

Investigating Rufous Scrub-birds



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Photos: Allan Richardson, David Stowe, me

NB In this pdf version the scrub-bird's calls no longer can be played.

Rufous & Noisy Scrub-birds

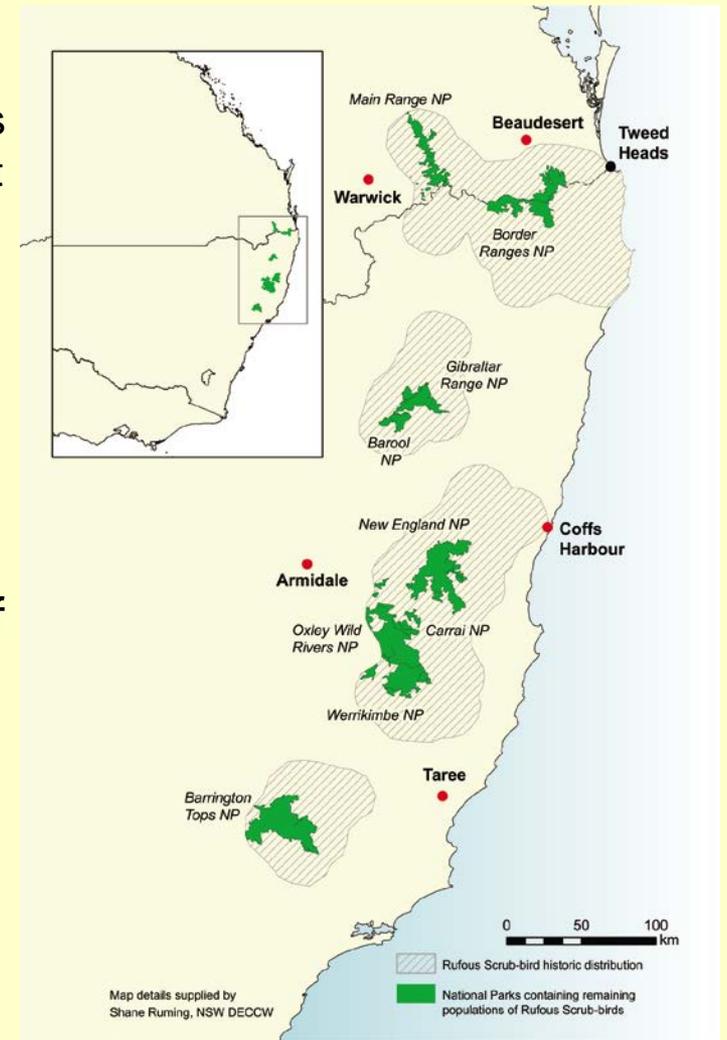
- Noisy Scrub-bird
 - *Atrichornis clamosus*
 - First described in 1844
- Rufous Scrub-bird
 - *Atrichornis rufescens*
 - First described in 1866
- Close relatives but living ~4,000km apart
 - How similar are they?
 - Cryptic, vocal, very weak flyers,
- Nearest relatives: Lyrebirds



Sketch: Louise Williams

Rufous Scrub-birds

- Rare species; vulnerable to extinction
 - Decrease from estimated 11,900 territories to 2,400 (1981) since European settlement
 - Further population decreases probably 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.



Past and present distribution

Investigating Rufous Scrub-birds

- In 2010, 300+ Key Biodiversity Areas were established in Australia
 - A BirdLife Australia / BirdLife International project
 - Concept is now being extended to non-avian KBAs
- Five KBAs were based on Rufous Scrub-birds
 - Two Peoples Bay / Mt Manypeaks for Noisy Scrub-birds
- Each KBA requires a monitoring program
 - I volunteered to look after the Gloucester Tops KBA
- 2010-2017: Gloucester Tops Rufous Scrub-bird population monitoring using teams of volunteers
- Recent years: program extended to studies of individual birds

