



PARKER CONSERVATION
CONSERVATION, TRANSLOCATIONS, RESTORATION, RESEARCH, MANAGEMENT

Surveys for Rare, Threatened and Endangered avian species in Wenita Forest Products plantation estate.

Executive summary

Avian surveys were conducted in Wenita Forest Products (WFP) plantation estate. Surveys focused on Rare, Threatened and Endangered avian species (RTE) as recognised by the Forest Stewardship Council (FSC), of which WFP are a member.

Ten discrete blocks of *Pinus radiata* forestry due to be harvested in the next five years were surveyed October 8 – 28, 2015. Approximate territory mapping was achieved using targeted call-playback for two key species previously identified in the WFP estate; New Zealand falcon *Falco novaeseelandiae* and South Island fernbird *Bowdleria punctata*. To avoid unnecessary disturbance to birds, nest searches were not conducted. Area searches were conducted for all other bird species to obtain presence / absence records.

One RTE species, the NZ falcon, was identified at six of the ten sites surveyed. Of 268 call-playback sampling points targeting this species over the ten sites, falcons responded at seven points. For six of the seven responses only a single bird was seen and one was of a pair. All sites where falcons were detected were near recently (1-2 years) harvested areas or skid sites, and the plantation forest edge.

Fernbird were detected at two of ten forest sites surveyed, using call-playback targeting this species. Both Akatore and Taieri Ferry Road had multiple birds holding adjacent territories, with calling heard continuously along some habitat boundaries.

Area searches were conducted for all other species. An average of 23 bird species were recorded in each area. The maximum number of bird species recorded from one area was 28 (Akatore) and the minimum 17 species (Waronui). Native bird species were common and at times abundant.

To monitor trends of all bird species, including falcon, WFP may want to consider future surveys including a quantitative measure of species' abundance. The presence / absence surveys conducted for this report do not allow insight into changes in the abundance of any bird species.

Introduction

As a Forest Stewardship Council (FSC) certified forest company, Wenita Forest Products (WFP) are obligated to supply products that come from 'responsibly managed forests that provide environmental, social and economic benefits' (<http://us.fsc.org>).

One component of the FSC environmental requirements involves five-yearly avian surveys in areas of the WFP estate that are scheduled for harvest in the next five years. Surveys focused on FSC-recognised Rare, Threatened and Endangered (RTE) avian species inhabiting the plantation areas. The Forest Stewardship Council define RTE species as:

Any species listed in either of the following two publications or their updates under the specified categories

a) IUCN Red List of threatened species- Critically endangered, endangered or vulnerable

b) N.Z. Threat Classification system (2008 or update) - Nationally critical, nationally endangered or nationally vulnerable

Source: National Standard for Certification of Plantation Forest Management in New Zealand. Approved Version 5.7 FSC Code: FSC-STD-NZL-01-2012. New Zealand plantations. EN .Effective date: 27th September 2013.

Falcons are classed as *Threatened; Nationally Vulnerable (B: Moderate, stable population (unnatural))*, (Data Poor, Stable) by the New Zealand Department of Conservation (DOC) Threat Classification System (Robertson et al. 2012).

Previous avian surveys in the WFP estate confirmed the presence of one RTE avian species; the NZ falcon *Falco novaeseelandiae*. The Otago Branch of the Ornithological Society of New Zealand (OSNZ) recorded falcon sightings from 1995 to 2006 (OSNZ unpublished data). Of 74 falcon sightings, at least five are from the WFP estate (OSNZ Dunedin, unpublished data). Peter Schweigman conducted avian surveys in 2001, 2009 and 2010. During these surveys falcons were recorded at Akatore (2009), Waitahuna (2001, 2009) and Mount Allan (2010). In addition, Steve Lawrence of the OSNZ, conducted annual falcon surveys in WFP estate 2010-2014. These surveys focused only on falcons and predominantly in areas scheduled for harvest. Lawrence recorded falcons at Akatore, Cuttance, Mt Allan and 'Toko Mouth' forests. Further historic information was available from Sandy Crichton, who filmed falcons at nest sites in the WFP estate at Akatore, Berwick, Mount Allan and Mount John in the late 2000s (S. Crichton pers. comm.).

