

How many bees in the bush? Estimating social bee densities in the field

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Australian Government
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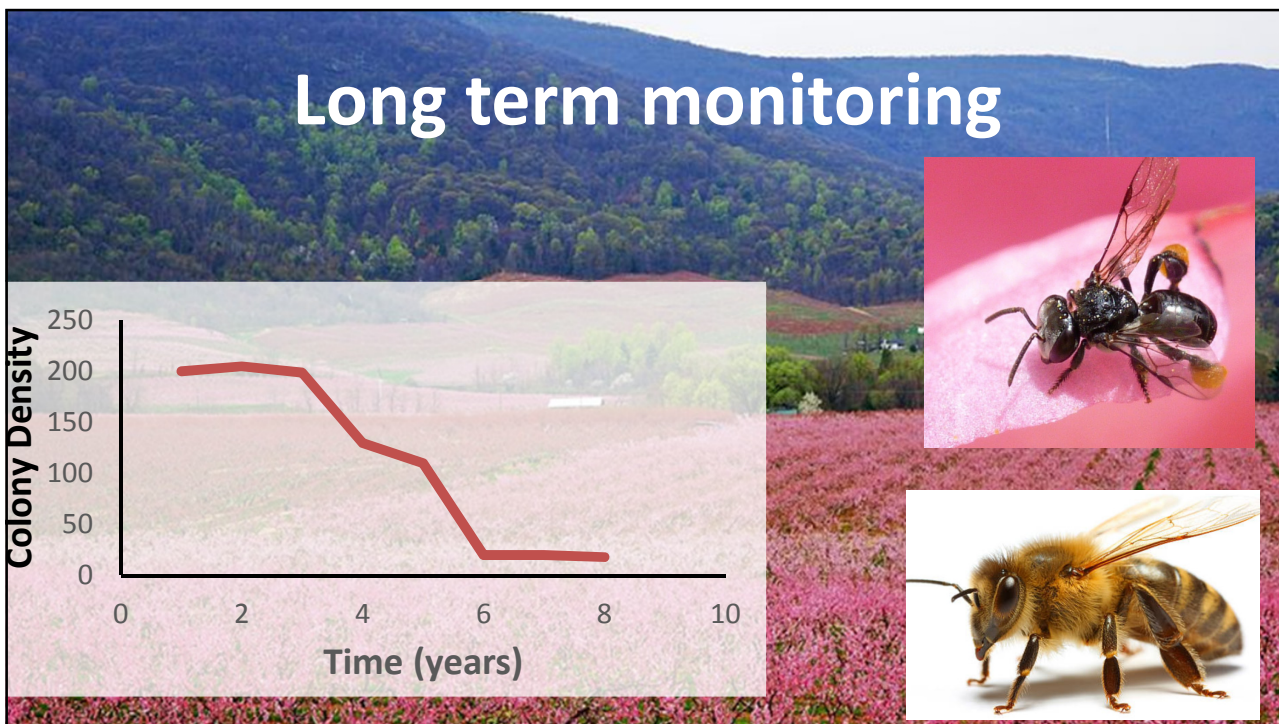
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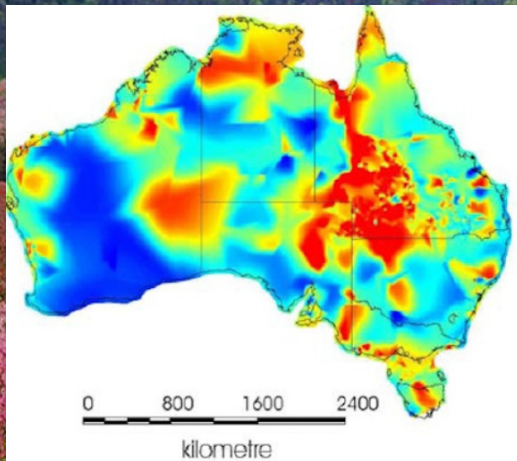
