

FORESTCHECK: The response of birds to silviculture in jarrah forest

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Background

Birds have a strong association with vegetation type and structure. Typically jarrah forest has a dense canopy, many large trees, a sparse understorey and a diverse floristic ground stratum. Individual bird species exhibit ecological requirements linked to vertical stratification (foraging zone), food type (insects, seeds, nectar), feeding substrate (leaves, leaf litter, bark, fruits) and nesting substrate (branchlets, branches, hollows). These predictable associations enable us to anticipate the potential effect of disturbance, including that of silviculture (timber harvesting and associated burning).



The FORESTCHECK project contributes to adaptive management of Western Australian forests by providing timely and relevant information about the implementation, effectiveness and biodiversity consequences of silvicultural practices in jarrah forest. FORESTCHECK monitoring takes place at five locations within four jarrah forest ecosystems at 48 sampling grids. Grids represented examples of reference forest (never harvested or forest that had not been harvested for at least 40 years) and forest subject to either gap release or shelterwood/selective cut silvicultural treatments during the period 1988–2002.

Monitoring of birds was carried out over the five year period from 2001–2005. Each year grids from one forest ecosystem were monitored. Each grid was visited five times, with a minimum of seven days between visits. Counts commenced at sunrise from October to December and on each visit, at each grid, 20 minutes was spent searching a 1ha plot and recording all birds detected by sight or sound (Abbott *et al.* 2011).

Above: The scarlet robin (*Petroica multicolor*) is a common species throughout jarrah forest.

Findings

- There was little evidence of any substantial effect of silviculture treatments on the avian community structure or on individual species.
- The number of individual birds recorded over the five-year period was 2,334 and comprised 46 species with only the kookaburra (*Dacelo novaeguineae*) not being native to WA.
- The most common species recorded were the broad-tailed thornbill (*Acanthiza apicalis*), striated pardalote (*Pardalotus striatus*), western gerygone (*Gerygone fusca*), western thornbill (*Acanthiza inornata*) and the golden whistler (*Pachycephala pectoralis*), which made up 53% of all records.



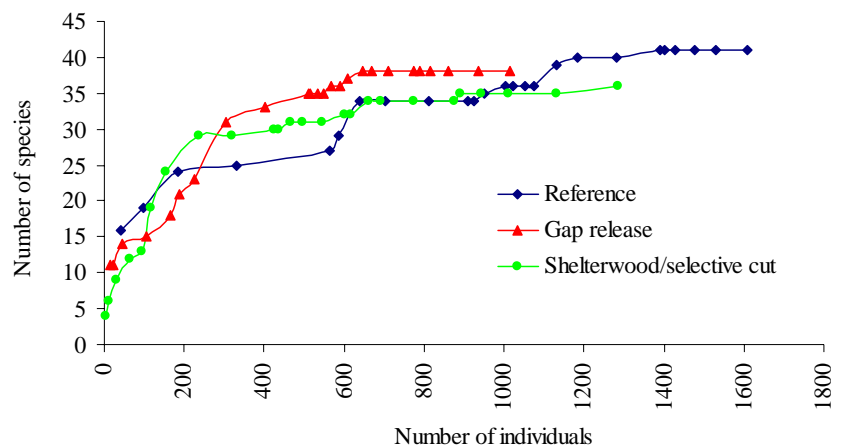
Left: The kookaburra was the only exotic bird species recorded in FORESTCHECK surveys.

Below: The golden whistler was one of the most common species recorded in FORESTCHECK surveys.



- No species was recorded on all 48 grids, but the broad-tailed thornbill, striated pardalote and the western gerygone were recorded on 45 or more grids.
- The number of species recorded over time accumulated at similar rates in gap release, shelterwood/ selective cut, and reference forests, but more individuals were recorded in reference forest than in silviculturally treated forest.

Right: Species accumulation of individual birds in reference forest, shelterwood/selective cut and gap release treatments



Management Implications

Most jarrah forest birds are widespread throughout the south-west and have evolved to be resilient to disturbance. Silvicultural practices examined by FORESTCHECK create or maintain the habitat diversity necessary to maintain bird species richness. This is provided for by the rapid regeneration of dominant tree species after harvesting and associated fire, the patchiness of treatments at the landscape scale, the high degree of connectivity of harvested and burnt forests with forests not harvested or recently burnt, and the retention of habitat trees in gap release forests.

Reference:

Abbott, I, Liddelow, G., Vellios, C, Mellican, A. and Williams, M. (2011) FORESTCHECK: The response of birds to silviculture in jarrah (*Eucalyptus marginata*) forest. *Australian Forestry* 74, 328-335