

What do we know about Rufous Scrub-birds?



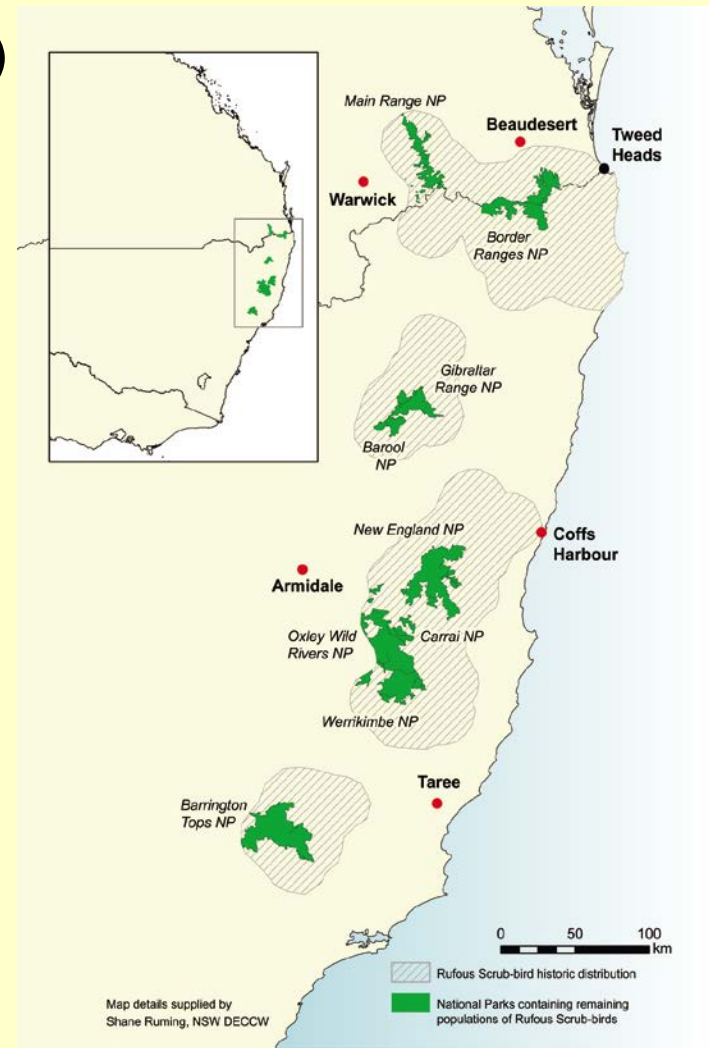
Alan Stuart

1 September 2018

Photos: Allan Richardson, David Stowe, me

Rufous Scrub-birds

- Rare species; endangered (EPBC Act)
 - 80% decrease (1981) from estimated 11,900 territories to 2,400 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.



