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Monitoring the impacts of invasive mammals on arboreal geckos’ habitat use, cell foam retreat use, and the effectiveness of different monitoring techniques.

A thesis submitted in partial fulfilment of the requirements for the degree of

Master of Science in Conservation Biology

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Joshua Jeffrey Thoresen

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DOC: AK 20666-FAU; General handling Permit (includes Iwi consultation) (under Dianne Brunton)

Ethics approval: Standard research handling of geckos, i.e. measuring demographics only, which does not require animal ethics approval.
“Four things on earth are small, yet they are exceedingly wise... A lizard grasps skillfully with its hands, and it is found in kings’ palaces”

Proverbs 30 vs. 24...28

For Adonai
ABSTRACT

Gecko ecology was studied in areas of pest control and no control in four areas around Auckland. The density index of geckos was highest at Waiheke (treatment, i.e. pest control) with an average of 137.5 geckos ha⁻¹ compared with Waiheke (control, i.e. no pest control): 56 g/ha⁻¹, Tawharanui: 20.3 g/ha⁻¹ and Shakespear: 9.5 g/ha⁻¹. The Waiheke sites were then studied further; gecko condition was measured and males were found to have lower body conditions at the non pest controlled sites, rats were also found to be more abundant at these sites and large invertebrates less abundant. Habitat was also analysed and geckos were found to be captured under cell foam retreats (CFRs) in areas with lower canopies, higher forest density, a higher proportion of undergrowth cover and smaller canopy areas and tree diameters. These parameters were then used to compare the detectability of geckos with their densities and areas with the lowest densities were also found to have the lowest detectability. The efficiency of CFRs was then compared with VES nightspotting, Onduline artificial cover objects (ACOs) and tracking tunnels. CFRs and VES were found to be similarly efficient with 1.66 geckos hour⁻¹ for CFRs compared with 1.10 geckos hour⁻¹ for VES. ACOs and tracking tunnels did not detect any geckos during this study. The humidity at the time of capture correlated with the number of geckos captured per check, with less geckos captured as the humidity increased.

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Abstract ................................................................................................................................... IV
Acknowledgements ................................................................................................................. IV
Table of Contents .................................................................................................................. VIII
Table of Tables .................................................................................................................... XII
Table of Figures ................................................................................................................... XII
# TABLE OF CONTENTS

Chapter One: General introduction ........................................................................................................ 1  
 1.1 History of New Zealand’s biota and conservation ................................................................. 2  
 1.2 New Zealand’s gecko fauna: taxonomy, ecology and conservation ................................. 5  
    1.2.1 Taxonomy .................................................................................................................... 5  
    1.2.2 Ecology ..................................................................................................................... 6  
    1.2.3 Conservation ........................................................................................................... 8  
 1.3 Issues in monitoring arboreal reptiles ............................................................................... 10  
    1.3.1 Pitfall traps ............................................................................................................... 11  
    1.3.2 G-Minnow traps ....................................................................................................... 12  
    1.3.3 Artificial cover objects (ACOs) .............................................................................. 12  
    1.3.4 Visual encounter surveys (VES) .......................................................................... 13  
    1.3.5 Tracking tunnels .................................................................................................. 13  
    1.3.6 Cell foam retreats (CFRs) ................................................................................... 14  
 1.4 Issues in understanding gecko habitat use ...................................................................... 14  
 1.5 Issues in understanding gecko monitoring object use .................................................. 15  
 1.6 Research objectives ......................................................................................................... 17  
 1.7 Thesis structure ............................................................................................................... 18  

Chapter Two: General methods ........................................................................................................... 19  
 2.1 Study species .................................................................................................................... 20  
    2.1.1 Forest gecko: Mokopirirakau granulatus ............................................................... 20  
    2.1.2 Auckland green, or ‘elegant’ gecko: Naultinus elegans ................................... 22  
    2.1.3 Pacific gecko: Dactylocnemis pacificus ............................................................... 24  
 2.2 Study areas ...................................................................................................................... 26  
    2.2.1 Whakanewha Regional Park, Waiheke Island ..................................................... 27  
    2.2.2 Tawharanui (open sanctuary) Regional Park ....................................................... 29  
    2.2.3 Shakespear (open sanctuary) Regional Park ....................................................... 31  
 2.3 Pre-thesis study ............................................................................................................... 33  
 2.4 Waiheke Island ............................................................................................................... 34  
    2.4.1 Cell foam retreats ................................................................................................. 34  
    2.4.2 Visual encounter surveys ..................................................................................... 36
Chapter Three: The impacts of rats on geckos: behaviour, population structure and condition. ................................................................................................................... 45

