



Whanganui Region

Field Trip to Kittos' Bush (265 Tokomaru West Rd, Whanganui)

Background

Kittos' Bush (-39.81900, 175.00100, part of Lot 1 DP 408623, Wellington Land District) is an approximately 8.5 ha patch of mixed lowland podocarp–hardwood forest established on steep hillsides either side of a seasonal stream that cuts through a band of coquina limestone extending through the Brunswick terrace. The limestone is part of the Nukumaruan stratum, one of a recurring sequence of marine deposits, the features of which have been retained by ongoing uplift of the land within the Whanganui Basin during the late-Quaternary ((Abbott *et al.* 2005). The Nukumaruan limestone was formed in a shallow-water environment at a time when there was reduced sediment input from the land and is estimated to be 2.40–1.63 Ma (https://www.gns.cri.nz/content/download/7516/40961/file/NZ_Geological_Timescale_2015_table.pdf).

The canopy of the main forest situated on the true left bank of the stream running through the valley is predominantly *Beilschmiedia tawa* (tawa) with patches of *Prumnopitys taxifolia* (matai) (Ravine, 1996). Other noticeable species include *Dacrycarpus dacrydioides* (kahikatea), *Podocarpus totara* (totara), *Prumnopitys ferruginea* (miro), *Knightia excelsa* (rewarewa), *Pseudopanax crassifolius* (lancewood), *Hedycarya arborea* (pigeonwood) and *Schefflera digitata* (pate). *Coprosma robusta* (karamu) and *Alectryon excelsus* (titoki), both grow in the open along the lower forest edge. The mid-stratum and understorey are relatively open with a wide variety of species, the most prominent of which is *Dicksonia fibrosa* (wheki-ponga). The forest is noted for the presence of *Rhabdothamnus solandri* (taurepo), a bird-pollinated species threatened by the absence of specialised bird pollinators such as hihi, *Notiomystis cincta* (Anderson *et al.* 2011). Apart from the presence of a few, relatively sparsely occurring non-native tree species—e.g. *Pinus pinaster* (cluster pine); *Populus alba* (silver poplar); *Populus* spp.; and *Salix fragilis* (crack willow)—the forest appears reasonably intact, although regeneration of currently established plants is probably being adversely affected by browsing by feral goats and perhaps fallow deer. There is possum control.

Birds

Birds present in the forest and around the forest margins have been surveyed on three occasions by members of Birds New Zealand, on 11 November 2011, 13 February 2019 and, most recently, on 17 February 2019 during a joint Whanganui Museum Botanical Group and Birds New Zealand outing. These observations are summarised in Table 1 together with links to the eBird checklists online, where further details about the kinds of survey and the birds recorded can be found. Throughout our time in the forest the soundscape was dominated by the chorusing of the cicada, *Amphipsalta zelandica*, the calls of which cover the frequency spectrum from 4,500 to 13,000 Hz (spectrum peak 9,000 Hz), making it difficult to hear high-pitched bird calls such as those of grey warbler, *Gerygone igata*, and New Zealand fantail, *Rhipidura fuliginosa* (Fig. 1).

Table 1. Summary of birds recorded at Kittos’ Bush, 2011-2019. The figures represent the number of individuals seen or heard during each period of observation, except for those recorded on 17 February 2019, where the figures are the highest number recorded in the seven checklists made on that day

Species		Date and duration of observations		
		13 Nov 2011 ¹ 2.25 hr	13 Feb 2019 ² 0.58 hr	17 Feb 2019 ³ 3.15 hr
California quail	<i>Callipepla californica</i>	1		x ⁴
New Zealand pigeon/kererū	<i>Hemiphaga novaeseelandiae</i>	2	5	8
Shining cuckoo	<i>Chrysococcyx lucidus</i>	1		
Australasian harrier	<i>Circus approximans</i>		1	1
Sacred kingfisher	<i>Todiramphus sanctus</i>	1	1	1
Eastern rosella	<i>Platycercus eximius</i>	6		
Tūi	<i>Prosthemadera novaeseelandiae</i>	8	7	7
Bellbird	<i>Anthornis melanura</i>	1	1	8
Grey warbler	<i>Gerygone igata</i>	1	2	2
Australasian magpie	<i>Gymnorhina tibicen</i>			4
New Zealand fantail	<i>Rhipidura fuliginosa</i>	1		6
North Island robin	<i>Petroica longipes</i>	2	1	3
Welcome swallow	<i>Hirundo neoxena</i>			2
Silver-eye	<i>Zosterops lateralis</i>			2
Song Thrush	<i>Turdus philomelos</i>	1		
Eurasian blackbird	<i>Turdus merula</i>	4		
Chaffinch	<i>Fringilla coelebs</i>	2	1	1
European goldfinch	<i>Carduelis carduelis</i>			2
Yellowhammer	<i>Emberiza citrinella</i>			1
House sparrow	<i>Passer domesticus</i>		1	5