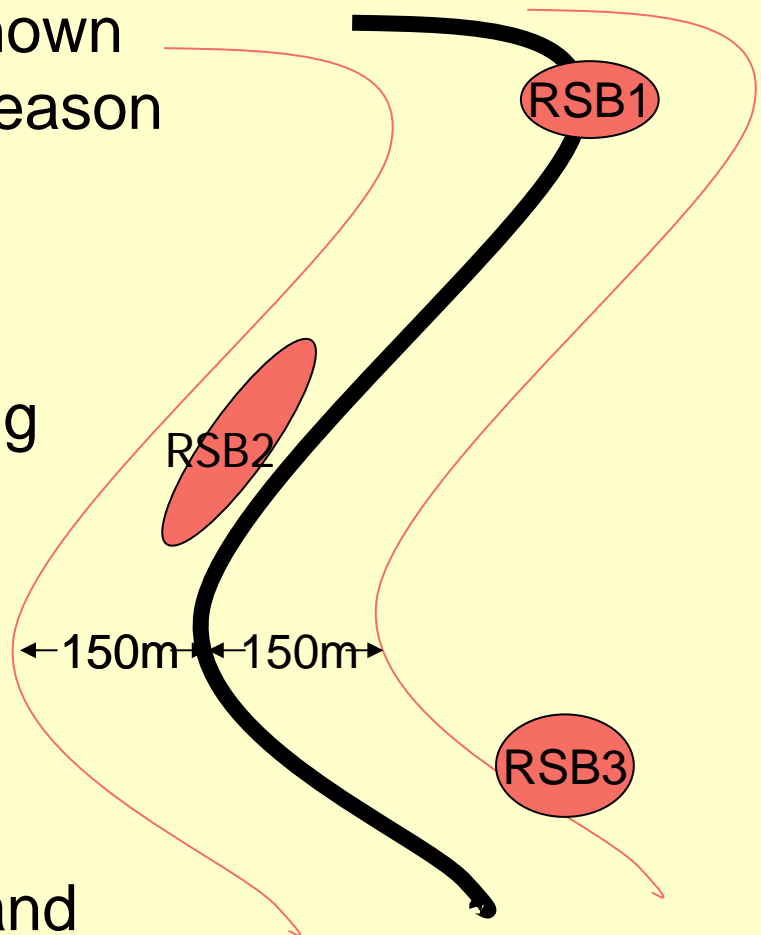
Past and present distribution



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



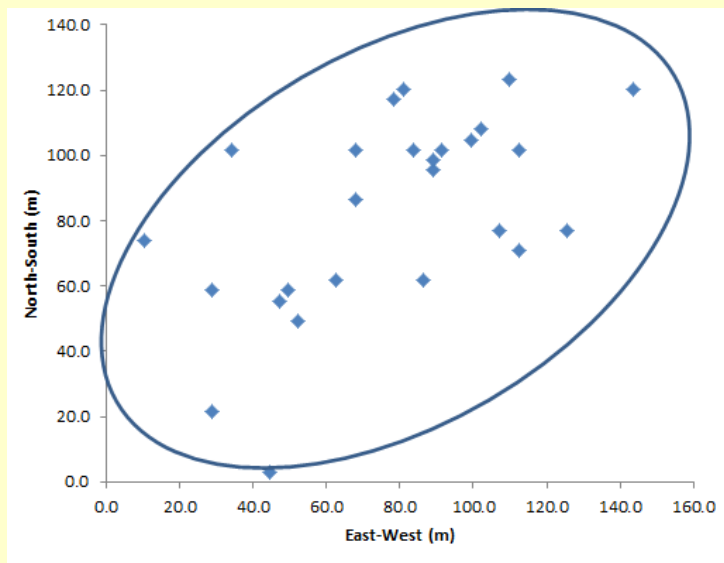
Male Rufous Scrub-bird (Allan Richardson)



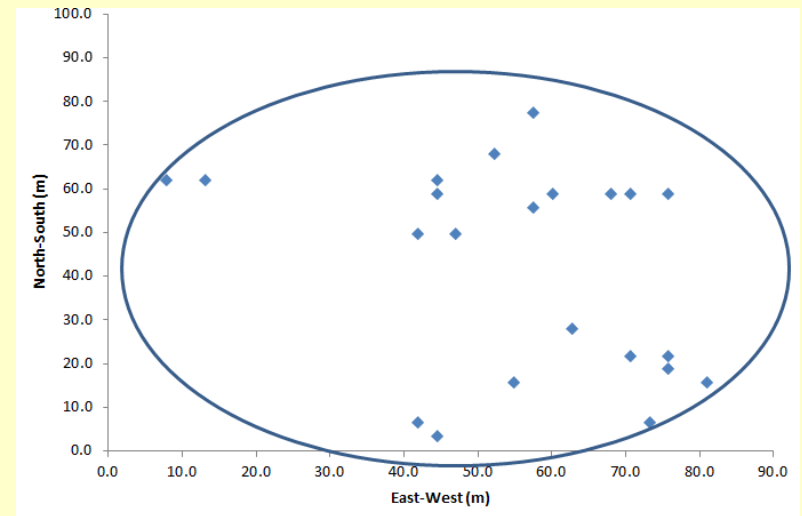
Female Rufous Scrub-bird (David Stowe)