The Gloucester Tops

- SW part of Barrington Tops National Park in NSW
- Altitudes 300m to 1500+m
- Habitats:
 - Low altitude rainforests
 - Mid altitude woodlands with rainforest gullies
 - High altitude = a mosaic of Antarctic Beech rainforest and eucalypt open woodlands (with scattered Snow Gum patches)
- High altitude woodlands have very dense ground cover
 - Shrubs, ferns, grasses, leaf litter, fallen timber
 - This is the Rufous Scrub-bird's habitat



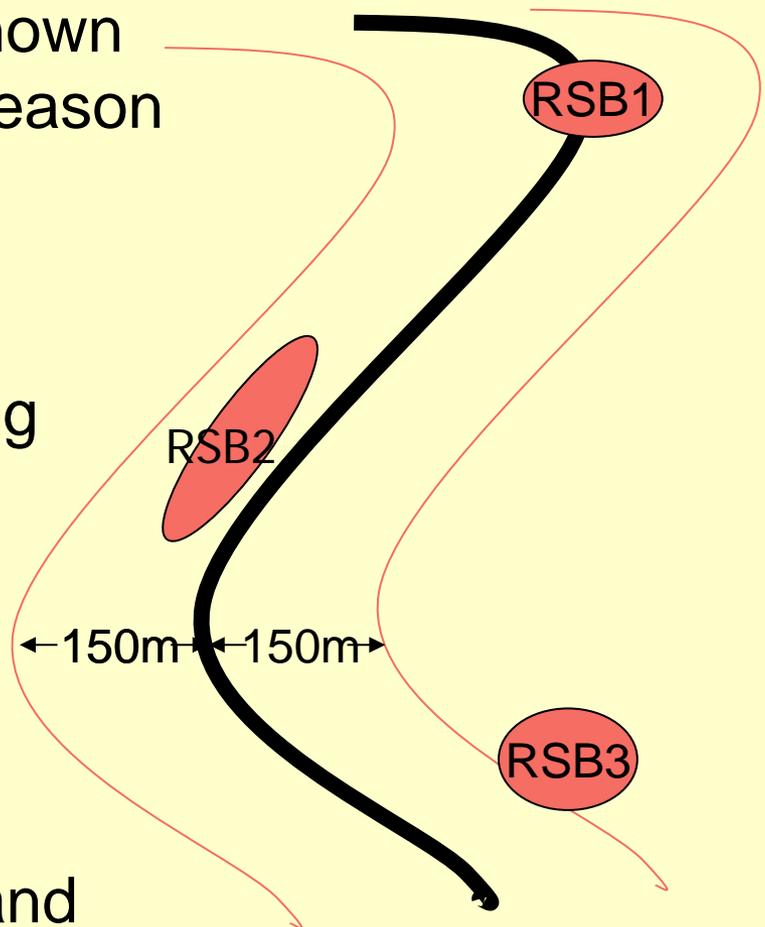
Rufous Scrub-bird habitat



Gloucester Tops eucalypt open woodlands habitat

Monitoring Gloucester Tops population

- Transects (roads, tracks) in known core habitat, in the breeding season
 - Ferrier's 1980-81 method
 - Supplemented by visits to other apparently suitable habitat
- In favourable conditions, calling males can be heard from 150m away
- Records from same location over a breeding season or in successive years = a territory
- Maintain a territory inventory and track annual occupancy



What have we learnt about the Gloucester Tops population?

- Focus was on understanding a population in known core habitat (~4km radius site, ~5,000ha).
- 37 Scrub-bird territories were 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
 - In the Gloucester Tops, Rufous Scrub-birds occupy open woodland adjacent to beech forest
 - We have noted that beech forest seems to be spreading into these open woodland areas
- Drier climatic conditions
- Wildfires
- Foxes? Cats?