¹ eBird checklist <https://ebird.org/newzealand/view/checklist/S11167218>

² eBird checklist <https://ebird.org/newzealand/view/checklist/S52641180>

³ eBird checklists <http://ebird.org/newzealand/view/checklist/S52800568>
<http://ebird.org/newzealand/view/checklist/S52800585>
<http://ebird.org/newzealand/view/checklist/S52800608>
<http://ebird.org/newzealand/view/checklist/S52800625>
<http://ebird.org/newzealand/view/checklist/S52800640>
<http://ebird.org/newzealand/view/checklist/S52800654>
<http://ebird.org/newzealand/view/checklist/S52800659>

⁴ Recorded by others during the field trip but not in any of the checklists

The continued presence of North Island robin, *Petroica longipes*, during this period is notable, the species first having been recorded in the mid-1990s during the Protected Natural Areas Programme survey (Colin Ogle pers. comm. Colin also noted the presence of North Island robin, in the forest in June 2015: eBird checklist <https://ebird.org/newzealand/view/checklist/S23793924>). Three separate males were recorded during the latest survey, but more are probably present, given the suitability of much of the area (open field layer with much leaf litter). Nevertheless, the population is probably not much more than 10–12 pairs. That such a small population can persist for around 25 years at least is indicative of the species’ durability, despite ongoing threats from non-native predators, but perhaps also to the importance of immigration from (and probably emigration to) similar small patches of forest connected by wooded streams.

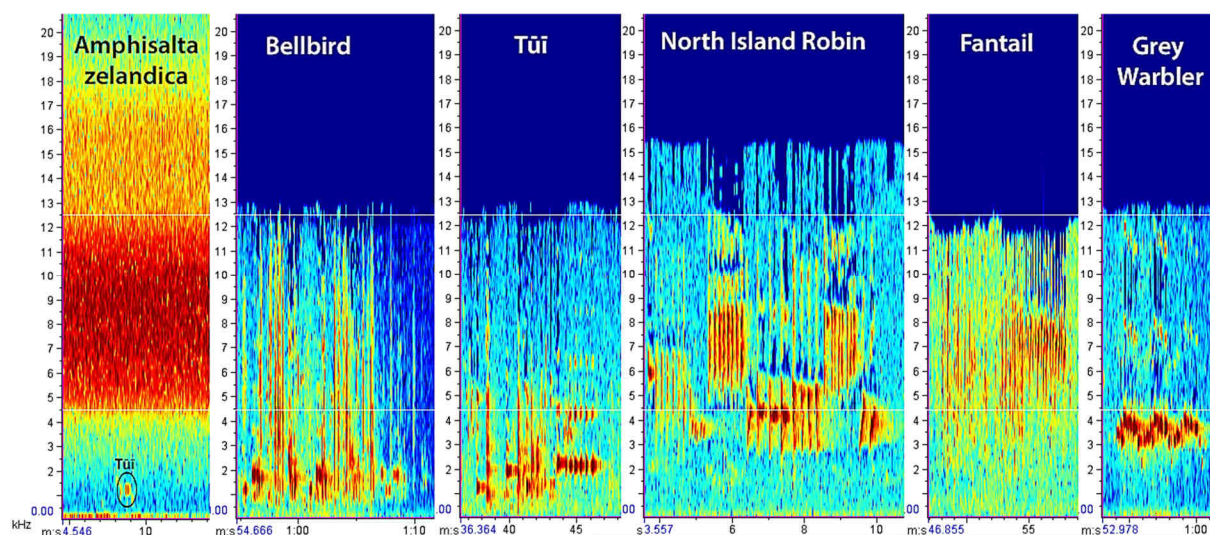


Fig. 1 Sonograms showing dominance of the soundscape by the chorusing cicada, *Amphisalta zelandica* relative to the calls of five common native bird species observed at the site (vertical axis = frequency [kHz], horizontal axis = time [s]; deep red = highest sound intensity [~ 90 dB], red = $70\sim 75$ dB, orange = $60\sim 70$ dB, yellow = $50\sim 60$ dB, green and cyan = background noise [< 50 dB], deep blue = no audible sound or above the frequency range of the recording). Note that the calls of North Island robin and fantail, and the harmonics of the calls of bellbird and grey warbler fall within the range of the cicada calls.