Behaviour of individual birds

- Size of singing 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



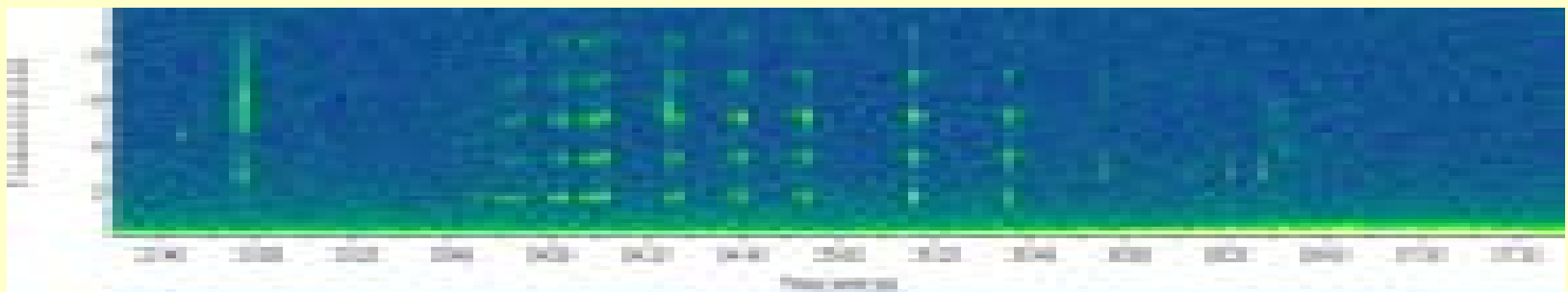
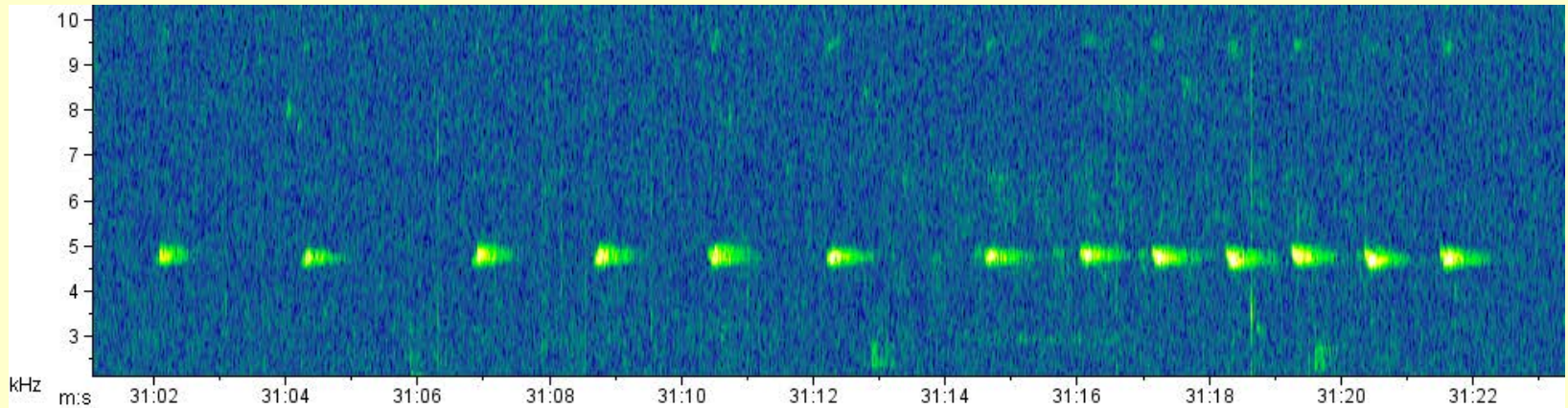
RSB locations within a 0.74ha territory

