

DeakinWeek
2007
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Bats, birds and bandicoots
 wildlife conservation and landscape
 change in the 21st Century

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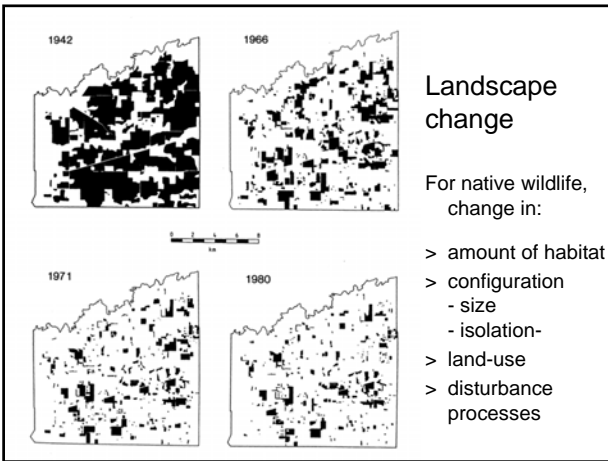



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Pig-footed Bandicoot, vicinity of Kerang Lakes NW Victoria



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Landscape ecology at Deakin

What is the consequence of landscape change for native wildlife?

What factors influence the ability of wildlife species to persist in modified landscapes?

How can we plan for both humans and wildlife?




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An international issue








southern England Ontario, Canada



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Three 'snapshots' of our research

- > Selection of roost sites by bats (Lindy Lumsden) 
- > Squirrel gliders in a linear network (Rod van der Ree) 
- > Woodland birds and landscape change (Jim Radford) 



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Insectivorous bats

Lesser Long-eared Bat

- > 8 g
- > feeds on insects
- > active at night
- > widespread (seldom seen)
- > roosts in hollow by day

Where are roosts located?



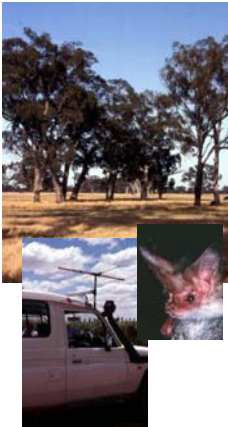
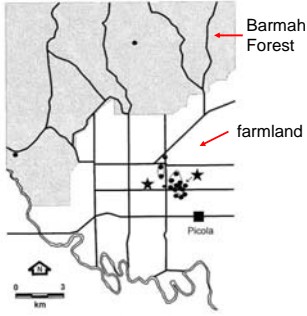
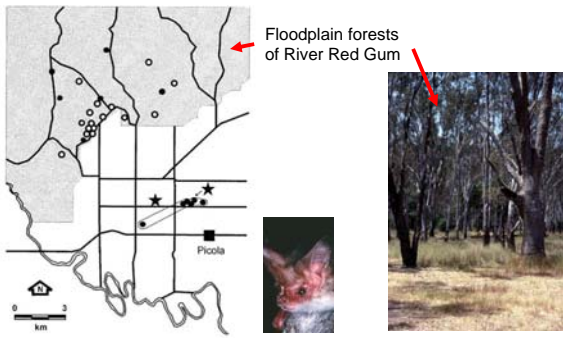




Photo: Lindy Lumsden

Roost locations of male Lesser Long-eared Bats in relation to capture points




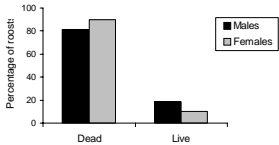
Roost locations of female bats in relation to capture points



What kinds of trees provide roosts?


Strong selection for:

- dead trees (males and females)
- large trees (breeding females)
- in locations with higher density of hollow-bearing trees

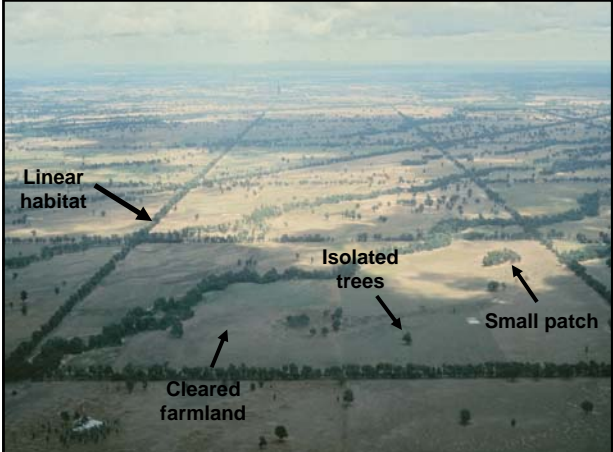



| Tree Status | Males (%) | Females (%) |
|-------------|-----------|-------------|
| Dead | ~80 | ~90 |
| Live | ~20 | ~10 |

Key insights



- > Scale of movements undertaken
- > Strong selection for:
 - locations of roosts
 - types of roost trees
 - position and type of roost hollow
- > Importance of scattered trees in rural landscapes
- > Dead trees
- > Large, old trees



Can the Squirrel Glider persist here?