Wenita Forestry Products also requested information on bird species with unfavourable conservation statuses. Previous surveys have included South Island fernbird *Bowdleria punctata* as having 'conservation priority' (<http://www.wenita.co.nz/sustainability/>). The Department of Conservation (DOC) classify SI fernbird as *At Risk; declining (B: Large population and low to moderate ongoing or predicted decline)* (Robertson et al. 2013). This threat classification does not include the species in the FSC Rare, Threatened, Endangered category; however, there is no information on vital rates (population trends, survival, fecundity, productivity) of SI fernbird, so the local conservation status for this species is unclear.

Presence / absence surveys were conducted by Peter Schweigman at Akatore, Waitahuna and Mt Allan in 2001, 2009, 2010. For comparative purposes, presence / absence surveys were repeated for all avian species.

Aim

The aim of this work is to conduct presence / absence surveys for all avian species in Wenita Forest Products estate areas scheduled for harvest in the next five years. Priority will be placed on Rare, Threatened and Endangered (RTE) bird species as recognised by the Forestry Stewardship Council (FSC).

Methods

New Zealand falcons

Falcons readily respond to call-playbacks (broadcasting pre-recorded calls of the target species to elicit a response from birds present). Therefore, to systematically survey for falcon territories call-playbacks were broadcast for 60 seconds at regular (200-400 m) intervals throughout areas due for harvest in the WFP estate. Prior falcon nest surveys by Lawrence (Lawrence 2011; 2012; 2013; 2014) showed nests are commonly on the edge of mature plantation stands and near to skid sites. For these reasons sampling focused on these locations within each forestry block. The local topography was used to maximise the broadcast coverage of an area, for example broadcasting call-playbacks from ridges and spurs rather than in valley bottoms. After broadcasting falcon calls, observations were conducted for three minutes to detect falcons.

Falcons are fiercely defensive of nest sites, which aids nest-finding; however, this was not a focus of the current work. Since nest information will not necessarily be used in mitigation of forest harvesting, and the nest would not be monitored sufficiently this season to determine nest survival, the disturbance to nesting birds from nest-finding activities was not justified

Fernbirds

Fernbirds are also very responsive to call-playbacks, especially leading up to and throughout the breeding season. Pairs will often respond together in duet with 'u-tick' or 'teeoo' calls. They will also give an aggressive 'chitter' call, especially if close to a territorial boundary or if birds from neighbouring territories also respond to call-playback.

Care was taken when broadcasting fernbird calls, as pairs will sometimes turn on each other if they are in dense habitat and cannot see each other (K. Parker pers. comm.). Fernbirds often use natural features as territorial boundaries, e.g. stream edge, ridge, track, habitat change, etc.

The survey methodology firstly identified likely fernbird habitat using ArcGIS. These included wetland, dense wetland and tussock grassland (tops and inversion areas), and areas with dense ground vegetation, emergent scrub, especially recent cut over sites, especially if there

are wet areas among them. At each site 30 seconds of call-playback was broadcast. Response is usually very fast, within seconds, but the observer waited 1-2 minutes, then played another short call-playback burst prior to moving to the next sampling point. Call-playbacks were played every 50-70 m in likely fernbird habitat.

Presence / absence of all other bird species

Area searches are frequently used in the United States and Australia (Magrath et al. 2008) for presence / absence bird surveys. These provide an alternative to five minute bird counts, which don't detect less abundant or less vocal species. Notably area searches will be more effective than five-minute bird counts for falcons. These surveys were conducted via a 20 minute walk in 1-2 ha of radiata forest scheduled for harvest in the next five years. Area searches aimed to avoid roads and tracks but these were included in four of the ten areas surveyed due to the dimensions of some stands.

Results

Surveys were conducted in ten discrete WFP plantation areas to the northwest and south of Dunedin, New Zealand October 8 – 30, 2015. The areas surveyed are scheduled for harvest in the next five years. The forests consisted of radiata *Pinus radiata* stands older than 21 years interspersed with younger radiata stands and areas of other plantation tree species and indigenous vegetation.

