

# Invertebrates

Pitfall trapping of ground invertebrates by a PhD student at VUW (Olivia Vergara) has resulted in the identification of a diverse collection of native and introduced species. Olivia found dung beetles to be the most commonly encountered species (for species >5mm body length), followed by hymenoptera (ants and wasps), spiders, harvestmen, ground and cave wētā and ground beetles. Olivia found fewer of the larger ground wētā when rat abundance was higher. Iconic stag beetles were also encountered, including a *Geodorcus novaezealandiae* individual. This genus of insects is vulnerable to rats and considered of equal conservation importance as kiwi. As such they are legally protected under the Wildlife Act.



The VUW team also monitor the abundance of the Wellington tree wētā using wētā motels, as this species is also a favoured prey item of rats.

Clockwise from top: ground beetle, stag beetle (*Paralissotes* sp.), ground wētā, cave wētā, tree wētā in defensive posture on a tree and a gallery of tree wētā in a wētā motel. Except for the last photo, all photos are by Olivia Vergara.



Report produced by Nyree Fea, VUW, September 2018

For information about restoration in the Aorangi Forest Park, please visit: <http://www.aorangitrust.org.nz/about>

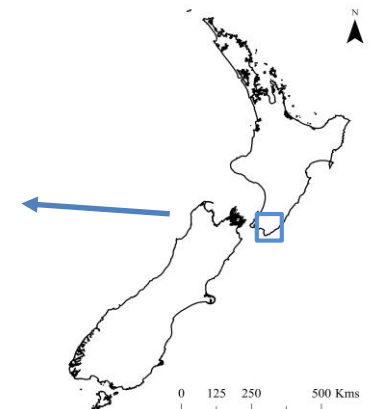


# Biodiversity in the Aorangi Forest Park

Aorangi Forest Park is 20,000 hectares and contains a wide range of native and endemic species. It is located in the southern-most mountain range of New Zealand's North Island. The highest peak in the park is Mount Ross at 983 metres above sea-level. The park was previously known as the Haurangi Forest Park, but this was changed to reflect the Māori name of the range protected by the park. The southern block of native forest was gazetted as a state forest in 1900 and the northern block was added in 1936. The privately farmed land in between was taken over by the New Zealand Forest service in 1974. Since 1978, both the indigenous forest blocks and the farmland has been formally protected as a forest park.



Biodiversity monitoring is undertaken by Victoria University of Wellington (VUW) at five study sites (clusters of black triangles on the map). This ten year programme (2012 – 2021), funded by TbFree NZ, includes monitoring of native and introduced species, namely birds, invertebrates, mammals and vegetation.



# Vegetation

The forest is a mix of beech forest, lowland broadleaf species, emergent podocarps, and areas of regenerating scrub. The highest elevations (especially in the north-west), are dominated by beech species. The lower slopes are mostly comprised of broadleaf species like māhoe, hīnau, rewarewa, tawa, kāmahī with occasional podocarps (miro, matai, tōtara, rimu and kahikatea). An isolated stand of northern rātā is also found in the north-west edge of the park.



The shrublands of the river terraces and coastal foothills are dominated by tauhinu while elsewhere at low altitudes mānuka and kānuka dominate coastal sites.

Other interesting native species encountered by the VUW team include orchids (e.g. spider orchids, *Corybas* sp. plus green hooded orchids, *Pterostylis* sp., left photo) and a native mistletoe (*Peraxilla* sp.\*) that was spotted by the VUW monitoring team in the canopy of a beech tree in the north-west of the park.

# Mammals (native)

The fur seal colony at Cape Palliser is the only one in the North Island where breeding is well-established.

It is unknown if any populations of the native short-tailed\* or long-tailed bats† (New Zealand's only native land mammals) remain in the Aorangi Forest Park, although a population of short-tailed bats in the nearby Tararua Range was discovered in 1999. VUW will begin searching the AFP for bats in 2019.