Photo: Lindy Lumsden

Endangered species in Victoria
 Dependent on tree hollows
 Diet of nectar, pollen, invertebrates

Trapping along 14.6 km roadside
 832 captures of Squirrel Gliders
 High density population

Radio-telemetry (36 individuals)



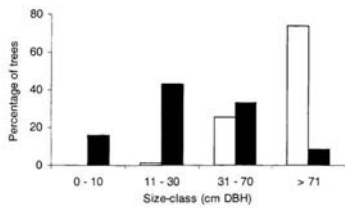
- > Linear home ranges (1.3-2.8 ha, 320-840 m length)
- > Use paddock trees and clumps in farmland (within ~ 75 m)
- > Social groups
- > Overlap at intersections



Home range of a male Squirrel Glider

Key factors:

1. Large old trees



- > Tree hollows for dens
- > Foraging



Key factors:

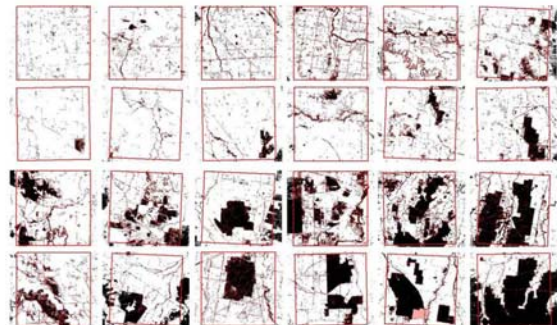
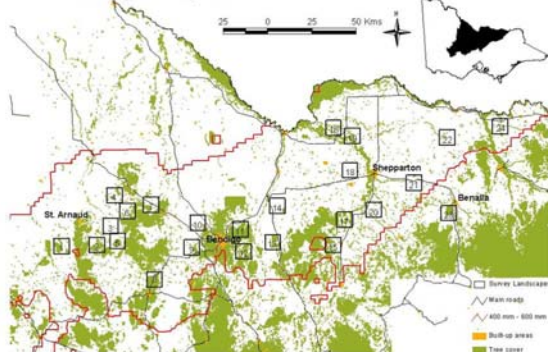
2. Connected system



- > Population connected
- > Pathway for dispersal movements
- > Implications for conservation in rural landscapes

Woodland birds and landscape change

Location of survey landscapes in North-Central Victoria



Study landscapes, each 10 x 10 km (100 km²), in northern Victoria. Tree cover ranges from 2% to 60% of the landscape.

Woodland-dependent birds

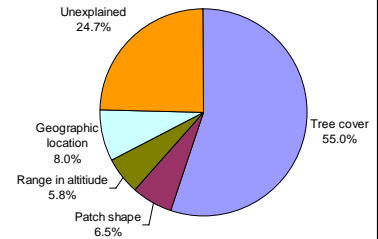
- > live in native vegetation almost entirely, rarely observed in cleared land; reluctant to cross open areas
- > 80 of the 140 'typical' bird species in the region
- > from 12 to 53 wdl-dep. species per landscape (av. 38.4)

Speckled Warbler *White-browed Babbler* *Sacred Kingfisher* *Buff-rumped Thornbill*

What influences the number of woodland bird species in rural landscapes?

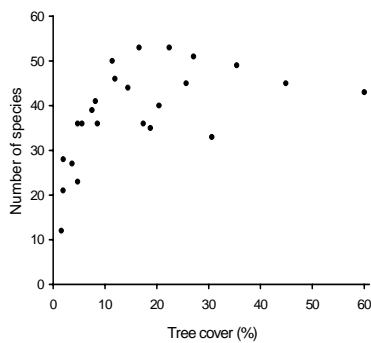
Significant influences:

- Tree cover
- Patch shape
- Range in altitude
- Geographic location

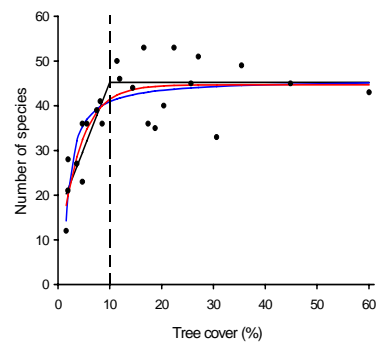


Tree cover by far the most influential variable

Species richness of woodland birds and tree cover



Species richness of woodland birds and tree cover



Key findings

- > Number of woodland-dependent species decreases as native vegetation declines.
- > Disproportionate loss in landscapes with less than 10% tree cover
- > 'Threshold' response



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Time ...

- > immense change in short time (ecologically)
- > time-lags
 - past change
 - future restoration



