately 27 other lizards were also observed.

• All lizards captured were skinks of the genus Oligosoma. These animals showed a degree of variation in colouration and patterning. Preliminary analysis indicated that the species present is most likely to be O. nigriplantare polychroma.

1.5 Conclusion
The present lizard fauna of Travis Wetland is relatively depauperate being made up of only one species of skink. With restoration and judicious management Travis Wetland has the potential to support populations of other lizard species which are found locally, including the skink O. lineoocellatum and the geckos; Hoplodactylus maculatus and Naultinus gemmeus.
2.0 Introduction

The extant New Zealand lizard fauna is considered to consist of at least 59 species (Daugherty et al., 1994) all of which are endemic to New Zealand at the generic level. This species diversity is comparable to that of extant terrestrial birds (53 species) (Atkinson and Millener, 1991; Daugherty et al., 1993).

In the greater Christchurch City area (including the Port Hills) there are, or have been in recent times, at least four (possibly five) species of lizard; two species of gecko, Hoplodactylus maculatus (common gecko) and Naultinus gemmeus (jewelled gecko), and two species of skink, Oligosoma lineoocellatum (spotted skink) and Oligosoma spp. ("common" species)\(^1\) (McCann, 1955; Canterbury Museum Collection records; pers. obs.). However, the only published record of lizards within the Travis Wetland area is reference to "a skink" in a paper by Meurk (1988). There are more recent accounts of lizards being observed or captured in insect pitfall traps (R. Mcfarlane pers. comm.; C. Meurk pers. comm.). The Canterbury Museum has no records from this area although there are common and jewelled geckos collected by McCann from nearby New Brighton in the museums' collection (McCann, 1955).

Recent moves to develop Travis Wetland for urban subdivision have stimulated interest in documenting what species are at the site and its potential for restoration. The aim of this survey was to identify what lizards were present at Travis Wetland and to examine the potential of this area as a site for reptile conservation.

3.0 Study Area

Travis Wetland is an area of grassland, willow and shrubland north east of Christchurch City (Figure 1). Despite being largely degraded it is still considered to be an important example of pre-European Christchurch rivalling in importance the more well known Riccarton Bush, Avon Heathcote Estuary and Brooklands Lagoon (Meurk, 1988).

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\(^1\) In 1990 the "common skink" O. n. maccanni was divided into four new species and one new subspecies on the basis of allozyme and morphological variation (Patterson and Daugherty, 1990). However, intra-specific colour polymorphism shown by some species within and between populations makes the identification of these new species in the field very difficult. In Canterbury there are at least two species present (O. maccanni; O. nigriplantare polychroma) both of which may also be present in the Christchurch area.
Figure 1: The location of Travis Wetland in Christchurch City (Source Christchurch City Council, 1995).
4.0 Methods

Initially, forty pitfall traps baited with a pear lure were used to sample two sites ("Long Island" and "Manuka") within the wetland (Figure 2). A further ten traps were added to the Manuka site when it was apparent that lizards were not being sampled with the traps which had already been placed at this site. The pitfall traps were made from 30cm deep "Raro" and "Milo" tins.

The traps were placed in a variety of habitats. These habitats were based on the vegetation types identified by Meurk (1988):

Willow
Dominated by grey willow *Salix cinerea*. Traps were placed where they were entirely enclosed by willows.

Grassland
Sites dominated by a mixed grassland of native and introduced species. Traps were placed in two grassland habitats; a grass-rush wet pasture (Manuka site) and rush-sedgeland (Long Island site).

Willow\grassland edge
Sites where the edge of the willow bordered the mixed grassland. Traps were placed so that they crossed this transition zone between the woodland and grassland.

Tinned pear has been found to be an effective means of attracting lizards particularly geckos to pitfall traps (Whitaker, 1967). A lid was placed above each trap with a 1cm gap between the top of the trap and the lid, allowing lizards access to the bait while still providing captured lizards with protection from predation and the weather. Most of the traps were not set until at least a week after they were placed in the ground. The first forty traps were baited for a period of 21 days. The ten extra traps at the Manuka site were set for 7 days. When not in use sticks were placed in the traps to allow captured lizards to escape.
Figure 2: Approximate location of the trap grids in Travis Wetland "Long Island" (●) "Manuka" Site (○) (Source Christchurch City Council, 1995).
In conjunction with the trapping, possible refugia were searched for lizards or for sign of lizards (droppings, sloughed skin). All observations of animals in the field were also recorded.

5.0 Results
Sixteen lizards were captured in pitfall traps (Table 1). One skink was captured twice. At least 27 lizards were also observed in the field. Four of the skinks captured at the Manuka site would have been born in the summer of 1995 indicating that, at this site at least, reproduction is taking place.

<table>
<thead>
<tr>
<th></th>
<th>Long Island</th>
<th>Manuka</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Female</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Imm</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>4</td>
<td>12</td>
</tr>
</tbody>
</table>

Table 1: The number of skinks captured in pitfall traps over the period February 11th to the 2nd March 1996.