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
 - Hard to verify that they don't make any other calls



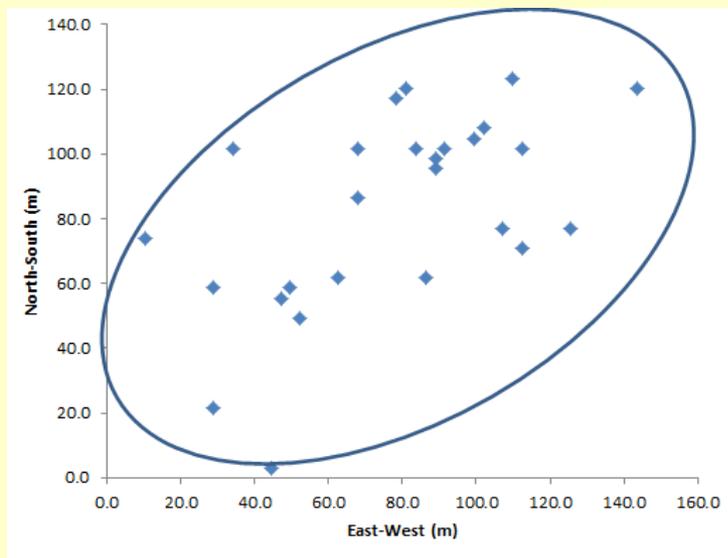
Male Rufous Scrub-bird (Allan Richardson)



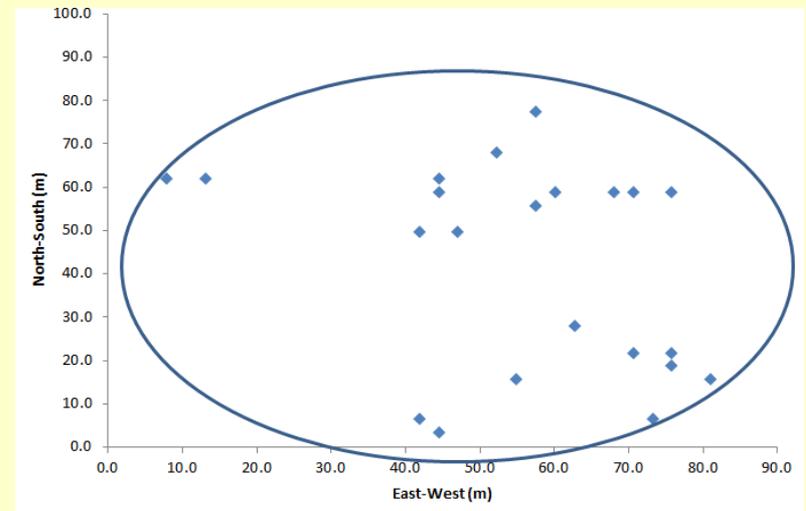
Female Rufous Scrub-bird (David Stowe)

Behaviour of individual birds

- Size of calling area in the Gloucester Tops:
 - 0.49-1.33ha (1980-1981 study)
 - 0.54-1.66 ha (2014-2017 study)
- Is this the territory size??



