

# Review and evaluation of conventional wisdom on the roosting of flying foxes



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6<sup>th</sup> Annual National Flying-fox Forum: Camp restoration and species recovery

14<sup>th</sup> September 2021

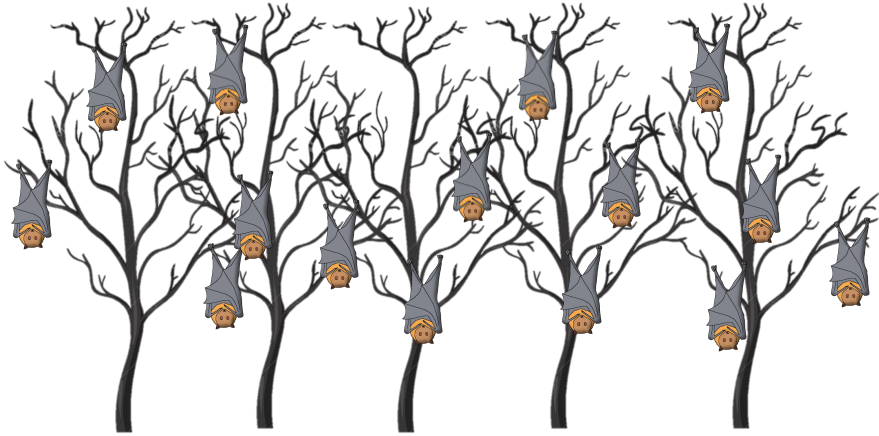
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# Vegetation management policies for conservation and conflict are contradictory

- Include vegetation restoration works

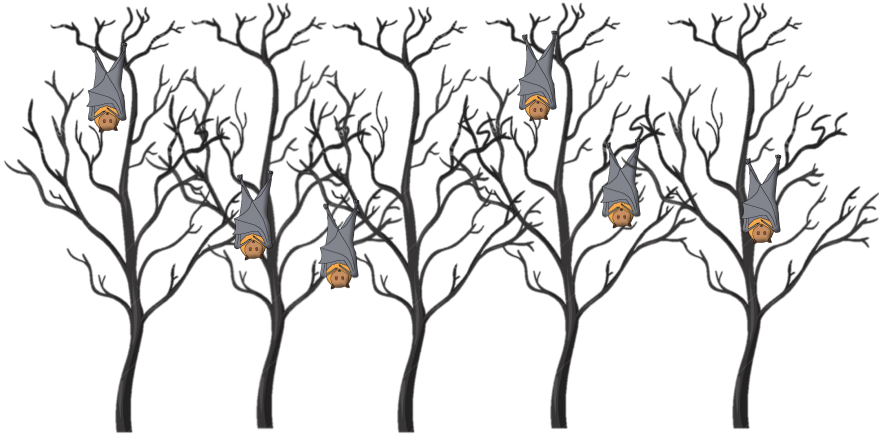
- But also tree removal to reduce human-wildlife conflict





Challenges are compounded by urbanisation





The impact on flying-foxes is poorly understood




## AUTHOREA

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## Conventional wisdom on roosting behaviour of Australian flying foxes - a critical review, and evaluation using new data

COMMUNITY ECOLOGY STATISTICAL TERRESTRIAL VERTEBRATE

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### Abstract

1. Fruit bats (Family: Pteropodidae) are animals of great ecological and economic importance, yet their populations are threatened by ongoing habitat loss and human persecution. A lack of ecological knowledge for the vast majority of Pteropodid bat species presents additional challenges for their conservation and management. 2. In Australia, populations of flying-fox

## Ecology and Evolution

Open Access

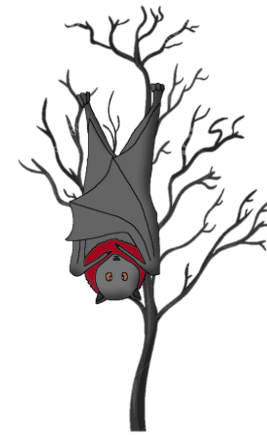
(1) Collation of commonly held perceptions

