TECHNICAL NOTES

Native birds in South Island high-country exotic conifers

Nick Ledgard*

Over the summers of 1982/83 the New Zealand Forest Research Institute conducted a survey of exotic trees in the Canterbury high country. The main purpose was to look at species present and growth rates and to determine the site factors most influencing growth. Results have been published in the NZ Journal of Forestry Science (Ledgard and Belton, 1985). During the course of the survey 243 sites were visited. They ranged from small woodlots and shelterbelts to plantations of many hectares in extent. Most stands were mature and none under the age of 20 were sampled. The major species encountered in decreasing frequency of occurrence were Corsican, ponderosa and radiata pine, European larch and Douglas fir.

At each site notes were made of any native birds either seen or heard. Visits usually lasted from between 30 minutes and two hours and normally took place between 8 am and 5 pm. Introduced bird species, particularly the finches, were more frequently encountered, but were not recorded due to the difficulty in distinguishing the calls and songs of different species.

Table 1 lists the native birds recorded within stands of five exotic tree species.

Table 1. Native birds recorded within stands of five exotic tree species in the Canterbury high country.

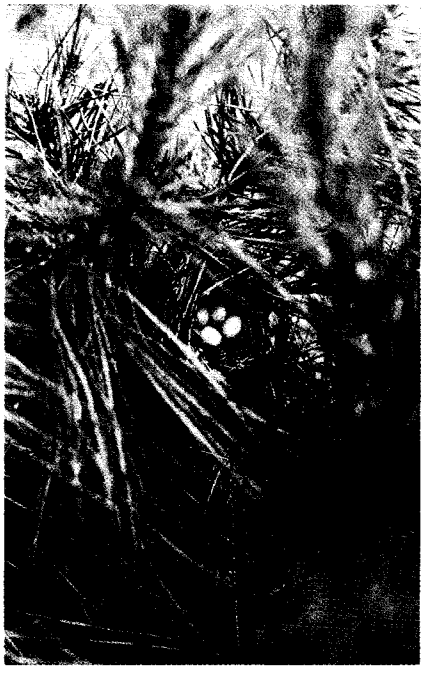
Tree species	Number of sites		Species and number of birds				
	Total	Birds present (%)	Grey Warbler	Pied Fantail	S Is. Pied Tit	Bellbird	NZ Falcon
Radiata pine	53	6 (11%)	3	2		1	
Corsican pine	57	12 (21%)	5	5	1	1	
Ponderosa pine	59	4 (7%)	3		1		1
Douglas-fir	42	3 (7%)	1	1	2		
European larch	32	1 (3%)	2	1			
All species	**243**	**26 (10%)**	**14**	**9**	**4**	**2**	**1**

Native birds were recorded at 10% of all sites. The Grey Warbler was seen most often, accounting for 46% of all recordings. Corsican pine stands were the most frequented with native birds being recorded in 21% of all stands visited.

Small stands such as those sampled in this survey often offered bird habitats which would otherwise be unavailable in the largely treeless high-country landscape. Some stands in which native birds were recorded were many kilometres from areas of native scrub or forest.

Nesting

With respect to bird nesting in exotic forests Brockie (1992) records some interesting data. To quote directly: *"Tall forest on Little Barrier Island carried 532-680 pairs of natives (birds) per 100 ha, and very large numbers (1030-1087 pairs/100 ha) lived on Kapiti Island in the 1950s, when the pine plantations of Kaingaroa also supported high numbers of native birds. It was found that mature radiata pine forest supported up to 652 pairs of native species/100 ha – more than any native forest on the mainland. If introduced birds are included, the mature radiata forest in Kaingaroa supported 1203 breeding pairs/100 ha – the densest forest bird populations recorded in New Zealand so far, except for the 71 bellbirds/ha on one of the Poor Knights islands".* When considering this information it must be remembered that the 1950s Kaingaroa pine forests were 'mature' and carried a rich understorey of native species. More recent regimes are usually shorter, allowing less of a native understorey to develop. The obvious attraction of old radiata stands to nesting birds must raise the question as to whether some should always be maintained purely for bird habitat reasons.