RSB locations within a 1.66ha territory



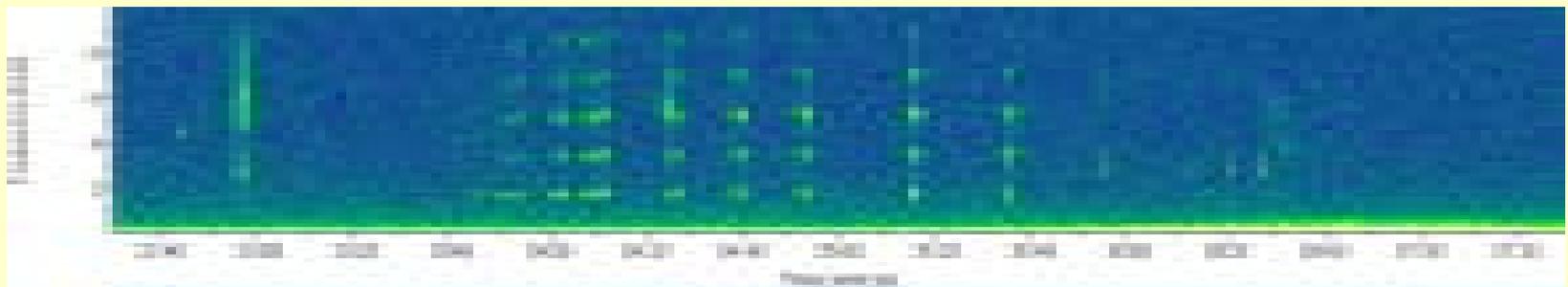
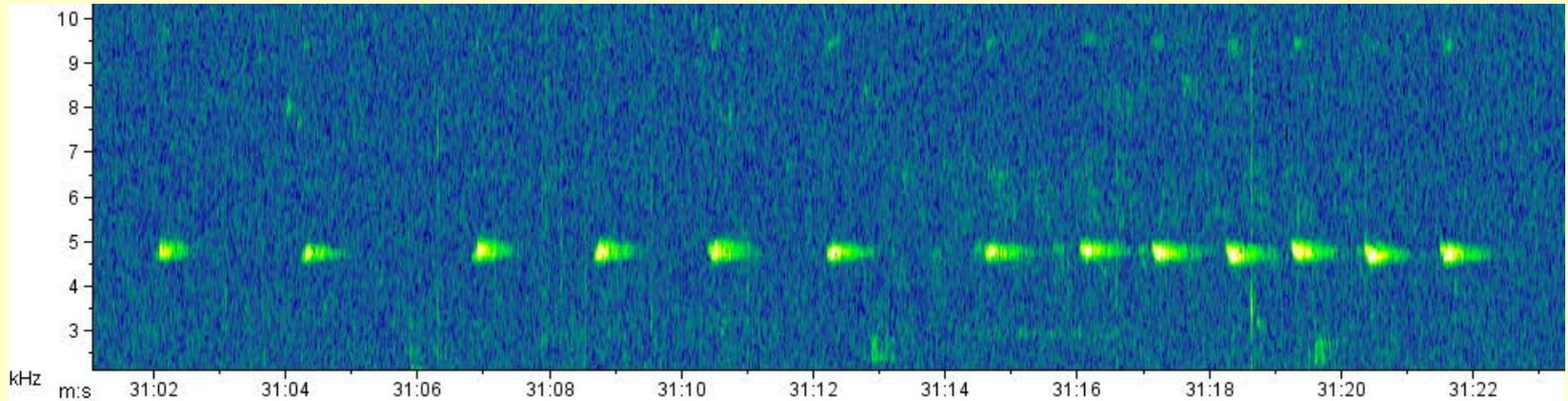
RSB locations within a 0.74ha territory