*e.g. "Roost abundance peaks in March"*

(2) Systematic review of published literature

*Support or contradict statement?*

(3) New empirical data to test perceptions



Black flying-fox



Little red flying-fox

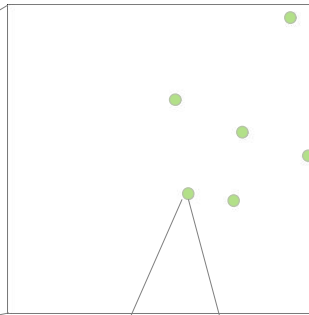
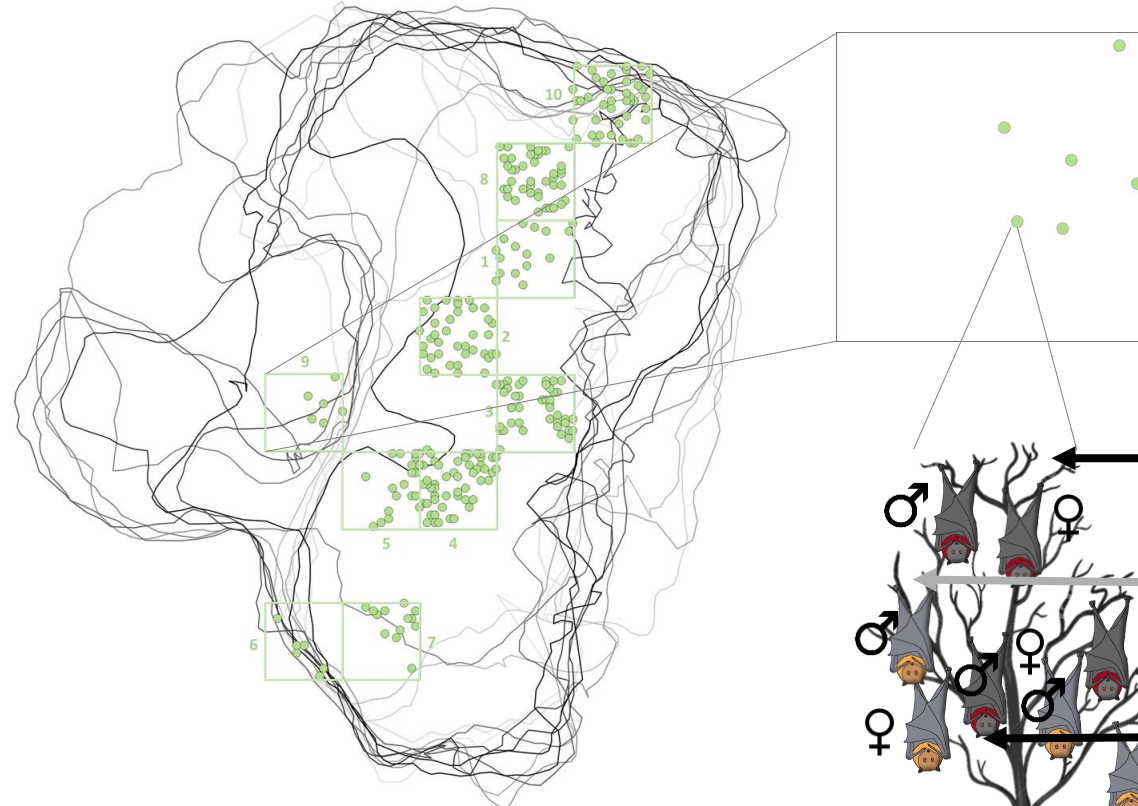
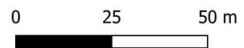


Grey-headed flying-fox

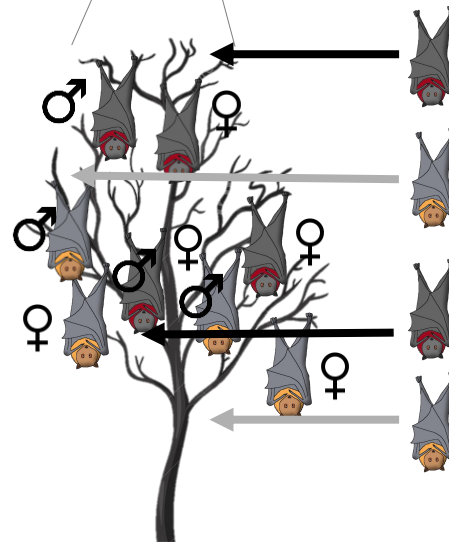
- Urban area
- Roost
- ★ Study roost

Redcliffe

- August 2018
- September 2018
- October 2018
- November 2018
- December 2018
- January 2019
- February 2019
- March 2019
- April 2019
- May 2019
- June 2019
- July 2019
- August 2019