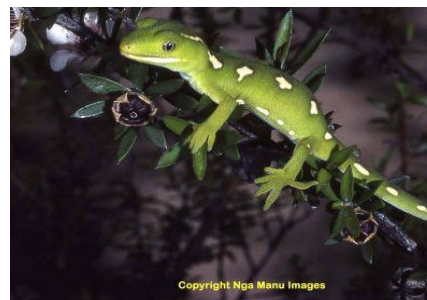
# Mammals (introduced)

The Department of Conservation (DOC) in collaboration with Greater Wellington Regional Council (GWRC) and TbFree NZ (previously the Animal Health Board) have historically conducted mammal control across the AFP. Four aerial 1080 operations have been carried out in the park since 2006. Brushtail possums, mustelids (stoats, weasels and ferrets), rodents (rats and mice) and hedgehogs are present in the forests. 1080 pellets have been surface-coated with deer repellent since the first operation in 2006 as the forest park is home to red deer, and as such is a popular area for deerstalkers. Goat numbers have been reduced to low levels by hunting and culling. Feral pigs are also present.

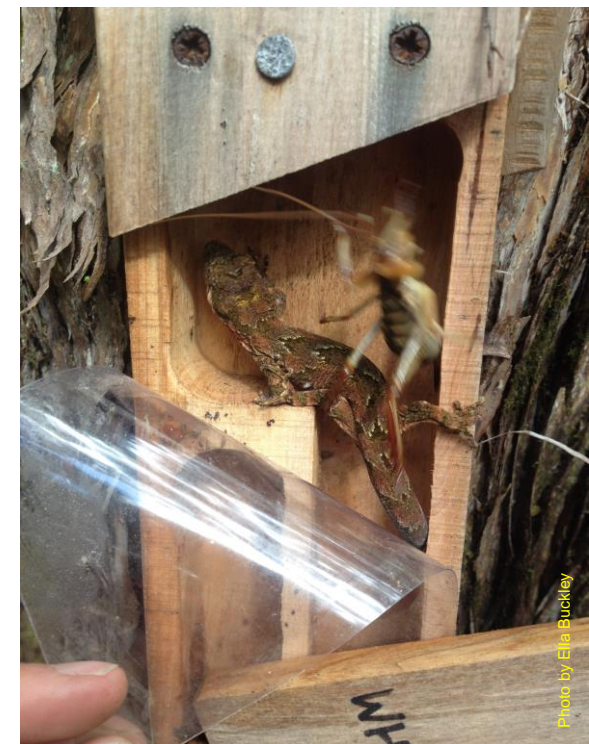
Conservation status of species: † Threatened (nationally critical), \* At Risk (declining), † At Risk (recovering), ‡ At Risk (relict), # At Risk (naturally uncommon). All other species are considered Not Threatened.

# Lizards

Very little is currently known about the status of native lizard populations in the Aorangi Forest Park. A VUW student conducted 19 days of pitfall trapping at one site in the north-west of the park and found only two common skinks. Additionally, VUW also detected a forest gecko\* in a weta motel along one of their transects (right photo).



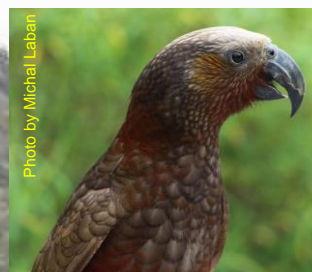
The VUW research team also hope to conduct green gecko\* (left photo) surveys.



# Birds

Bird monitoring in the AFP has been carried out by the VUW team since 2012 and was part of a PhD project (by Nyree Fea) on the responses of birds to mammal control. Nyree found the native species most commonly detected in the VUW bird counts were bellbirds, fantails, grey warblers, kererū, morepork, rifleman\*, silvereye, tomtits, tūī and whitehead\*. Two migratory species, that over winter in the tropics, were also detected in the spring and summer months (the shining cuckoo and the long-tailed cuckoo#). Falcons† and kingfishers were also present in the forests. Additionally, a remnant population of kākā† was detected at one site in the north-east. Nyree reported increases in populations of bellbirds, rifleman, tomtits, tūī and kererū 1-2 years after 1080 control. Her study also showed that native and endemic birds dominated with only a few introduced species present in the forests, the most common being the blackbird, chaffinch, dunnock and eastern rosella.

The Aorangi Restoration Trust plans to continue intensive mammal control in the AFP after TbFree NZ cease operations (from 2020). The plan is to eventually re-introduce rare species that are missing from the forests. The Trust is especially interested in re-establishing populations of iconic, endemic bird species that are absent, such as the North Island brown kiwi\*, the North Island kōkako† and the kākārīki‡.



Mammal control will hopefully boost other native fauna and flora, including resident species whose populations are currently restricted, such as the threatened North Island kākā (left photo) and the little blue penguin†, which breed along the coastline.