Falcon

One RTE species, the NZ falcon *Falco novaeseelandiae*, was identified at 7 out of 268 sampling points (3%) in the ten forest areas surveyed using call-playbacks of falcon song.

Table 1. Results of falcon surveys from ten forest areas in Wenita Forest Products estate

Site	NZ falcon detected	Block # falcon observed
NE Mt Allan	no	-
Hope Hill	yes	036, 037, 039
Cuttance (Moeraki)	yes	201, 203, 204, 205
Allanton	no	-
Popham's	yes	167, 168
Morrison's	yes	170
Akatore	yes	102, 103
Moneymore	no	-
Waronui	no	-
Berwick	yes	073

Of the six observations five were single birds and one a pair. Extensive areas were cautiously surveyed in each location where falcons were observed, but the birds displayed no clear nesting behaviours, such as aggressive defensive behaviours towards the observer, in the areas searched.

A brief description of each falcon observation follows:

Moeraki, single adult falcon

Only one bird detected on October 8. Responded to playbacks on the edge of a mature radiata stand adjacent to recent clearfell and skid site areas. The falcon did not approach closely and was not seen whilst walking the perimeter of the mature radiata stand. No further sightings. No response to call playbacks, or observations of falcons made from same area on October 12.

Hopehill, single adult falcon

On the edge of a mature radiata stand adjacent to recent clearfell and skid site areas. A single bird responded from the edge of the mature pine stand (Block 036-037), below (west) of a skid site on Lynda Road. Bird flew to above skid site and perched there for ten minutes before flying east (uphill). No falcons reacted as observer walked the entire perimeter of the mature stand. No response to playbacks in the area on October 22.

Morrissions, single adult falcon

On the edge of a mature radiata stand adjacent the Millenium Walkway Track start at the end of Taieri Ferry Road. The responding falcon stayed near for eight minutes then retreated towards the river and away from the radiata stand. The perimeter of the mature radiata stand where the falcon was present was surveyed but no further falcons were sighted.

Pophams, single adult falcon

On the edge of mature radiata, 6 m+ *Macrocarpa Cupressus macrocarpa* and some *Eucalyptus spp.* adjacent to recent clearfell and skid site areas. The bird responded to calls and then retreated uphill to the skid site. Followed the bird and walked the exotic edge around the clearfelled area but recorded no further falcon interactions.

Akatore, adult pair

Falcon was recorded on the edge of a mature radiata stand adjacent to recent clearfell and skid site areas. Responded to call playbacks. Both birds visible, emerging from the south side forest edge of a young replanted area at Block 102. Surveyed the areas the birds were both observed and the falcons did not respond as though they had a nest.

Berwick, single adult falcon

A single bird was observed interacting with an Australasian harrier *Circus approximans* and a pair of Australian magpies *Gymnorhina tibicen*. The interaction took place over a skid site and neighbouring pasture. The falcon behaviour was not overly aggressive, the bird pursued the harrier for less than five seconds and then retreated whilst the magpies pursued the harrier. After the interaction the falcon flew to the west, into farmland away from the plantation area.

Fernbird

Fernbird were detected at two of ten forest areas surveyed using call-playbacks specifically targeting this species. At Akatore fernbird were abundant throughout the edge of the estuary, but birds were not detected in dense vegetation immediately inside the adjacent radiata forest. At Morrison's fernbird were common in swampy habitat beside Taieri Ferry Road. Again fernbird were not detected on the immediate edge of the pine plantation.

All other avian species

Area searches were conducted for all other bird species. In total 32 bird species were recorded across the WFP estate. An average of 23 bird species were recorded in each area. The maximum number of bird species recorded from one area was 28 (Akatore) and the minimum 17 species (Waronui). The total number of native bird species recorded was 19 and exotic species 13. An average of 13 native species and 11 exotic species were recorded at each site. The maximum number of native bird species at a single site was 17 (Akatore) and the minimum nine (Moneymore). For detail, see Tables A1 and A1 in the Appendix.