Monthly-repeat measures from 2,522 trees, 80 subplots, 8 roosts

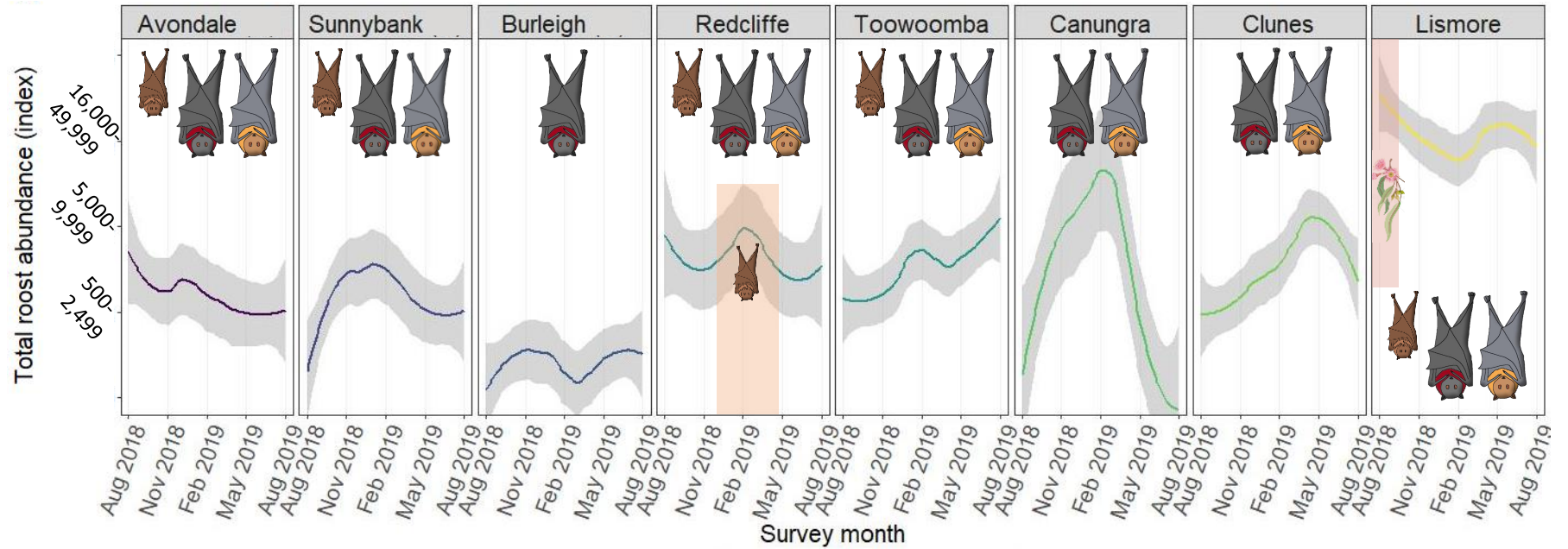


Systematic, repeatable & quantitative data on roosting ecology:

31 statements in total. Evaluated 11 with new empirical data

Statement / Perception about roosting ecology		Support	Contradict	Support	Contradict
Use of area	Some areas of roosts are more consistently occupied than others ('core area')	Study (date)			
	'Core areas' are more densely occupied than 'peripheral areas'	Study (date)			
	Roost area fluctuates with total abundance	Study (date)			
Overlap of sp.	Species share roosts sites but segregate spatially within	Study (date)	Study (date)		
	Species roost at different heights	Study (date)			
Seasonality	Roosts have distinguishable seasonal patterns of abundance and occupation	Study (date)	Study (date)		
	Roost abundance peaks in late March (winter)	Study (date)	Study (date)		
Demography	Most roost trees are occupied by mixed groups of adults, but groups of all male bats occur	Study (date)	Study (date)		
	Dominant individuals occupy the center of roosts, and subdominant individuals the outer area	Study (date)	Study (date)		





“Roosts have distinguishable patterns of abundance and occupation”