Behaviour of individual birds

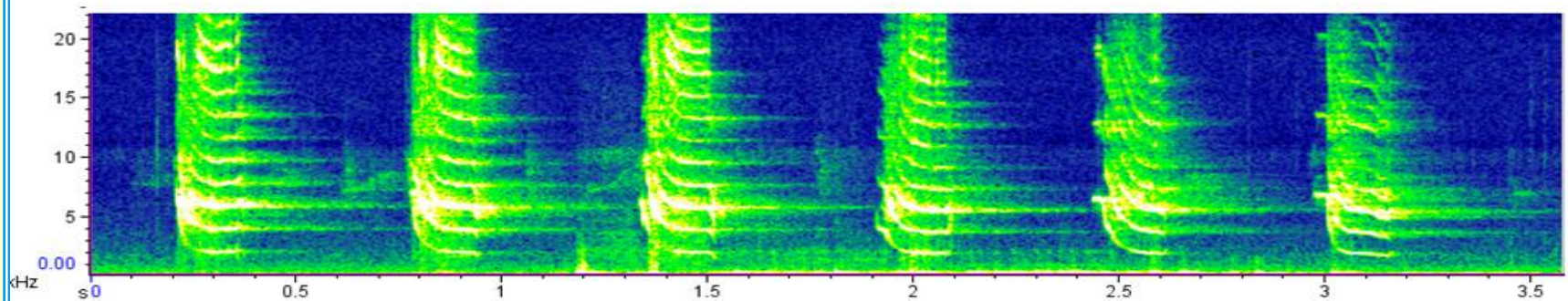
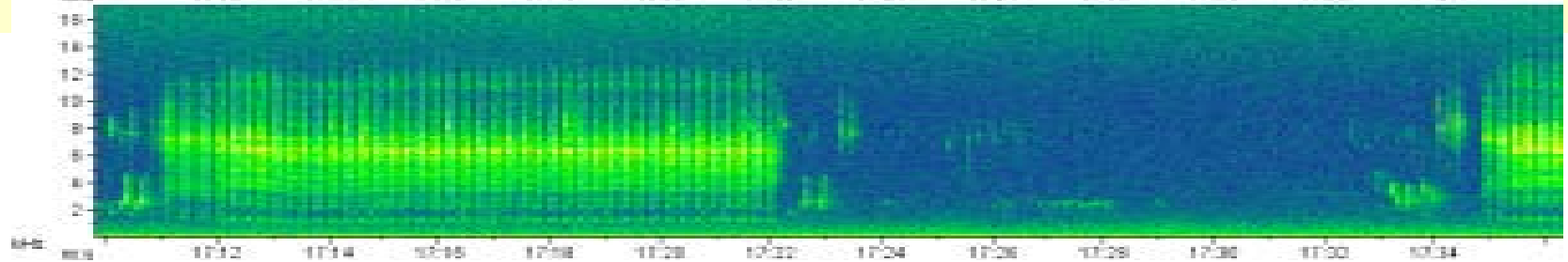
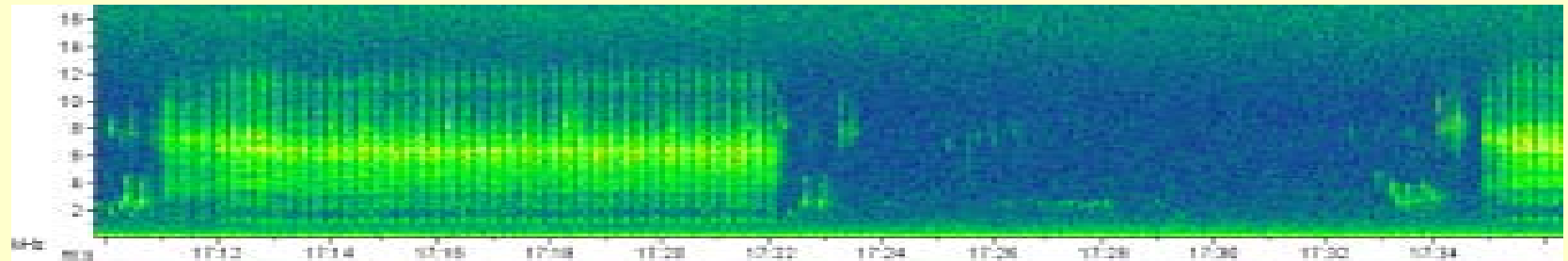
- Calls of males mainly are based around combinations of single syllable notes:
 - The frequency range varies
 - The number of syllables in a calling event varies
 - Can be ascending or descending
 - Also mimicry
- Using automated recording units (ARU) to analyse calling patterns of males at their territories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