Behaviour of individual birds

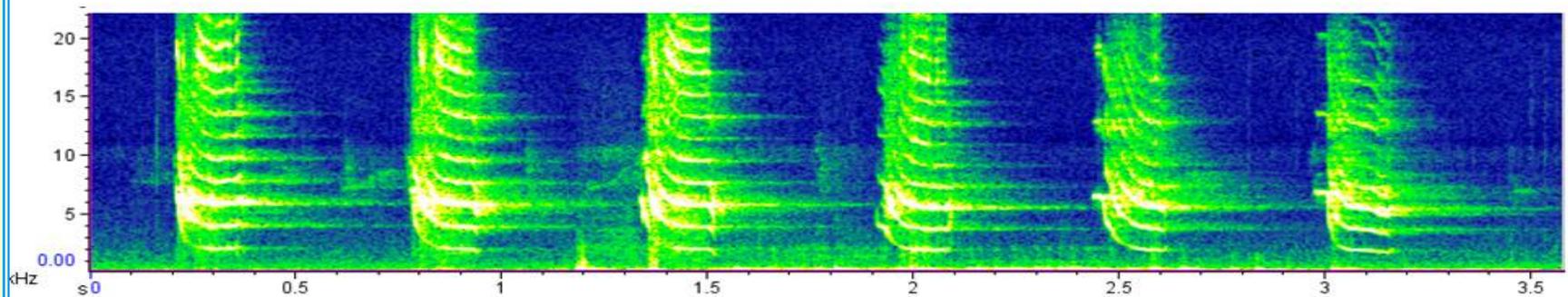
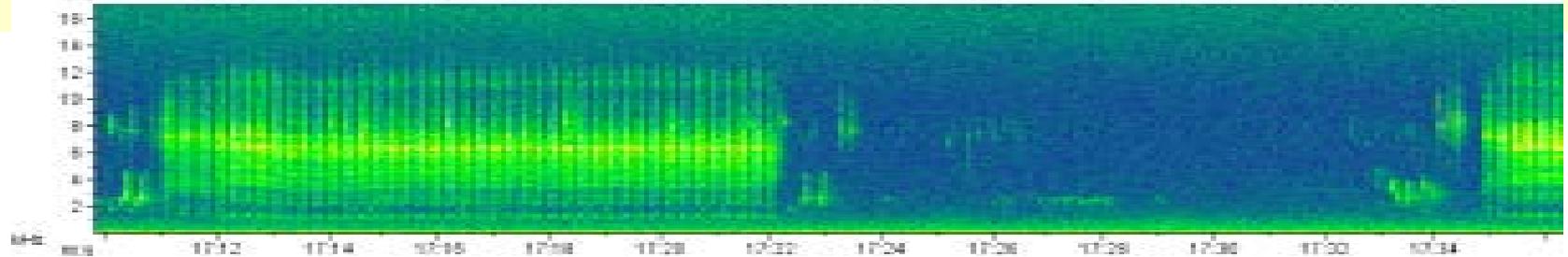
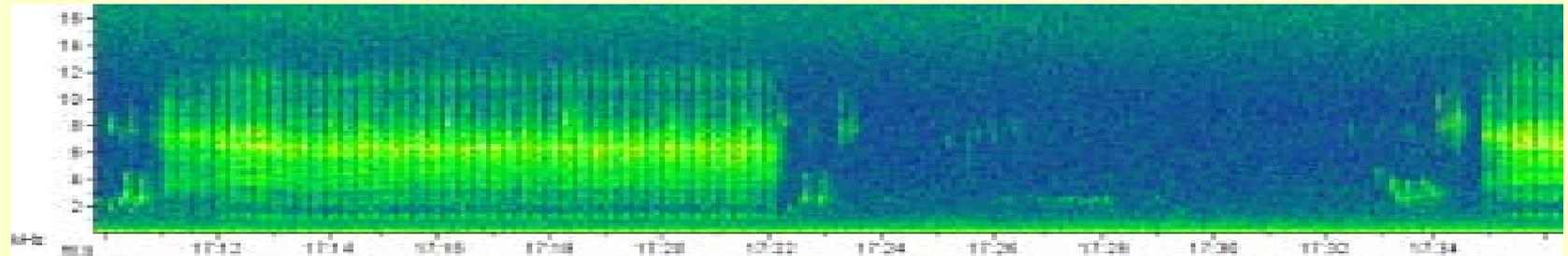
- Calls of males mainly are based around combinations of single syllable notes:
 - The frequency range varies
 - The number of syllables in a calling event varies
 - Can be ascending or descending
 - Also mimicry
- Using automated recording units (ARU) to analyse calling patterns of males at their territories
(donated by BirdLife Australia NSW branch)
- ARU produces sonograms = digital records of a bird's call
 - e.g. frequency vs time