Discussion

Falcons

New Zealand falcons / karearea show high site fidelity with pairs remaining on territories throughout the year (Heather and Robertson 2015). Few studies have investigated falcon biology, but of those that have territory size varies. For example, falcons in NI pine forest averaged 9 km² territories (Seaton et al. 2013); in the eastern South Island open country 15 km²; and larger in native forest (Heather and Robertson 2015). Within territories, falcon nest site areas may change relative to harvesting regimes. Steve Lawrence's (2010-14) research shows birds appear to prefer open country areas of clear-cut or young trees close to mature stands.

Seven observations of NZ falcon were made. Only one observation was of a pair, and these birds did not appear to be breeding. It is possible the birds had not yet started breeding, or alternatively a nesting attempt had already failed. Lawrence (2010-14) reported frequent nest failures due to likely depredation by introduced mammalian predators. Predation is no doubt common as introduced mammalian predators were conspicuous in most areas. For example pig *Sus scrofa* sign was very notable generally, but especially in the areas surveyed at Akatore, Morrison's and Pophams. At Akatore, where fernbird appear abundant (see below), a stoat *Mustela erminea*, then an adult cat *Felis catus* with a single kitten, were observed in a ten minute period in a single visit. Cats and mustelids prey on falcon adults and chicks while pigs, possums, and possibly hedgehogs, take eggs and chicks (Seaton et al. 2013).

It is recommended that the broad area around locations where falcon were detected be re-surveyed prior to harvest.

Fernbird

Fernbird were abundant at both Akatore and Morrison's but the species is not inhabiting the radiata plantation proper despite there being some potentially suitable habitat. Skid site and road selection for harvesting at Morrison's should take fernbird into account.

All other bird species

The surveys reported here broadly recorded the presence of the same species as Peter Schweigman did in WFP in previous surveys for WFP 2001-2009. In addition pukeko *Porphyrio melanotus* and Eastern rosella *Platycercus eximius* were recorded.

Recommendations

To monitor trends of all bird species, including falcon, WFP may want to consider future avian surveys including a quantitative measure of species' abundance. The presence / absence surveys conducted for this report do not allow insight into changes in the abundance of any bird species. For example a species may still be recorded as present in two successive surveys yet has declined or increased significantly. Population trends of all, or at least some, bird species would allow greater insight into the role WFP estate plays in providing habitat to both native and exotic birds.

It is important to note that Sandy Crichton reported that the falcons he observed often nested in conflict areas; e.g., under the root ball of a wind-blown tree in areas about to be felled (S. Crichton pers. comm.). This differs to falcons in North Island pine plantation forest where the species predominantly nested in clear fell areas, which reduces conflict with forest harvest considerably (R. Seaton pers. comm. to Sandy Crichton). This suggests falcon nests in WFP estate may at times be negatively affected by timber harvest. The aggressive defensive behaviours by falcons protecting nest sites results in harvesting companies generally being aware of the presence of falcon nests, but this may not always be the case. Locating a representative sample of falcon nests in WFP estate and following the fate of those nests would allow greater insight into falcon nest site selection, vulnerability of nests to timber harvest and nest survival.

Acknowledgements

Thanks to Peter Schweigman, Steve Lawrence, Sandy Crichton, Paul Pope and Derek Onley for providing valuable historic information. Steve Lawrence also gave detailed advice on survey methodology and provided historic reports and data.

References

Heather B, Robertson H, 2015. The Field Guide to the Birds of New Zealand. Penguin, Auckland.

Lawrence S, 2011. NZ Falcon Study in Wenita Forests 2010-2011. Unpublished report to Wenita Forestry Products.

Lawrence S, NZ 2012. Falcon Survey Report 2011-2012. Unpublished report to Wenita Forestry Products.

Lawrence S, 2013. NZ Falcon Survey in Wenita Forests Spring-Summer 2012/13. Ornithological Society of New Zealand. Unpublished report to Wenita Forestry Products.