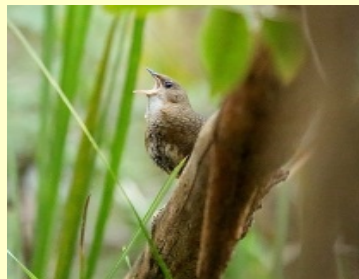
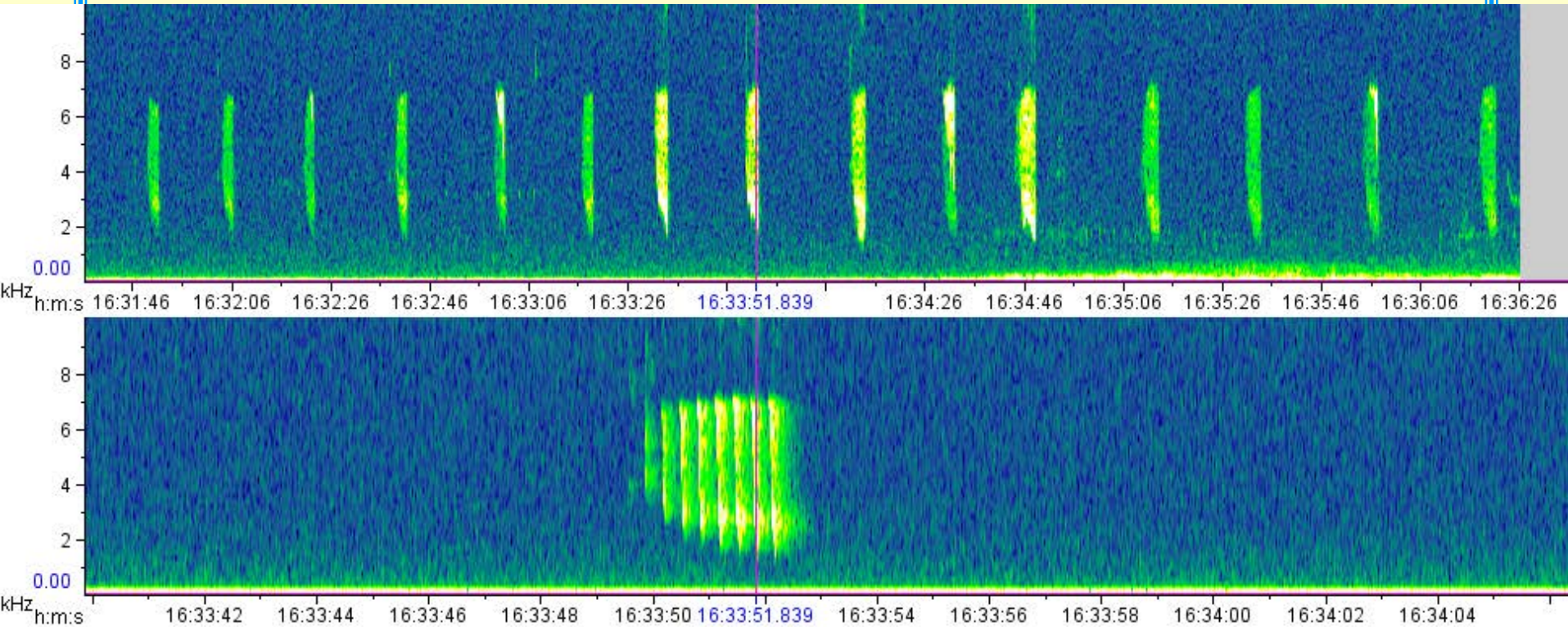
Some Rufous Scrub-bird calls



