Rufous Scrub-birds in the Gloucester Tops

Alan Stuart
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Photos: Allan Richardson, David Stowe, Rob Kyte, me
Rufous Scrub-birds

- Rare species; endangered (EPBC Act)
  - 1981 finding: 80% decrease in territories since European settlement (from 11,900 territories to 2,400 territories)
  - Further population decreases have occurred
  - Has disappeared from the lower altitude former parts of its range
- Secretive, skulking with limited flight
- Heard, but seldom seen
- Require dense understorey; deep leaf litter
- Five isolated remnant populations.
- Two sub-species.
Gloucester Tops eucalypt open woodlands habitat
The Gloucester Tops Scrub-bird study

1. Population monitoring
   - Focus has been on understanding a population in known core habitat (~4km radius site, ~5,000ha).
   - Spring surveys when male Scrub-bird are advertising their territories

2. Studies of individual birds
   - Singing behaviour by males at their territories
   - Sizes of singing areas
   - A banding and radio-tracking study has commenced
What have we learnt about the Gloucester Tops population?

• 37 Scrub-bird territories identified
  – 20 with long-term occupancy
  – 17 with transitory occupancy (1-2 year periods)

• Long-term occupancy rate of ~55% was also observed for the New England NP population (M. Andren, Corella 2016)

• Territory density of 3.6 ± 0.3 territories km^-2 is the same as was found in 1981
  – This equates to 167-200 territories in the 5,000ha study area
  – At least 10% of the southern sub-species population is in the 4km radius study area
What have we learnt about the Gloucester Tops population?

• Inter-territory separations:
  – Usually at least 300m between territories (mostly >400m)
  – Shorter-term clustering of territories can occur when conditions are favourable

• It requires 6-7 years after a major fire before habitat begins to be suitable again for Rufous Scrub-birds

• Many Rufous Scrub-birds stop calling when spring conditions are dry (e.g. in 2012, 2013, 2017)
  – Do they abandon their territories or cease to advertise them?
  – Does breeding occur in a dry spring?

• Conservation considerations
  – Habitat changes under passive management
  – Future drier climatic conditions and increased probability of fires
## Comparisons with Noisy Scrub-bird

<table>
<thead>
<tr>
<th></th>
<th>Noisy Scrub-bird</th>
<th>Rufous Scrub-bird</th>
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<tbody>
<tr>
<td>Breeds</td>
<td>Winter</td>
<td>Spring</td>
</tr>
<tr>
<td>Eggs</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Incubation period</td>
<td>36-38 days</td>
<td>?</td>
</tr>
<tr>
<td>Time to fledging</td>
<td>~4 weeks</td>
<td>?</td>
</tr>
<tr>
<td>Mimicry</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Males</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Exploded lek (→ males can hear other males)</td>
<td>• Can’t hear other calling males?</td>
</tr>
<tr>
<td></td>
<td>• Songs vary over time</td>
<td>• Song is constant?</td>
</tr>
<tr>
<td></td>
<td>• Share their territory with non-calling males</td>
<td>• Males may be alone in their territories?</td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Live in separate territories</td>
<td>• ?</td>
</tr>
<tr>
<td></td>
<td>• Probably visit hotshot males to mate</td>
<td>• ?</td>
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Behaviour of individual birds

- Males call from elevated perches (0.5-2m) and from the ground
- Female is thought to only make a soft contact call
- Size of male’s singing area in the Gloucester Tops:
  - 0.5-1.3ha (1980-1981 study)
  - 0.5-1.7 ha (2014-2017 study)
- Is this the territory size??

RSB locations within a 0.7ha territory
RSB locations within a 1.7ha territory
Behaviour of individual birds

• Calls of males mainly are based around combinations of single syllable notes:
  – The frequency range varies
  – The number of syllables in a calling event varies
  – Can be ascending or descending
  – Also mimicry

• Using automated recording units (ARU) to study calling patterns of males at their territories
  (donated by BirdLife Australia Southern NSW branch)

• ARU produces sonograms = digital records of a bird’s call

• Semi-automated analysis method developed
The main call (“chipping”)
Monitoring the chipping call

- 1500-2000 calls/day in the breeding season!
  - Unpredictable short breaks
  - Diurnal calling only

No. of calls per 20 minute interval
Monitoring the chipping call

- Calling rate drops substantially in the remainder of the year (often <200 chipping calls/day)
  - It becomes unpredictable as to when the bird will call
Banding and radio-tracking

- NSW ACEC permit obtained October 2018
- Two males caught Nov-Dec 2018
  - Using the T-shaped net method developed for the Noisy Scrub-bird
- The T-net has not been effective outside of the breeding season
  - Will trial various walk-in traps next visit
  - Suggestions are welcome!
Banding and radio-tracking

- Two males caught: full biometrics available for the first time
- DNA analyses of feathers
- Harness design for VHF transmitter requires optimisation
- Adult males (~30g): we plan to use 1.0g ATS A1055 transmitters
- Females and juveniles:
  - Probably will weigh 20-25g?
  - Suggestions re trapping and tracking are welcome!
Breeding behaviour: some progress

• No prior Gloucester Tops records
• Two young birds seen together Jan 2019
• Nest found in same area March 2019
• Hoping the female will build in same area in late 2019
  – Opportunity for intensive study
  – Trail cameras?
  – A hide??

Rufous Scrub-bird
nest, March 2019
Acknowledgements

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