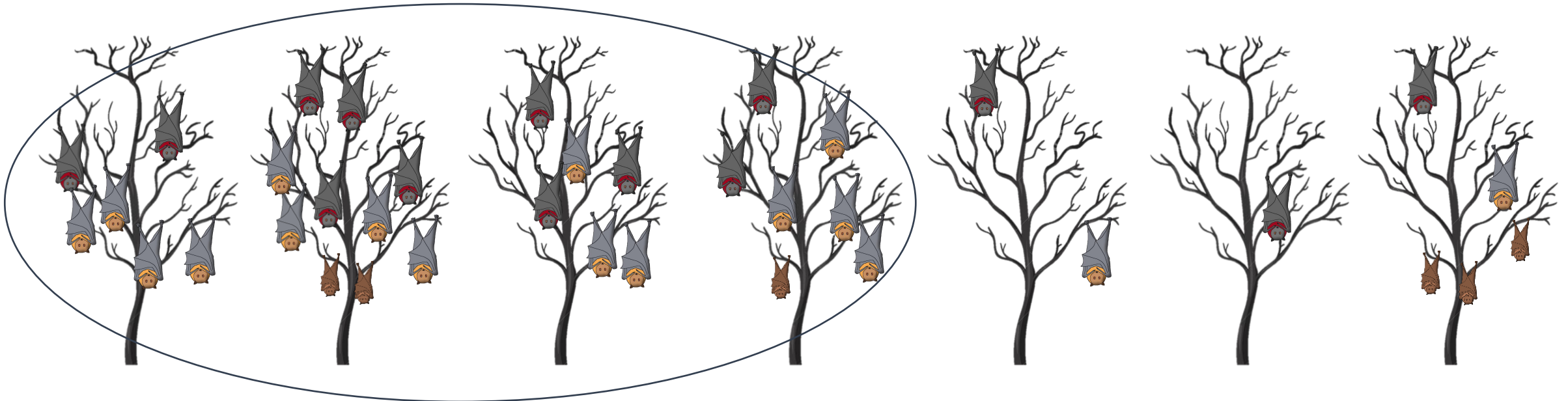
“Roosts abundance peaks in late March”



We found that roost structure was variable over space and time:



*“Some areas of roosts are more consistently occupied (‘core areas’) than others”*



These ‘core’ areas may be more important to preserve

“ ‘Core areas’ are more densely occupied than ‘peripheral areas’ “



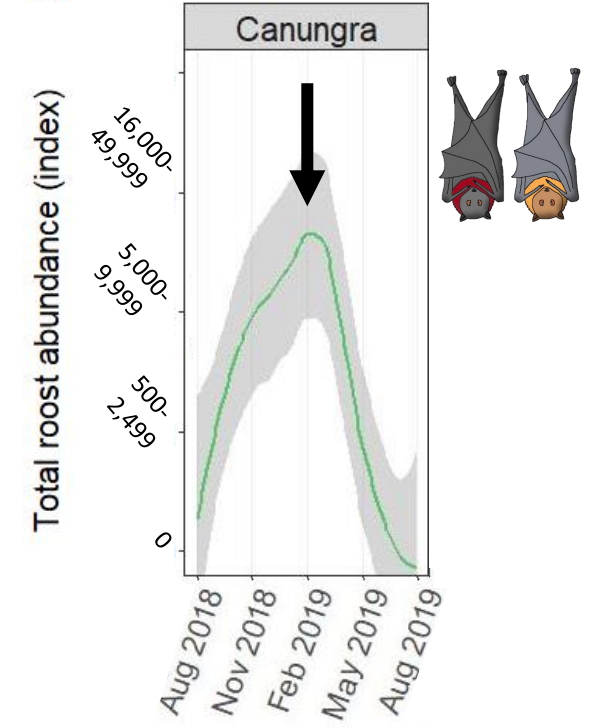
Increasing their value for habitat preservation

'Core' areas were NOT always in the centre of roosts...



...meaning that buffer creation could substantially impact flying-foxes

'Core' areas were NOT always in the centre of roosts...



