Analysing gecko monitoring data and standardising monitoring procedures at Shakespear, Tawharanui and Whakanewha Regional Parks

A thesis submitted in partial fulfilment of the requirements for the degree of Master of Environmental Management

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New Zealand

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2015

Abstract

Constant inventories of New Zealand gecko populations are important to monitor the status of the populations over time and allow diagnosis of declines in abundance. Long-term monitoring can also provide information on how effective different management schemes are for conserving a species. Populations of Pacific geckos (*Dactylocnemis pacificus*) are monitored at Shakespear and Whakanewha, and populations of forest (*Mokopirirakau granulatus*) and green geckos (*Naultinus elegans*) are monitored at Tawharanui and Whakanewha on a yearly basis. Whakanewha has a poison based regime for controlling predators, and Tawharanui and Shakespear are largely reliant on predator-proof fences.

Visual encounter surveys (VESs) provide a relative abundance estimate of the gecko populations in terms of catch per unit effort (CPUE). There was no significant change in CPUE over the three years of monitoring (2012-2014) for any of the gecko populations. It is a possibility this could be a result of small statistical power tests. Comparisons of abundance indices could not be made between parks due to the likely difference of detectability in different vegetation types.

Despite the change in activity levels of some animal species during different phases of the moon, this study found that the same phenomenon does not occur for green and forest geckos. There was no significant difference in the CPUE of the gecko species from VESs conducted during the new and full moon. Therefore, there is no need to stratify VESs based on the moon phases in order to account for changes in the activity levels of the geckos when obtaining abundance indices.

Tracking tunnels have proven an effective monitoring device for estimating the distribution and relative abundance of animal species and have increasingly been used to monitor lizard species. Its use for detecting arboreal geckos has not been completed

with any great success. One Pacific gecko was detected in this study using tracking tunnels designed for arboreal geckos, a very low tracking rate. Cell foam retreats (CFRs) were also used for detecting geckos. They were able to detect the presence of all gecko species at the three parks that were detected by VESs except for one instance: CFRs failed to detect the presence of green geckos at Whakanewha. Therefore, it is advisable that they are not used exclusively for monitoring the gecko populations.

Acknowledgements

A big thank you to my supervisors, Manuela Barry and Dianne Brunton. Thank you so much Manu for all the knowledge and advice, and for introducing me to the logistics around the lab. Thank you for the support throughout the write-up, and helping me become familiar with the parks and the people who run them. Thank you for helping me to the end. Thank you Dianne for help with volunteers and for editing and providing feedback on my write-up. Thank you to Chris Wedding and Dylan van Winkel for taking me out on my first night spot and introducing me to the geckos for the first time. Special thank you to Chris for helping me become familiar with the parks and the monitoring pogramme and for answering my ongoing queries. Also a big thanks to Mark Delaney for coming out to Waiheke and helping me set up my transects. Thank you Su Sinclair for help out in the field and answering my questions about the monitoring programme.

A totara thank you to Tommy for becoming my first volunteer especially during your exam time! I couldn't talk you out of it, and thanks for your ongoing help. Thanks for the little check lists you made for me and for always making me laugh. Thank you Bridgy for giving up your precious sleep and facing your fears to help me. Thanks for your inspirational notes and getting more excited about the geckos than me. Thank you for enquiring about my progress and for sitting with me during some tough times. Thank you Mum and Dad for coming out in the field and for your ongoing support till the end. Thank you especially for your help with all the menial work. Thanks Dad for your words of encouragement. It always surprises me how you can put into words exactly what I'm going through. Just a heads up, you're in the right profession. Thank you Mum for caring so much. Thank you for your encouraging texts and phone calls while you were overseas; and for all the hugs and yummy meals when you came back

home. Thanks Bernie for your words of wisdom. Celebrate the small victories. Thank you for the driving lessons and for you and Darren helping me buy my first car and sort out all the problems that come along with it. I always felt better driving out to the parks at night knowing you two were a phone call away! Thanks for all the dinners and giving me a break from my flat! Thank you Josh and Jade for enquiring about the progress of my thesis even when it got old. Thank you Josh for your honest remarks that help bring everyone down to earth. Thank you Frank for making me understand what hard work is and for all your great quips I had to be quick to get. Thanks Annah for being so inquisitive. Thank you to all my niece and nephews for reminding me life isn't all serious. Thank you to all my family for sticking with me to the end, especially during the latter stages. Thank you to all the people at East Coast Bays parish for making me feel welcome and giving me rides!

Thank you Shelley for getting me started and for the driving lessons! Thank you to Aaron, Carl, Jessica, Sarah, Jacqui, Stephanie, Su and Nick for providing aid in the field! A lot of time was saved with your help. Thank you so much! Thank you Aaron for helping edit my thesis. Thank you to the rangers, Matt Maitland, Maurice Puckett and Dan Beauchamp for giving me tours of the parks and for your help sorting out any problems. Thank you Dan at the navy base for keeping me safe and allowing me to come on the navy land. Finally, thank you to the bus drivers out on Waiheke!

The research for this thesis was conducted under the Auckland Council Discretionary Use Permit – Shakespear, Tawharanui and Whakanewha Regional Parks (application number CS54) and the Department of Conservation High Impact, Research and Collection Permit (AK-27008-FAU). Funding was provided by the Auckland Council.

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