Lawrence S, 2014. NZ Falcon Survey in Wenita Forests Spring-Summer 2013/14. Ornithological Society of New Zealand. Unpublished report to Wenita Forestry Products.

Magrath M, Weston M, Olsen P, Antos M, Herrod A, 2008. Survey guidelines for Australia's threatened birds. Guidelines for detecting birds listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999. Australian Government, Department of Environment, Water, Heritage and the Arts, WHERE? CANBERRA?

Townsend A J, de Lange P J, Duffy C A J, Miskelly C M, Molloy J, Norton D A, 2007. New Zealand Threat Classification System manual Department of Conservation, Wellington 35p.

Robertson H A, Dowding J E, Elliott G P, Hitchmough R A, Miskelly C M, O'Donnell C F J, Powlesland R G, Sagar P M, Scofield R P, Taylor G A, 2013. Conservation status of New Zealand birds, 2012. New Zealand Threat Classification Series 4 Department of Conservation, Wellington.

Seaton R, Hyde N, 2013. New Zealand falcon *In* Miskelly C M (ed) *New Zealand Birds Online* www.nzbirdsonline.org.nz.

Appendix

Table A1 Results of presence / absence surveys for native bird species from ten forest areas in Wenita Forest Products estate

Native bird spp.		Hopehill	Cuttance	Allanton	Pophams	Morrison's	Akatore	Moneymore	Waronui	Mt Allan	Berwick
1	brown creeper	1	1	1	1	1	1	1	1	1	1
2	fantail	1	1	1	1	1	1	1	1	1	1
3	tomtit	0	0	1	1	1	1	0	1	1	1
4	silvereve	1	1	1	1	1	1	1	1	1	1
5	grey warbler	1	1	1	1	1	1	1	1	1	1
6	bellbird	1	1	1	1	1	1	1	1	1	1
7	tui	1	1	1	1	1	1	1	1	1	1
8	riflemen	0	0	0	1	1	1	0	0	1	0
9	wood pigeon	0	1	1	1	1	1	1	0	1	1
10	shining cuckoo	0	1	1	1	0	0	0	0	1	1
11	welcome swallow	1	1	1	1	1	1	1	1	0	1
12	kingfisher	0	0	0	1	1	1	0	0	0	0
13	fernbird	0	1	0	0	1	0	0	0	0	1
14	paradise shelduck	1	1	1	1	1	1	1	1	1	1
15	Australasian harrier	1	0	1	1	0	1	0	1	1	1
16	white-faced heron	0	0	0	0	1	1	0	0	0	0
17	black-backed gull	0	0	0	1	1	1	0	0	0	1
18	falcon	1	1	0	1	1	1	0	0	0	1
19	pukeko	0	0	0	0	0	1	0	0	0	0
	Total	10	12	12	16	16	17	9	10	12	15

Table A2 Results of presence / absence surveys for exotic bird species from ten forest areas in Wenita Forest Products estate

Exotic bird spp.		Hopehill	Cuttance	Allanton	Pophams	Morrisons	Akatore	Moneymore	Waronui	Mt Allan	Berwick
1	chaffinch	1	1	1	1	1	1	1	1	1	1
2	blackbird	1	1	1	1	1	1	1	1	1	1
3	hedge sparrow	1	1	1	1	1	1	1	1	1	1
4	thrush	1	1	1	1	1	1	1	0	1	1
5	greenfinch	1	1	1	1	1	1	1	1	1	1
6	goldfinch	1	1	1	1	1	1	1	1	1	1
7	sky lark	0	0	1	0	0	0	1	0	1	0
8	red poll	1	1	1	1	1	1	1	1	1	1
9	starling	1	1	1	1	1	1	1	1	1	1
10	yellowhammer	1	1	1	1	1	1	1	1	1	1
11	magpie	1	1	1	0	1	1	1	0	1	1
12	mallard duck	1	0	0	1	1	1	0	0	0	1
13	Eastern rosella	0	0	0	0	0	0	0	0	0	1
	Total	11	10	11	10	11	11	11	8	11	12