Some Rufous Scrub-bird calls



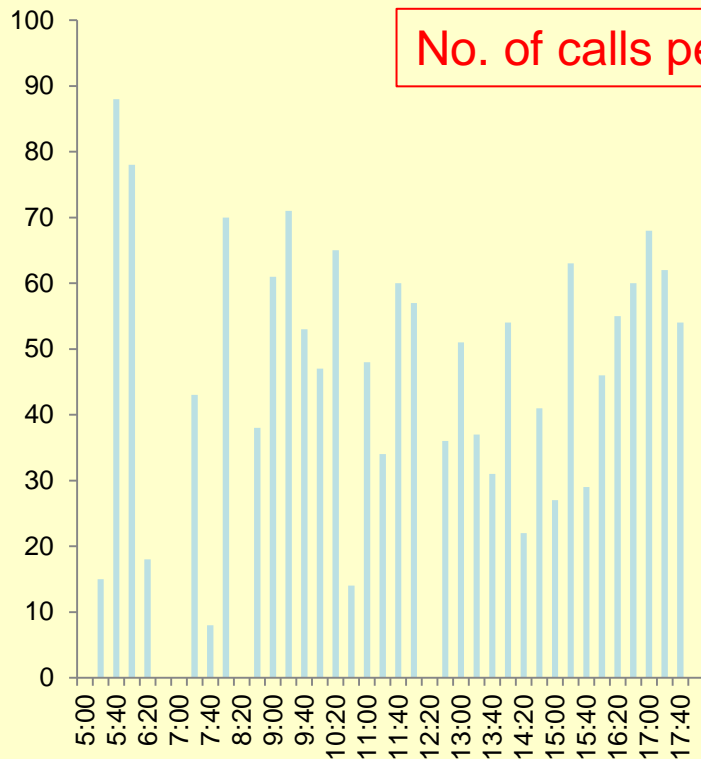
The main call (“chipping”)