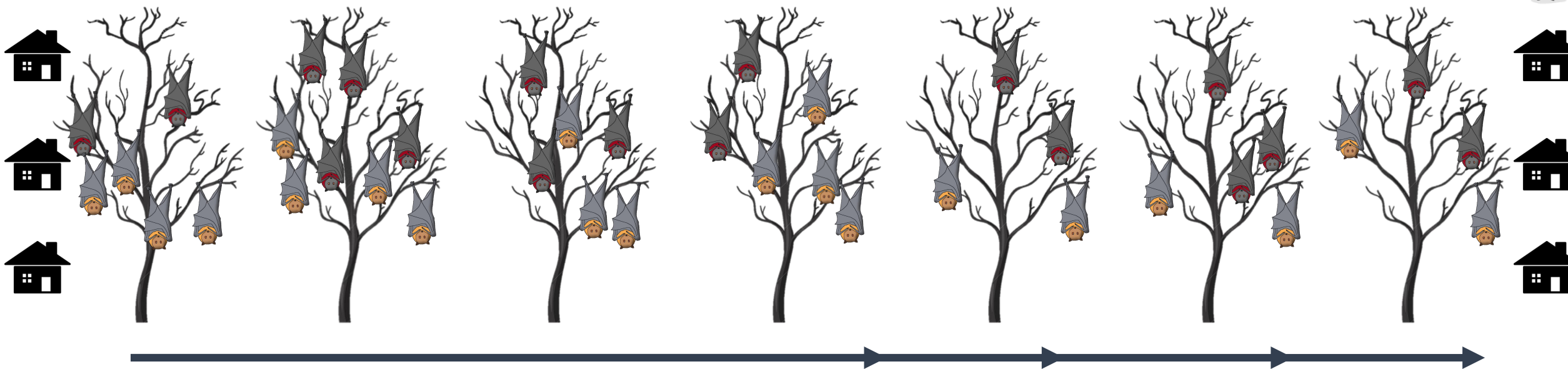
...meaning that buffer creation could substantially impact flying-foxes

Females with pups were also NOT always in the centre of roosts...



...compounding potential impacts of buffer creation

*“Roost area fluctuates with total abundance”*



So neighbouring houses may experience temporary impacts from expanding roosts...

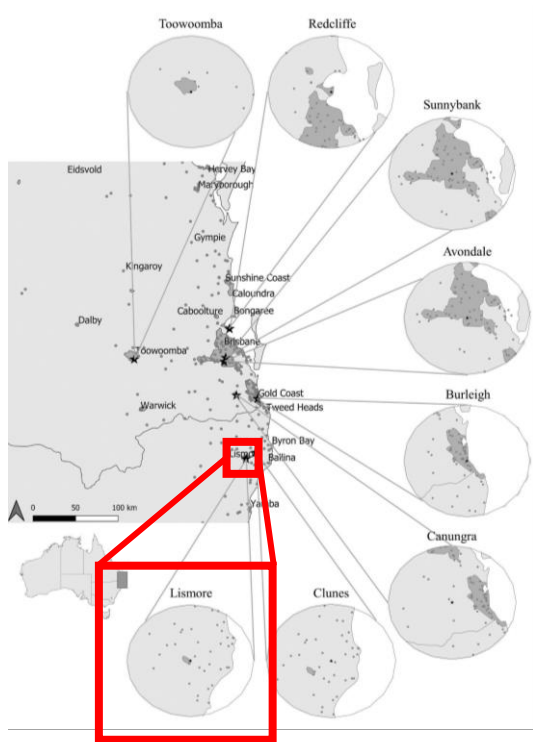


“Roost area fluctuates with total abundance”