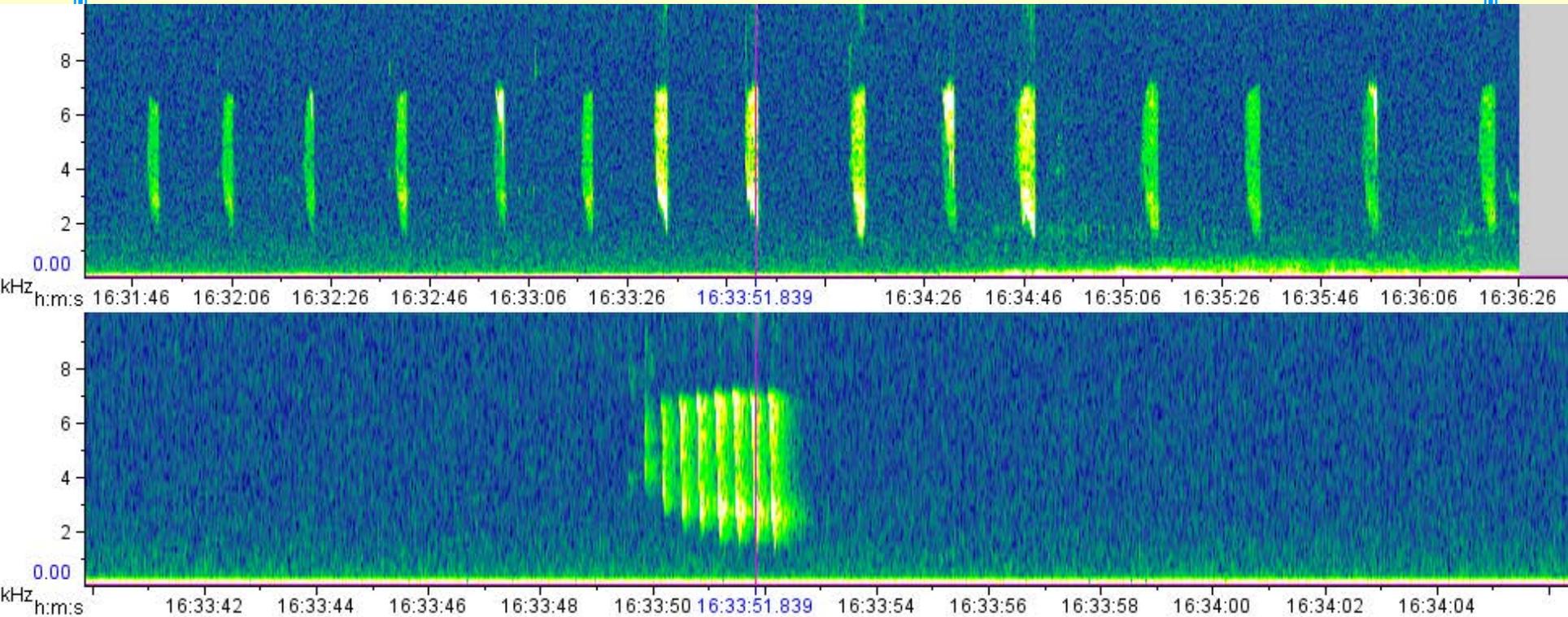
Some Rufous Scrub-bird calls



Some Rufous Scrub-bird calls



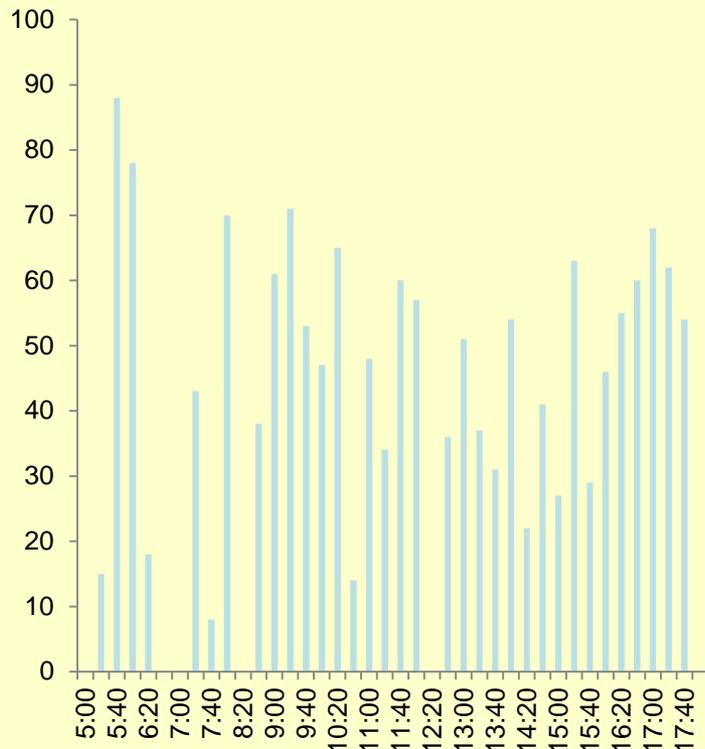
The main call (“chipping”)