Bellbird's nest in *Pinus contorta*, Craigieburn Forest Park. Photo: N. Ledgard.

Preferential nesting may also occur in high-country introduced tree stands. The author has photographed nests of bellbirds, fantails, pied tits, silvereyes and grey warblers in pine trees. During a number of years working in the Craigieburn Range near Arthur's Pass National Park where bellbirds frequent the native mountain beech forest and adjoining trial plantings of introduced conifers, the only four occupied bellbird nests found were in pine trees. European larch and Douglas fir appear to be less attractive as nesting sites for native birds. However, young Douglas fir stands appear the most attractive to introduced birds, especially the larger species such as blackbird and thrush.

* *Scientist, NZFRI, Rangiora.*

High-country future

The future is likely to witness an increase in forested area in the South Island high country and the biophysical impacts need to be assessed as carefully as the economic and social. NZFRI is establishing trial plantations in areas which are currently treeless, and changes in bird species and numbers are being recorded annually as part of the associated biodiversity monitoring programme.

References

Brockie, Robert. 1992: A living New Zealand forest – a community of forests and animals. David Bateman Ltd, 'Golden Heights', 32-34 View Road, Glenfield, Auckland: 172 pp (quote from p. 111).

Ledgard, N.J., M.C. Belton. 1985: Exotic trees in the Canterbury high country. NZJ1 of Forestry Science 15(3): 298-323.

Winter desiccation of seedlings in a managed NZ black beech (*Nothofagus solandri*) forest – and its potential solution

Platypus pinhole beetle is a major cause of degradation in beech (*Nothofagus*) wood. Removing nesting material in the form of logging debris from the forest can reduce pinhole beetle damage, but, on some sites, may also cause considerable desiccation of newly regenerated seedlings.

This problem was experienced by John Wardle in his managed black beech (*Nothofagus solandri*) forest near Oxford, North Canterbury. John has been sustainably managing this forest since leaving the Forest Research Institute in 1986.

Harvesting involved a system of small coupe fellings, with individual coupes between 0.20 and 0.25 hectare in area. Pinhole beetle was controlled by removing potential nesting sites, such as the heads of trees, after sawlog extraction. The removed material was sold as firewood. The cleared coupes were then clean seed beds suitable for seedling regeneration.

Good germination usually occurred after the next seed (mast) year, but it was observed that most of the seedlings died or were knocked back by desiccation during subsequent winters. Advanced growth seedlings, established before the harvest, were also damaged.

The problem was again experienced in the winter of 1994 in coupes logged in 1990 and 1991. Excellent growing conditions were present through the 1993/94 growing season long into the autumn. A cold winter followed, with an unusually high incidence of cool, strong, northwest winds. The cold winds caused desiccation of seedlings' leading shoots and burn-off in the crowns of saplings up to three metres high. Larger coupes, and particularly those exposed to the northwest winds, suffered most.

Some compromise in the goals of the management regime was thought necessary to overcome the desiccation problem.

The effects of winter desiccation on 3-4-year-old regeneration in a logged coupe. Healthy buds, as yet unopened, on the young trees indicate they will recover. Photo: Ian Platt, Ministry of Forestry

The Potential Solution

Winter desiccation is caused by the combination of cool soil temperatures and high evapotranspiration losses, usually exacerbated by wind exposure. To prevent desiccation it was thought necessary to insulate the ground and reduce the size of the coupes. Coupe sizes have now been reduced to 0.15 hectare or less, minimising wind exposure.

Logging slash and waste wood less than ten centimetres in diameter will now be left within the coupe, insulating the soil and protecting developing seedlings. This smaller-diameter material is not favoured by pinhole beetles. The understorey of shrubs and ferns provides further protection from the weather.

This new approach may largely overcome winter desiccation in the new crop, without appreciably increasing the ever-present incidence of pinhole beetle.

Ian Platt and John Wardle