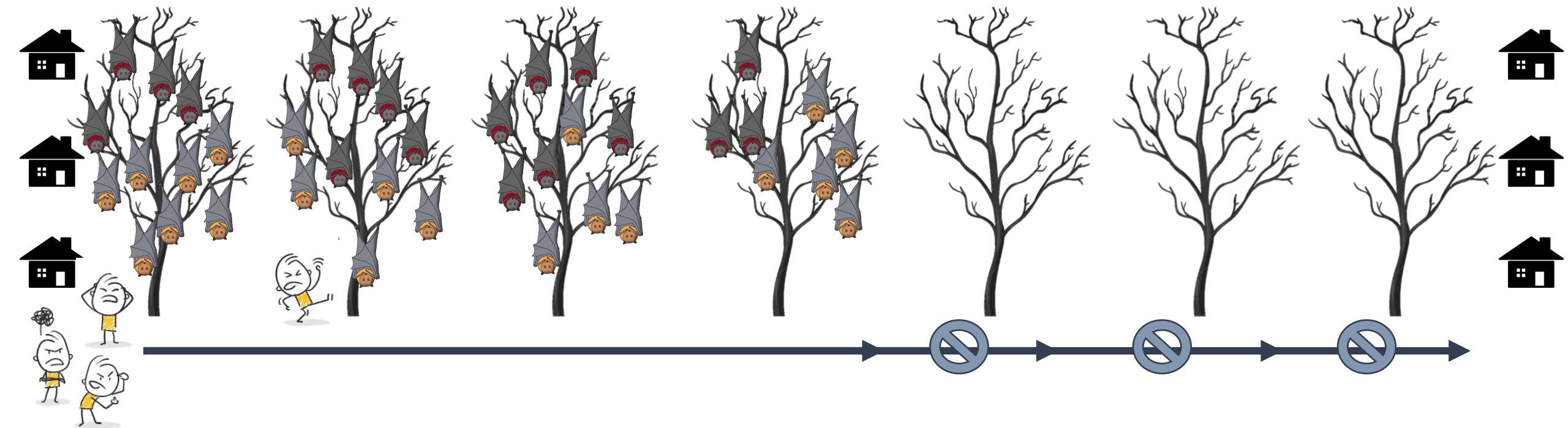
“Roost area fluctuates with total abundance”



“Roost area fluctuates with total abundance”



