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

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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.

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