All lizards captured and observed were skinks of the genus *Oligosoma*. Unfortunately, it is not possible to positively identity these skinks to specific level without recourse to molecular techniques. However, a preliminary analysis of patterning, colouration and scale counts indicate that the skink is probably *O. n. polychroma*. Within the Travis Wetland population there is some morphological variation in dorsal colouration and patterning, ventral colouration and patterning appears to be more consistent between individual animals (Figure 3a 3b).

All lizards seen and captured in pitfall traps were in the grassland areas. No skinks were observed in the willow (Table 2).

<table>
<thead>
<tr>
<th></th>
<th>Grassland</th>
<th>Willow/ grassland</th>
<th>Willow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pitfall Captures</td>
<td>16</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Observed</td>
<td>&gt;22</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 2: Habitats in which lizards were observed and captured.
Figure 3a: Dorsal patterning and colouration of skinks captured at Travis Wetland. Lizards varied from animals with prominent mid dorsal and dorsolateral stripes with little or no speckling (1) to individuals with a faint or absent mid dorsal stripe, speckled dorsal surface and a faint or absent dorsolateral stripe (4), or combinations thereof (2 and 3) (Photo A. B. Freeman).
Figure 3b: Ventral colouration of skinks captured at Travis Wetland. The pale cream throat and dark yellow belly was common to all the skinks captured. The speckling obvious on the throat of the top lizard was less consistent between animals, some individuals had no speckling on the ventral surface (Photo A. B. Freeman).
This is not unexpected as *O. n. polychroma* tends to inhabit open areas where low vegetation or debris cover is present (Patterson and Daugherty, 1992; Freeman, 1993; A. B. Freeman unpub. data). Density estimates could not be made because of the small number of animals captured. However, from the numbers captured, and observations in the field, it would appear that lizards are far more common at the Manuka site than at the Long Island site.

No other species of lizard were seen or captured.

5.0 Discussion

5.1 Travis Today

Travis Wetland has a relatively depauperate lizard fauna of one skink species (presumably *O. n. polychroma*). When considered in isolation the present conservation value of this population must be considered low as nationally this species is common and widespread (Patterson and Daugherty, 1992). Locally this species is probably the most common lizard in the Christchurch area (A.B. Freeman unpub. data.). However, when considered in the context of an indigenous lizard in an urban environment the value of this population is considerably higher. There are few endemic vertebrates left in the Christchurch City environment. This population is a remnant of what would have once been an extensive indigenous vertebrate fauna. For example, in the recent past there may have been up to three other species present in this area (McCann, 1955; Canterbury Museum Collection Records; Freeman, 1993; A.B. Freeman unpub. data). There was no indication from pitfall trapping or field observation that any of these species are now present at Travis Wetland.

Wild areas in an urban setting act as refugia for wildlife, there is some evidence that lizards in Christchurch city survive because of the presence of wild areas such as Travis Wetland. For example, the distribution of skinks within the Christchurch City area appears to overlay the distribution of “wild” areas in the city (A.B. Freeman unpub. data).

5.2 Future Possibilities

While Travis Wetland is currently of limited conservation value for lizards, with restoration this area has considerable potential as a site where lizard species which have been lost from Christchurch City could be reintroduced. Species which could potentially be reintroduced
include the common gecko, jewelled gecko and spotted skink. All these lizards are, or have been, present in the Christchurch City environs in the recent past (McCann, 1955; Canterbury Museum Collection Records; Freeman, 1993; A.B. Freeman unpub. data).

Any reintroduction could only happen after appropriate restoration of suitable habitats has occurred. For example, if the sand dune areas near Mairehau Road become covered in coastal bush species (Meurk, 1995), particularly low growing small leaved species, this may be a suitable site for reintroducing spotted skinks and common geckos. Both these species are found in scrub covered duneland areas on Kaitorete Spit (Freeman, 1994). Similarly, areas vegetated with manuka, *Coprosma spp* and other native shrubland species may become suitable habitat for jewelled geckos. This arboreal species inhabits scrubland remnants on the Port Hills and Banks Peninsula (Wilson, 1992; Bauer, 1990; A.B. Freeman unpub. data).

Over the long term, ongoing management will be required to maintain reintroduced lizard populations. This may include predator control, maintaining clearings and open areas for basking, providing suitable predator proof retreats and preventing the general public from collecting lizards. As grassland areas are replaced by shrubland and forest vegetation it is almost certain that the present species will decline in numbers and distribution as the present habitat is lost. However, this decline would be more than compensated for by the reintroduction of a suite of lizard species to recreate, to some degree, the fauna that was once present in the Christchurch area.

6.0 Acknowledgements

We would like to particularly thank Colin Meurk (Manaaki Whenua, Landcare Research), Rod Mcfarlane (Canterbury University) and Kelvin McMillan (Christchurch City Council) for advice and assistance. Our thanks also goes to Geoff Tunnicliffe who gave us access to the Canterbury Museum reptile collection.
References Cited