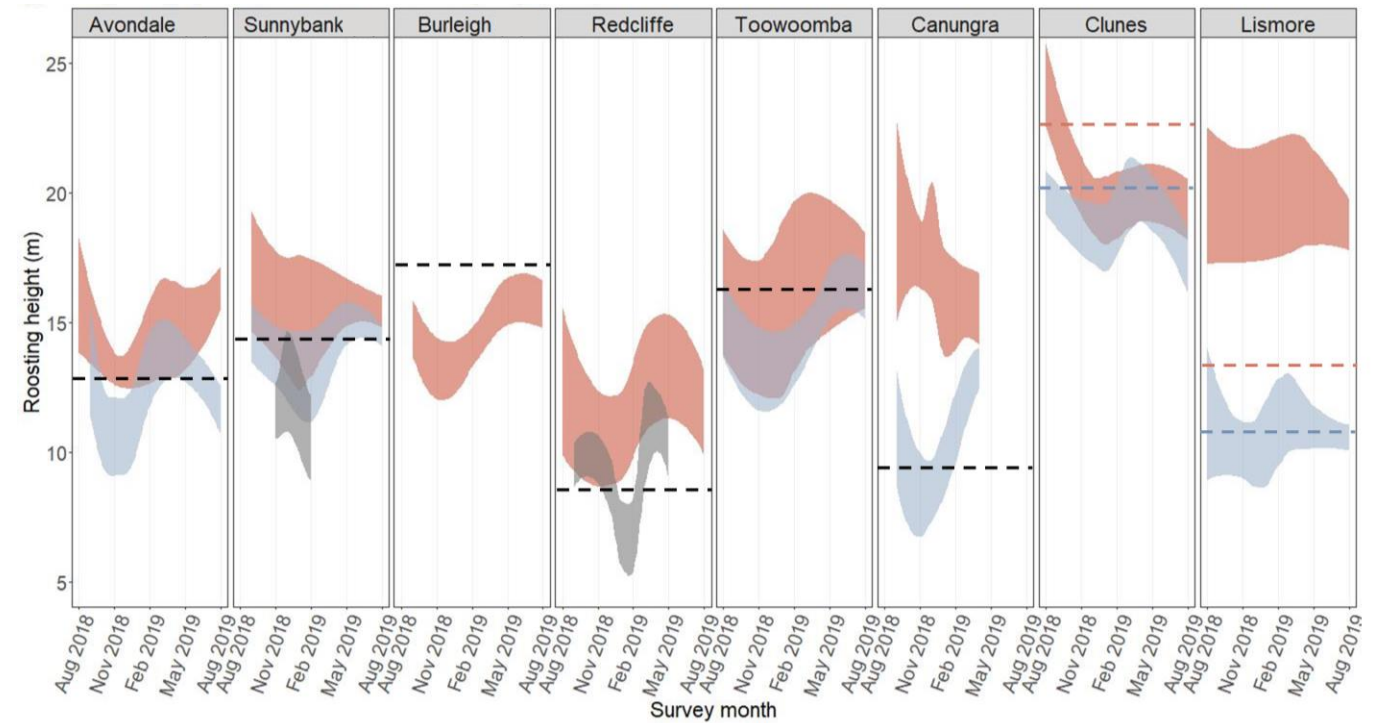
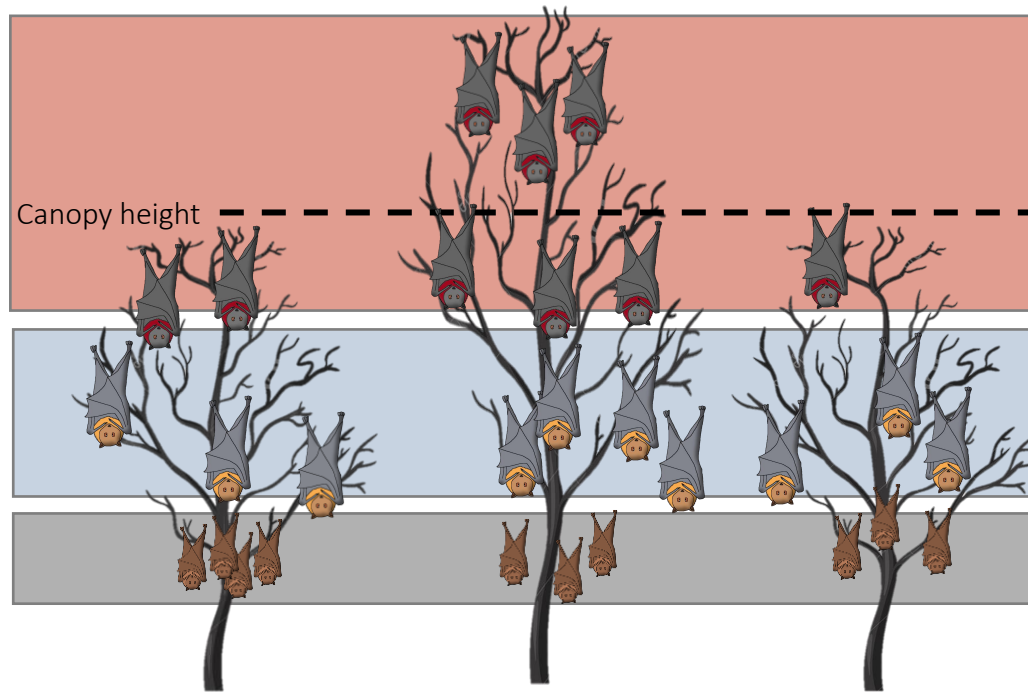
So buffer creation may exacerbate impacts, by compacting roost space