3.1 Introduction ................................................................................................... 46

3.1.1 Introductions and impacts of rats on New Zealand reptiles .............. 46
3.1.2 The impacts of rats on invertebrates ..................................................... 46
3.1.3 Body condition and sub-lethal injury estimates of reptiles ................ 48
3.1.4 Caudal autotomy in geckos ................................................................. 49
3.1.5 Research objectives ........................................................................... 50

3.2 Methodology ................................................................................................ 52

3.2.1 Study areas ........................................................................................ 52
3.2.2 Study species ..................................................................................... 52
3.2.3 Study design ...................................................................................... 52
3.2.4 Rat presence/absence ........................................................................ 53
3.2.5 Gecko monitoring ............................................................................ 53
3.2.6 Invertebrate sampling ....................................................................... 55

3.3 Results ........................................................................................................... 56

3.3.1 Predator tracking tunnels................................................................. 56
3.3.2 Forest gecko density indices ............................................................ 57
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.3.3</td>
<td>Population demographics</td>
<td>59</td>
</tr>
<tr>
<td>3.3.4</td>
<td>Evidence of attempted rat predation: body condition index (BCI)</td>
<td>61</td>
</tr>
<tr>
<td>3.3.5</td>
<td>Evidence of attempted rat predation: body-tail condition index (BTC)</td>
<td>62</td>
</tr>
<tr>
<td>3.3.6</td>
<td>Evidence of attempted rat predation – sublethal injuries</td>
<td>64</td>
</tr>
<tr>
<td>3.3.7</td>
<td>Invertebrate abundance analysis</td>
<td>69</td>
</tr>
<tr>
<td>3.4</td>
<td>Discussion</td>
<td>72</td>
</tr>
<tr>
<td>3.4.1</td>
<td>Gecko densities and population structure</td>
<td>72</td>
</tr>
<tr>
<td>3.4.2</td>
<td>Gecko condition (BCI and BTC)</td>
<td>76</td>
</tr>
<tr>
<td>3.4.3</td>
<td>Evidence of attempted rat predation - sublethal injuries</td>
<td>78</td>
</tr>
<tr>
<td>3.4.4</td>
<td>Invertebrate abundances</td>
<td>81</td>
</tr>
<tr>
<td>3.5</td>
<td>Conclusions</td>
<td>85</td>
</tr>
</tbody>
</table>

Chapter Four: An analysis of *Mokopirirakau granulatus* habitat use. .......... 88

4.1 Introduction                                                                                   | 89   |
| 4.1.1   | Issues in understanding gecko habitat use                                      | 89   |
| 4.1.2   | Gecko habitat choice variables                                                 | 90   |
| 4.1.3   | Research objectives                                                             | 92   |
| 4.2     | Methodology                                                                     | 94   |
| 4.2.1   | Study areas                                                                     | 94   |
| 4.2.2   | Study species                                                                   | 94   |
| 4.2.3   | Study design                                                                    | 94   |
| 4.3     | Results                                                                         | 96   |
| 4.3.1   | Gecko presence/absence analyses                                                | 96   |
| 4.3.2   | Habitat comparisons between regional parks                                     | 96   |
| 4.3.3   | Habitat comparisons between transects on Waiheke                                | 99   |
| 4.4     | Discussion                                                                       | 104  |
| 4.4.1   | Gecko presence/absence analysis                                                | 104  |
| 4.4.2   | Waiheke treatment compared with control                                         | 107  |
| 4.4.3   | Waiheke compared with Tawharanui and Shakespear                               | 108  |
| 4.5     | Conclusions                                                                     | 110  |
TABLE OF TABLES

Table 3.1 The total combined tracking rates of rats and mice per year for the Waiheke treatment transects ‘Rabbit’ and ‘Peanut’. .................................................................57

Table 3.2 Average and median densities (ha⁻¹) of geckos compared between the four study areas, where \( n \) = the number of transects per study area. .................................59

Table 3.3 The total number of species, invertebrates and proportion of most common species found in each study area. .................................................................................69

Table 3.4 Average and medians of large invertebrates per transect: sheet-web spiders, giant centipedes, and tree weta compared between the four study areas. (Where 95% CI = Lower and Upper confidence intervals) \( n \) = 5 for all areas excluding Shakespear where \( n \) = 4. ..........................................................................71

Table 4.1 Results of habitat analyses with median, 95% Confidence Intervals (Lower-Upper), Mann-Whitney ‘U’ statistic, and significance values. (*Where SDI indicates Simpsons Diversity Index) .................................................................................96