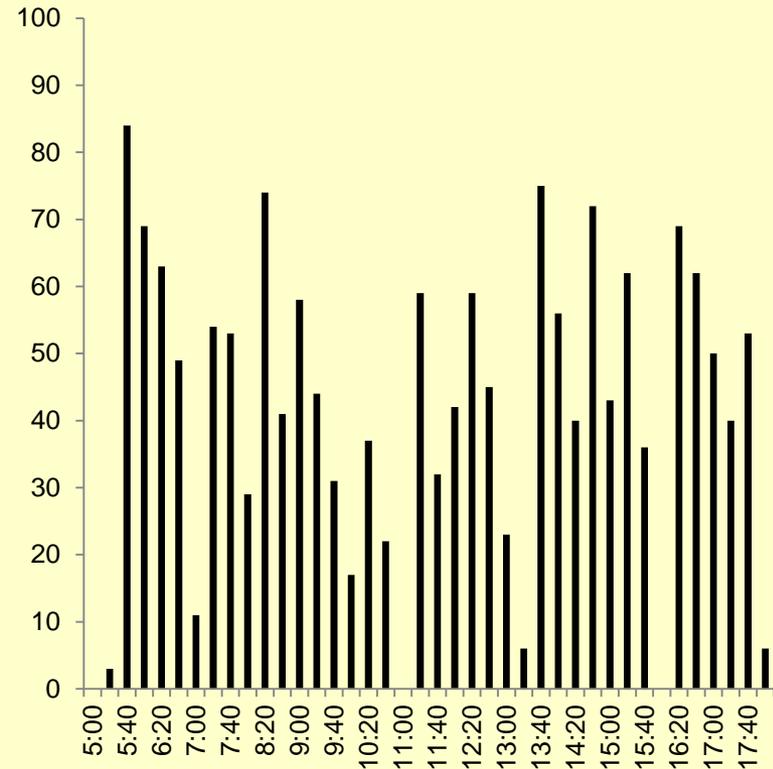
Monitoring the chipping call

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

CP122R 20150929

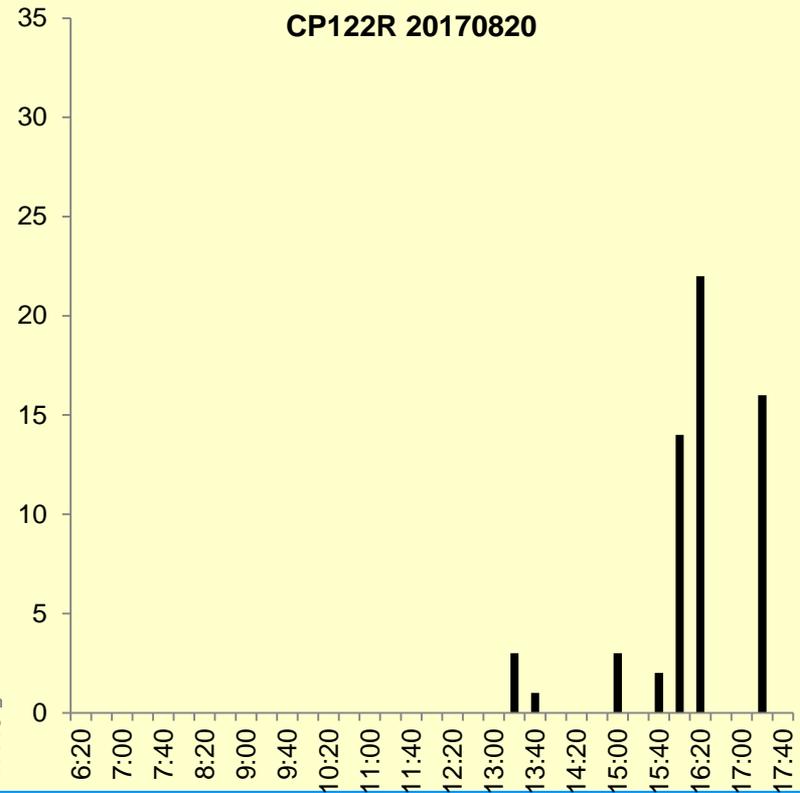
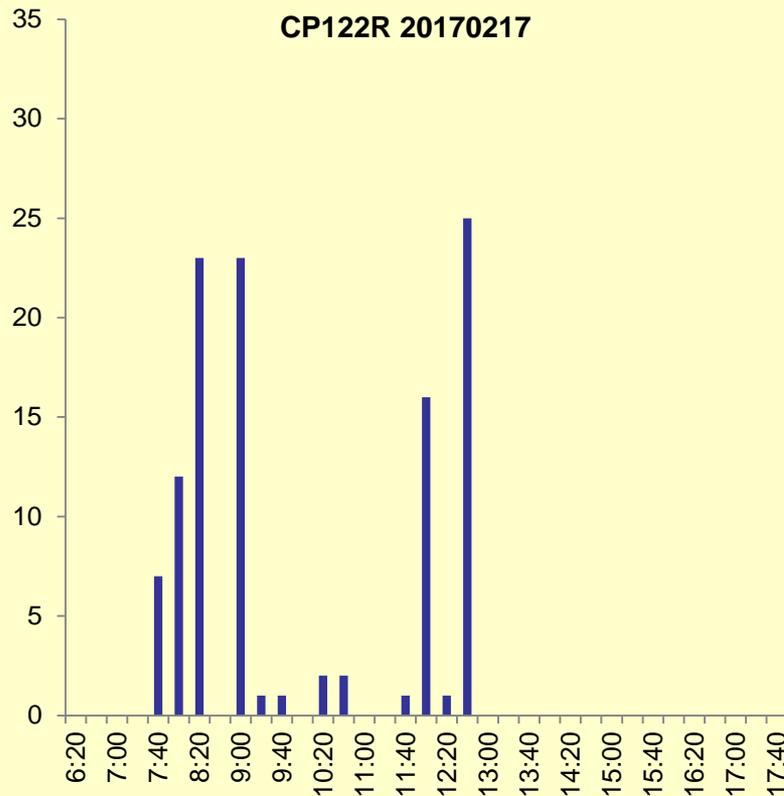


CP122R 20151002



Monitoring the chipping call

- Calling rate drops away substantially in the remainder of the year
 - Unpredictable as to when the bird will call



Conclusions

- A fascinating bird!
- Very difficult to study
- It calls prolifically during the breeding season
- They have remarkably small singing areas
 - Is this also their territory size??)
- Would a radio transmitter help our understandings?
 - Tracking the bird's movements
 - Could we catch one?