We found evidence of sympatry but fine-scale separation of species:



*“Species roost at different heights”*





“Species share roosts sites but segregate spatially within”



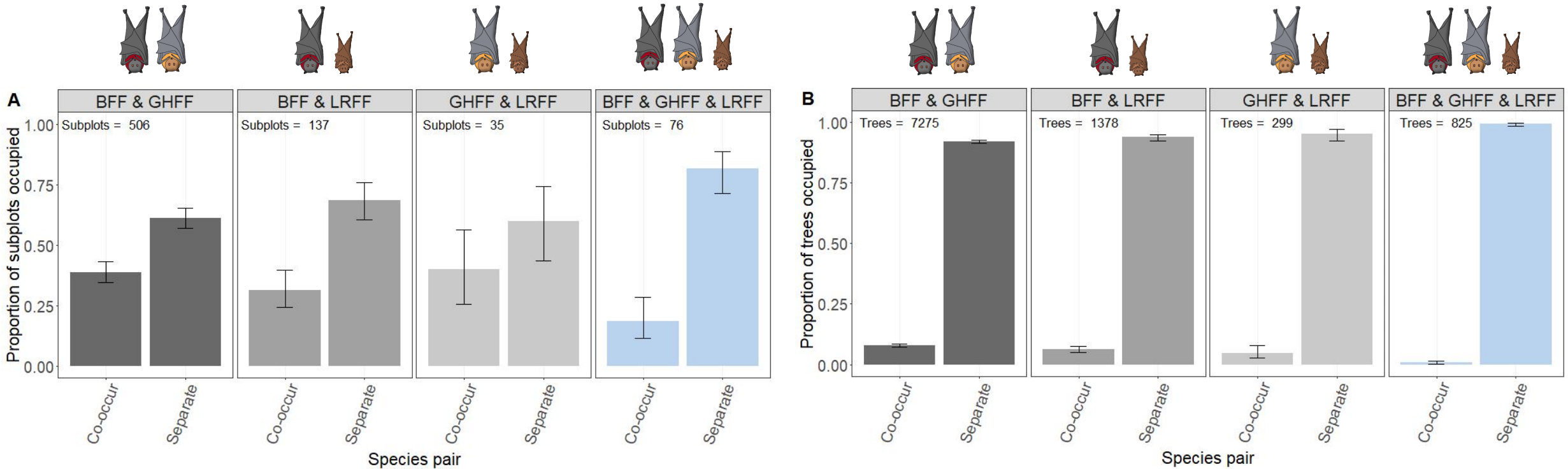


“Species share roosts sites but segregate spatially within”



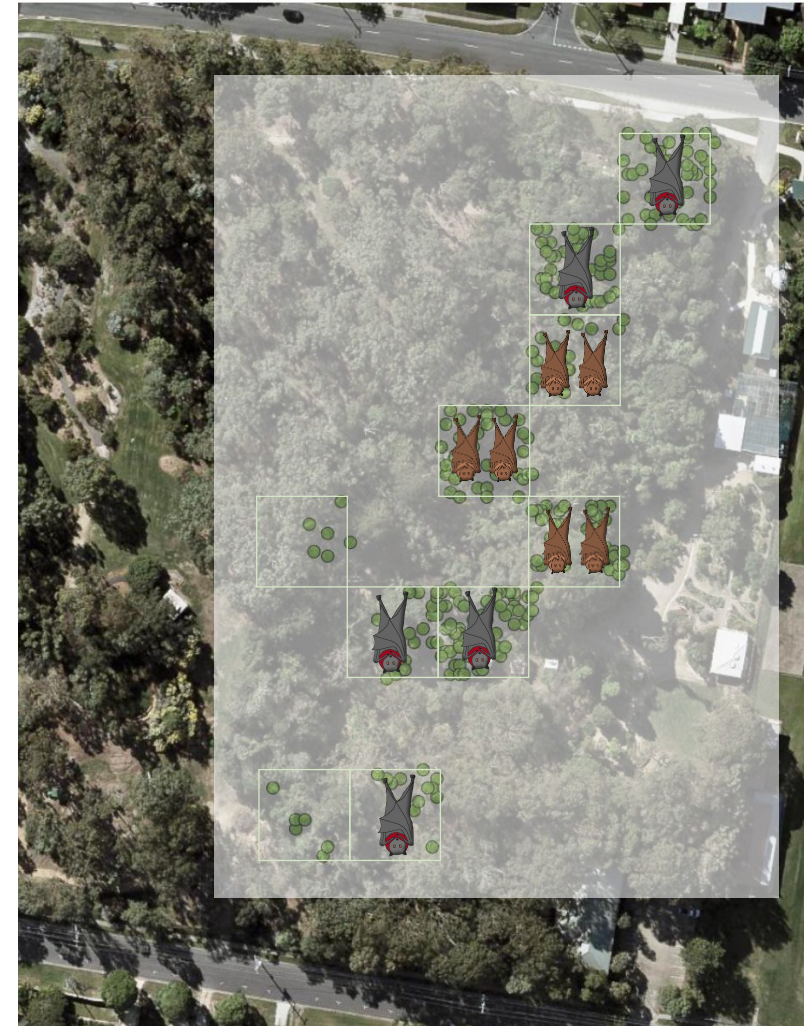


*“Species share roosts sites but segregate spatially within”*





“Large influxes of species into roosts can displace other species”





Build on broad-scale knowledge of historic roosting and provide updated baseline information on roosting structure in urban and peri-urban roosts



Can be used to guide management of these species, to better balance flying-fox conservation and human-wildlife conflict

Meets research needs identified in the Recovery Plan for grey-headed flying-fox

# Acknowledgements

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- Cara Parsons



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