Table 4.2 The proportion of the 10 most common species along each transect in the treatment and control areas on Waiheke Island. (Where S1 = Kanuka (Kunzea ericoides), S2 = Hangehange (Geniostoma lingustrifolium), S3 = Red Mapau (Myrsine australis), S4 = Mamangi (Coprosma arborea), S5 = C. rhamnoides, S6 = Mahoe (Melicytus ramiflorus), S7 = Silver fern (Cyathea dealbata), S8 = Tree fern (Dicksonia squarrosa), S9 = Mingimingi (C. propinqua), S10 = Gorse (Ulex europaeus). ..............................................................................................................103

Table 5.1 Total time spent searching for each monitoring method on Waiheke Island, including; total geckos found, total species found, geckos per hour, other reptiles found, geckos per trap, and other reptiles per trap. *The four other reptile species found were thought to be moko skinks (Oligosoma moco) or copper skinks (Cyclodena aenea) but an accurate identification could not be made. ..................123

Table 5.2 The overall differences in the number of males and females found on Waiheke Island using both CFR and VES methods (total) and only the CFR method (CFR). Showing the average and medians with standard error and upper and lower 95% confidence intervals. .....................................................................................126

TABLE OF FIGURES

Figure 1.1 Rare ‘yellow morph’ Auckland green or elegant gecko (Naultinus elegans) Photo: Author ..............................................................................................................1

Figure 2.1 (from left) Mark, Francess, & Author processing Mokopirirakau granulatus during VES nightspotting. Photo: D.v.Winkel .................................19

Figure 2.2 Male M. granulatus retreating into tree cavity. Photo: Author ........20
Figure 2.3 Distribution of *M. granulatus* .................................................................21

Figure 2.4 Demonstrating male hemipenal sac of *N. elegans*. Photo: Lee Thoresen ..................................................................................................................................22

Figure 2.5 Distribution of *N. elegans* ........................................................................23

Figure 2.6 The first documented *Dactylocnemis pacificus* was found on Waiheke Island during March 2012, after this study had been completed. Photo: Author .....24

Figure 2.7 Distribution of *D. pacificus* .....................................................................25

Figure 2.8 Map of New Zealand and the Hauraki Gulf, showing the three study areas, Waiheke Island (lowest square), Shakespear (middle) and Tawharanui (top). Photos: Google Earth. .............................................................................................26

Figure 2.9 Maps of Waiheke showing the area of Whakanewha Regional Park and the adjacent control study areas, including all 10 CFR (labeled IA to IE an an OA to OE) and six VES transects. Photo: Google Earth. .............................................................................................28

Figure 2.10 Map of Tawharanui, showing all five CFR transects and the predator-proof fence border. Photo: Google Earth. .............................................................................................30

Figure 2.11 Map of Shakespear Regional Park, showing all four CFR transects the predator-proof fence and the border with the New Zealand Defence Force. Photo: Google Earth ................................................................................................................................32

Figure 2.12 Example of CFR nailed to kanuka (left) Author checking a CFR attached to small manuka (right). Photos: Su Sinclair (left), Lee Thoresen (right). ................34

Figure 2.13 An example of one of the double stacked Onduline ACOs used during this study. Photo: Author. .............................................................................................................37

Figure 3.1 Male (right) and female (left) forest geckos found under a CFR, one of many pairs found during this study. ........................................................................45

Figure 3.2 An example of two dorsal identification photographs of two mature male forest geckos (gecko OA16, and gecko ID12). Note the distinct difference in the lower back markings, especially around the tail base, the gecko on the left also shows an autotomised re-grown tail. Photos: Author .............................................54

Figure 3.3 The percentage of tracking tunnel transects tracked by predators over four transects in the control areas (no pest control), and two transects in the treatment area (pest control). ‘Gecko tunnels’ denote the tracking tunnels that were set up within the treatment area to attempt to track geckos, a mustelid and a rat were found using these tunnels. ..........................................................................................................................................................57

Figure 3.4 Gecko density (ha⁻¹) indices over every transect in the four study sites .........................................................................................................................................................58

Figure 3.5 Total forest gecko captures per size category in areas of treatment (pest control) and control (no pest control) on Waiheke Island. ........................................60

Figure 3.6 Proportion of forest geckos caught in each size category (mm) in relation to total catch in treatment and control areas on Waiheke Island. .........................60
Figure 3.7 Box-plots comparing the body condition of males and females between the control and treatment areas on Waiheke Island. (Where \( n \) = the number of geckos captured per sex, per area). .............................................................. 61