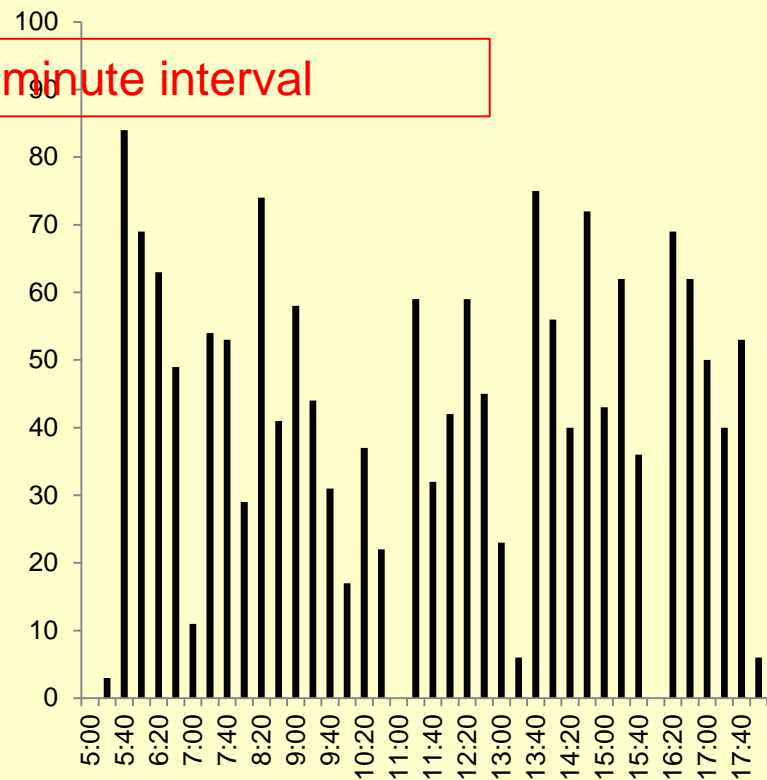
Monitoring the chipping call

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

CP122R 20150929



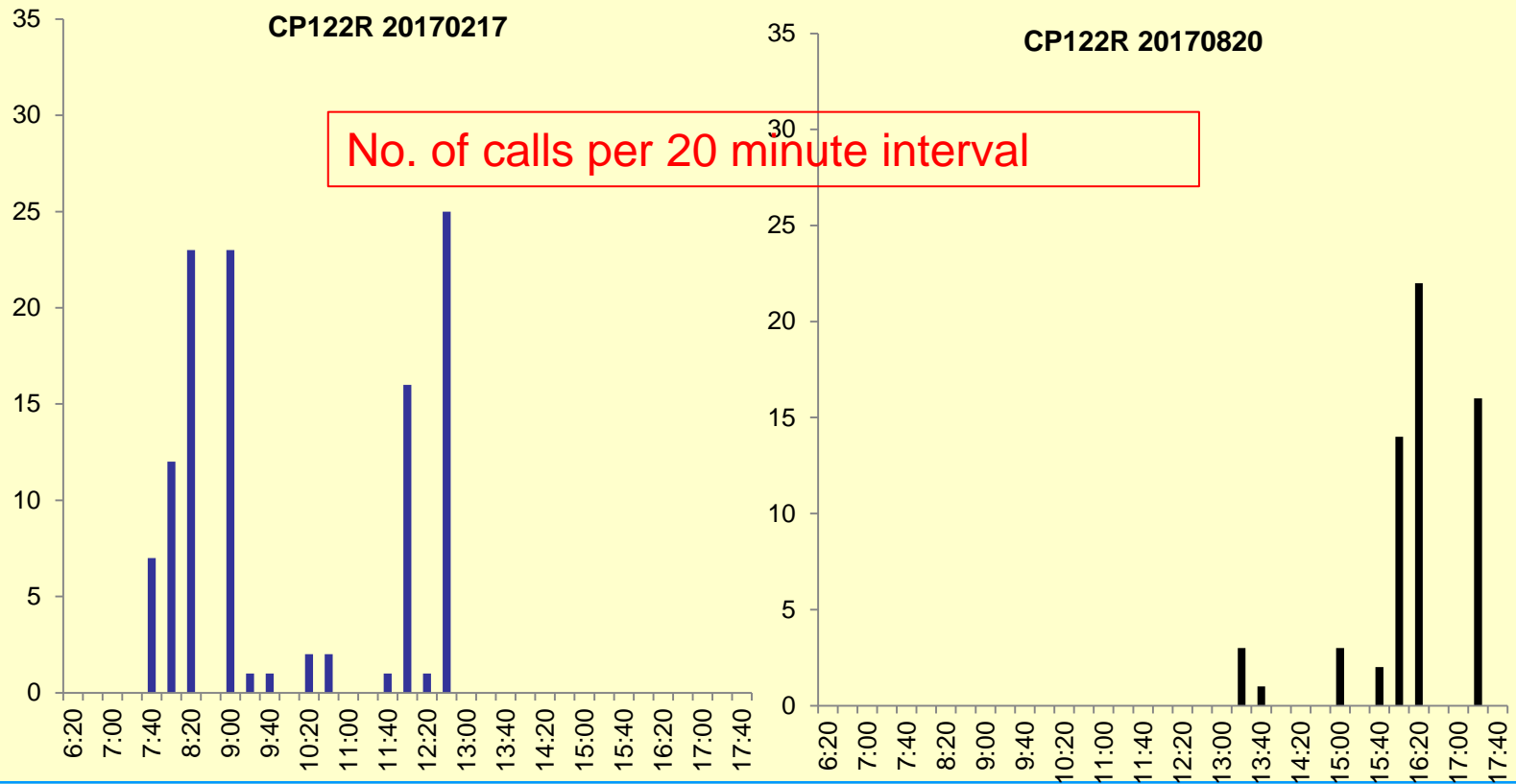
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No. of calls per 20 minute interval

Monitoring the chipping call

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



Comparisons with Noisy Scrub-bird

	Noisy Scrub-bird	Rufous Scrub-bird
Breeds	Winter	Spring
Eggs	1	2
Incubation period	36-38 days	?
Time to fledging	~4 weeks	?
Mimicry	No	Yes
Males	<ul style="list-style-type: none"> • Exploded lek (→ males can hear other males) • Songs vary over time • Share their territory with non-calling males 	<ul style="list-style-type: none"> • Can't hear other calling males? • Song is constant? • Males may be alone in their territories?
Females	<ul style="list-style-type: none"> • Live in separate territories • Probably visit hotshot males to mate 	<ul style="list-style-type: none"> • ? • ?

What next?

- Ongoing study of the calling behaviour of individual birds
- Determine inter-generational lifetimes
 - Catch and band Rufous Scrub-birds!
- Investigate the relationship between territory size and singing area
 - Radio telemetry?
- Find a nest and study breeding behaviour

A nest found near
Dorrigo (in 1910)



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?
- Next surveys: 24-26 September (*helpers welcomed*)