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Counting wild social bee colonies

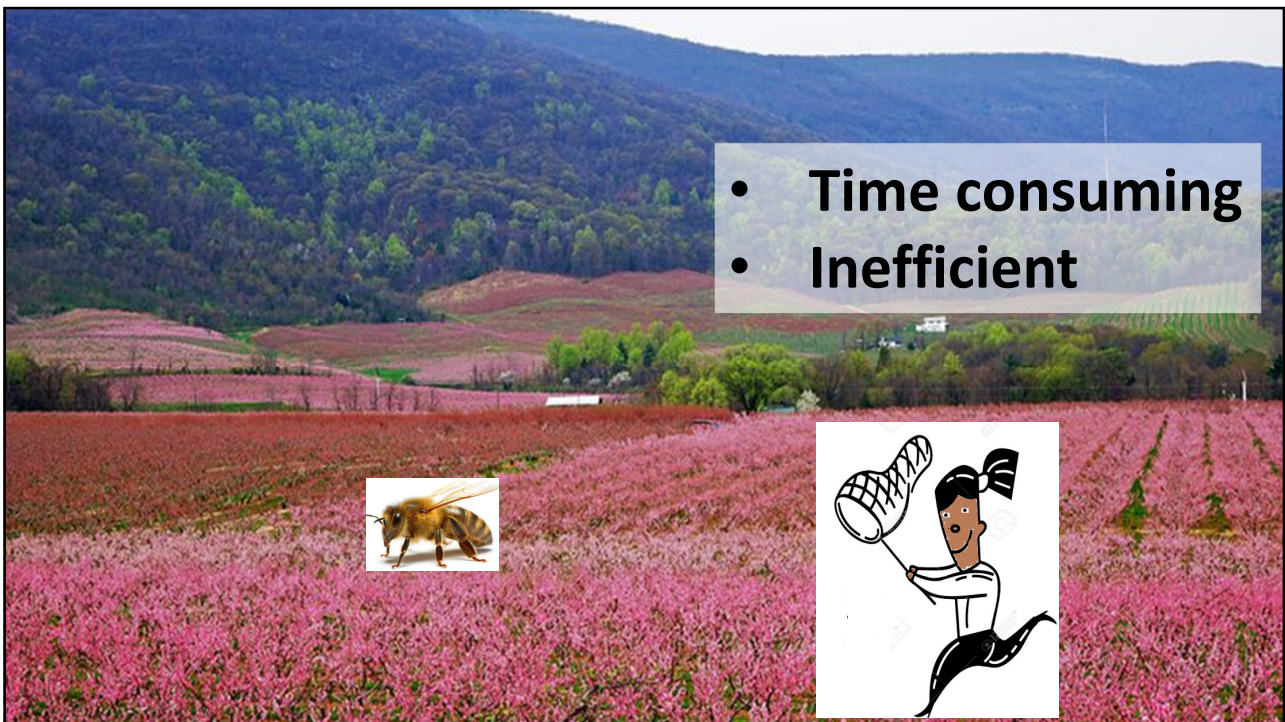


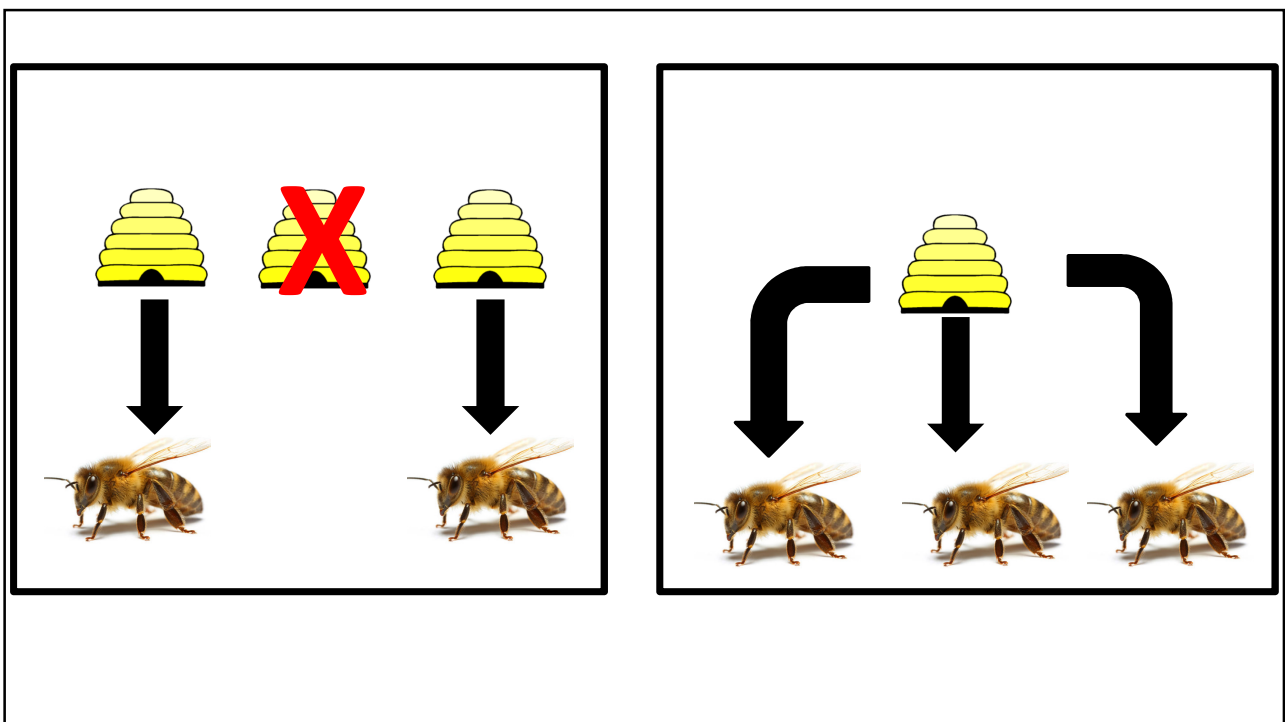