Figure 3.8 Box-plots comparing the body condition index between the size classes of 40-60 mm, 61-75 mm, 76-85 mm, and 86-95 mm in areas of control compared with treatment on Waiheke Island. (Where \( n \) = number of geckos captured per size class, per area). ...................................................................................................................................... 62

Figure 3.9 Box-plots comparing the body-tail condition index of males and females between the areas of control (no pest control) and treatment (pest control) on Waiheke Island. (Where \( n \) = the number of geckos captured per sex, per area). ...... 63

Figure 3.10 Box-plots comparing the body-tail condition index between the size classes of 40-60 mm, 61-75 mm, 76-85 mm, and 86-95 mm in areas of control compared with treatment on Waiheke Island. (Where \( n \) = the number of geckos captured per size, class per area). .............................................................................. 64

Figure 3.11 Male \( M. \) granulatus gecko, found under CFR OA31 showing two scars on upper back in the shoulder region. No other visible scars were observed on this gecko, also the tail has not been autotomised. .......................................................... 66

Figure 3.12 Male \( M. \) granulatus gecko, found under CFR OA32, over eight scars were observed on the lower back and head region. The tail has been autotomised and re-grown at least once. ........................................................................................................... 67

Figure 3.13 Male \( M. \) granulatus, found under CFR OA09 showing a small scar on the upper labial and canthal scales. There were no other visible scars found on this gecko, and no evidence of tail loss. ................................................................................. 68

Figure 3.14 Box-plots comparing the median number of invertebrates per transect over the four study areas, (where \( n \) = number of transects). ........................................... 70

Figure 4.1 \( M. \) granulatus on Coprosma sp. Photo: Author ........................................ 88

Figure 4.2 Box-plots showing the Simpsons diversity index from each of the four study areas. \( n \) = Shakespear = 80, Tawharanui = 200, Waiheke control = 200, Waiheke treatment = 199. (Where \( n \) = the number of CFR areas analysed per study area) .......................................................................................................................... 97

Figure 4.3 Box-plots showing the average number of trees per area around each CFR (19.63m²), per study area. (Where \( n \) = the number of CFR areas per study area; Waiheke control = 200, treatment = 199, Tawharanui = 200, Shakespear = 80). .... 98

Figure 4.4 Box-plots showing the tree height (m) over each of the four study sites. (Where \( n \) = the number of CFR sites per study area: Shakespear \( n \) = 80, Tawharanui = 200, Waiheke control = 200, Waiheke treatment = 199). ......................................................................................... 99

Figure 4.5 Box-plots showing the Simpsons diversity index over all 10 transects in the treatment and control areas on Waiheke Island. (Where ‘I’ signifies treatment (Inside pest control), and ‘O’ signifies control (Outside pest control)). Where \( n \) = 40 CFRs for each transect excluding IB where \( n \) = 39. ......................................................................................... 100
Figure 4.6 Box-plots showing the average forest density (measured as trees per 19.63m²) over the 10 transects in the treatment and control areas of Waiheke Island. (Where I = Inside regional park, denoting treatment and O = outside, denoting control). Where n = 40 CFRs for each transect excluding IB where n = 39. ........... 101

Figure 4.7 Box-plots showing the tree height (m) over all 10 transects in the treatment and control areas on Waiheke Island. (Where ‘I’ signifies treatment (Inside pest control), and ‘O’ signifies control (Outside pest control)). Where n = 40 CFRs for each transect excluding IB where n = 39. ......................................................... 102

Figure 5.1 Male-female pair of forest geckos found under a single CFR. Photo: Author ..................................................................................................................... 112

Figure 5.2 Gecko captures and recaptures using CFRs, also showing the cumulative catch throughout the three study periods: six checks during March, four checks between May-August, and six checks between September-November. .............. 121

Figure 5.3 Box-plot comparing the amount of geckos captured for each monitoring method. (Where n = the number of checks per method). ........................................ 122

Figure 5.4 Box-plot showing the geckos captured per hour for the CFR and VES monitoring methods over each study site and as an overall total. (Where n = the number of checks per method, per study area). ...................................................... 124

Figure 5.5 The temperature at the exact time of capture correlated with the numbers of geckos captured between May – November.............................................. 125

Figure 5.6 The relative humidity at the exact time of capture compared with the numbers of geckos caught between May – November.................................. 125

Figure 5.7 Box-plot showing The median number of invertebrates under the gecko occupied CFRs (presence) compared with the non-occupied CFRs (Absence). (Where n = the number of CFRs per area, where n presence = 49, absence = 190). ............................................................................................................................... 127

Figure 6.1 Male N elegans Auckland green or elegant gecko, showing distinctive cream markings outlined in black. Photo: Lee Thoresen ......................... 138