The area supports sizeable numbers of tūi, *Prosthemadera novaeseelandiae*, bellbird, *Anthornis melanura*, and kererū, *Hemiphaga novaeseelandiae*. The first two species are important pollinators of bird-pollinated flowers, whereas all three are also important seed dispersers. The presence of bellbird may account for the persistence of *Rhabdothamnus solandrii* because mature capsules of this plant were seen in November 2011, indicating that something is pollinating the flowers. Although bellbird may not be as effective a pollinator as hihi, it may provide just enough pollination services to keep the *Rhabdothamnus* population viable. The bigger threat to that population, however, is likely to be browsing by goats or deer (or both). Several plants showed marked signs of browsing.

Several sacred kingfisher, *Todiramphus sancta*, nest holes were seen in *Dicksonia squarrosa* (wheki-ponga) stems (Fig. 2A), at least one of which had been used this season (Fig. 2B, C). Once the adult birds have been able to excavate an entrance through the fibrous outer layer of the stems, they are able to dig out a larger cavity in the softer central stem tissue. The reason for multiple nest holes in some *Dicksonia* stems is likely to be a result of the need to excavate a new nest hole each time, to avoid any build-up of parasites, which can happen if the same nest site is used regularly.

The other notable feature of the forest was almost complete absence of introduced bird species, other than those seen on the forest fringe in grassland (mostly buntings, finches and sparrows). Although both California quail, *Callipepla californica*, and Eastern rosella, *Platyercus eximius*, have been noted previously, they are clearly not as common as native species (but at least one large covey of quail was noted by others during the field trip: Colin Ogle, pers. comm., Royce Johnson, pers. comm.). Overall, this testifies to the relatively intact nature of this forest. Although small, it would benefit from greater protection from introduced mammals, allowing it to serve as a 'stepping stone' in the landscape for the movement of both native plants and animals among similar patches, linking them with larger protected areas elsewhere.

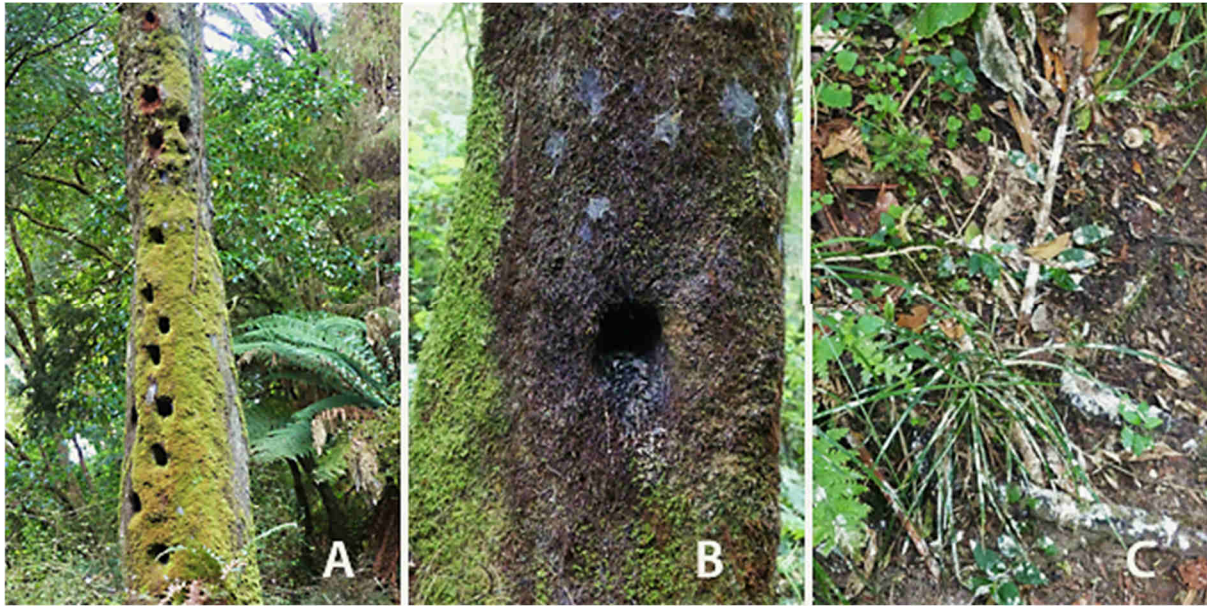


Fig. 2 Nest holes of various ages excavated by sacred kingfisher in the stem of a wheki-ponga (A), and a recently used nest hole (B), as shown by the presence of faecal splashes around the nest hole and on the ground below (C). Note that the most recently excavated nest hole in A is situated at the top, and that those near the bottom are well covered in moss around the edges, suggesting that the birds have excavated new nests upwards as the tree fern grows.

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