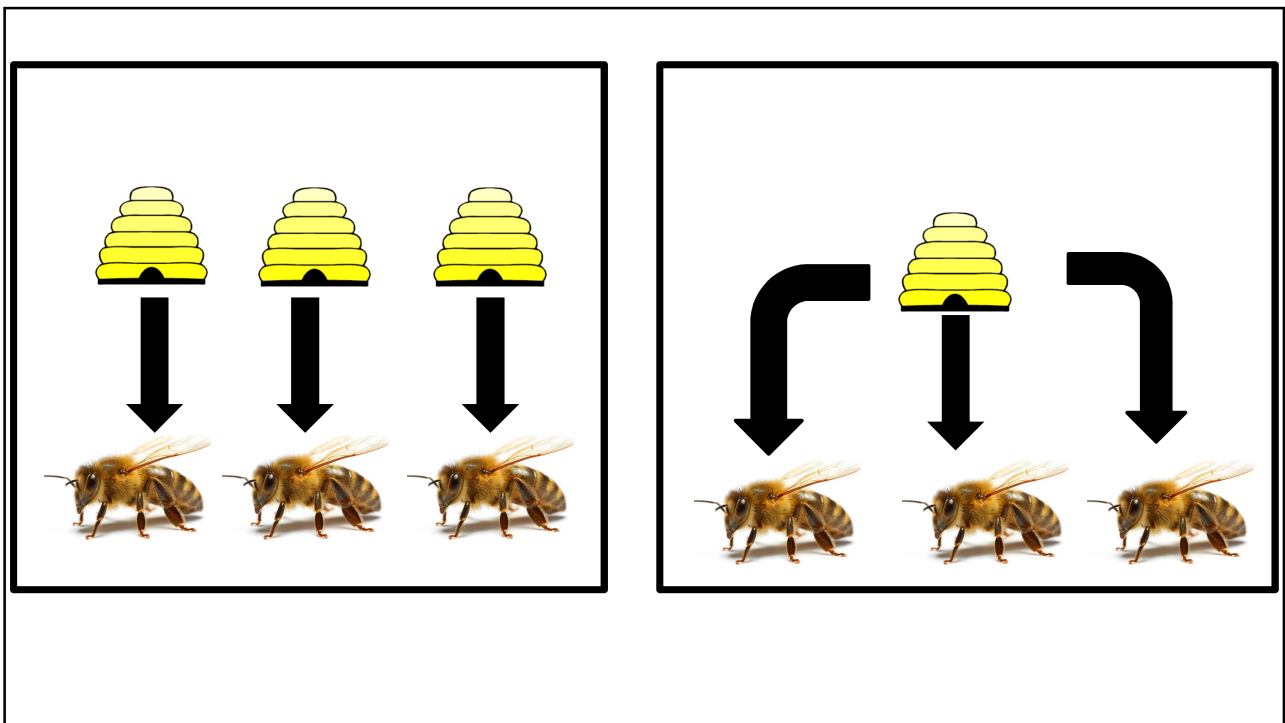
Identify areas at risk

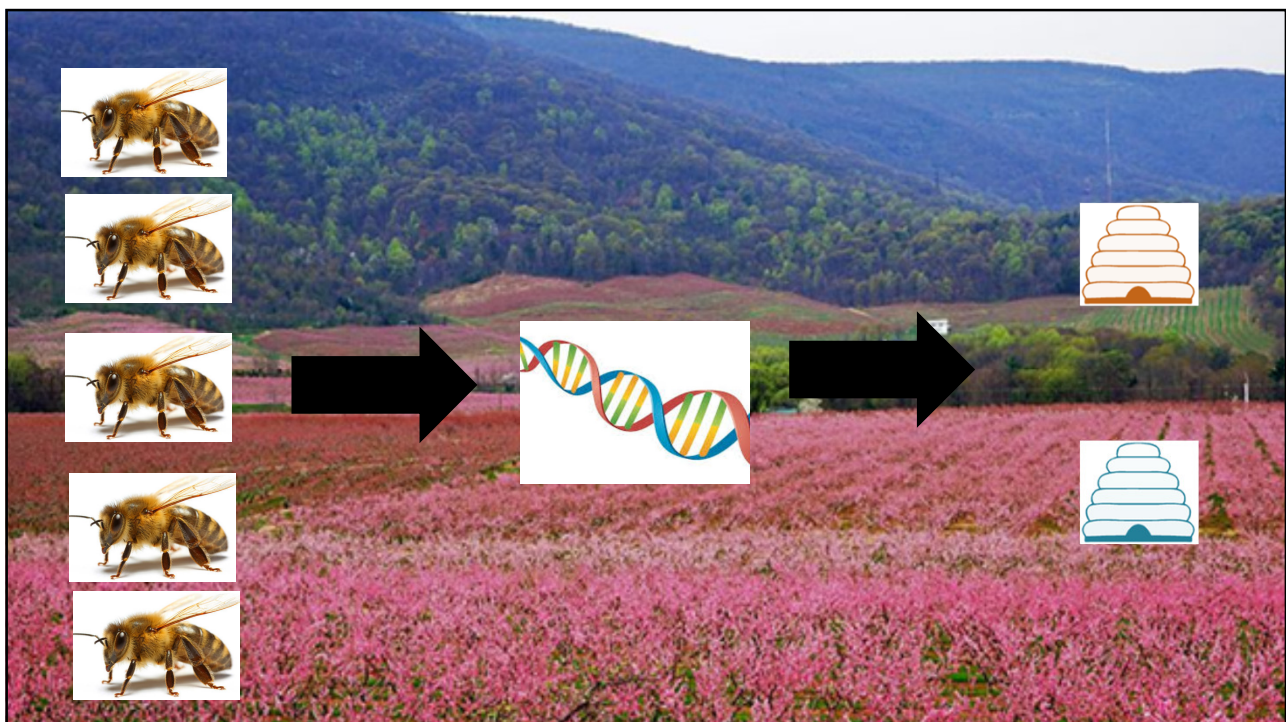
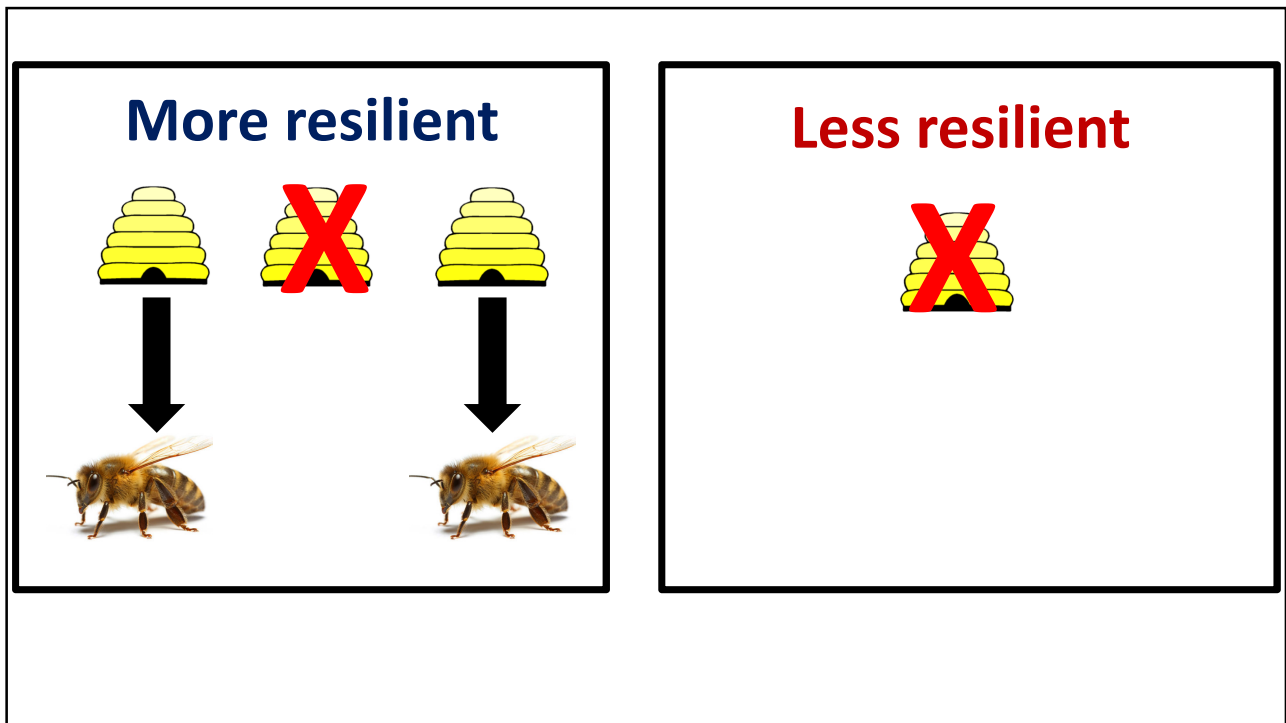


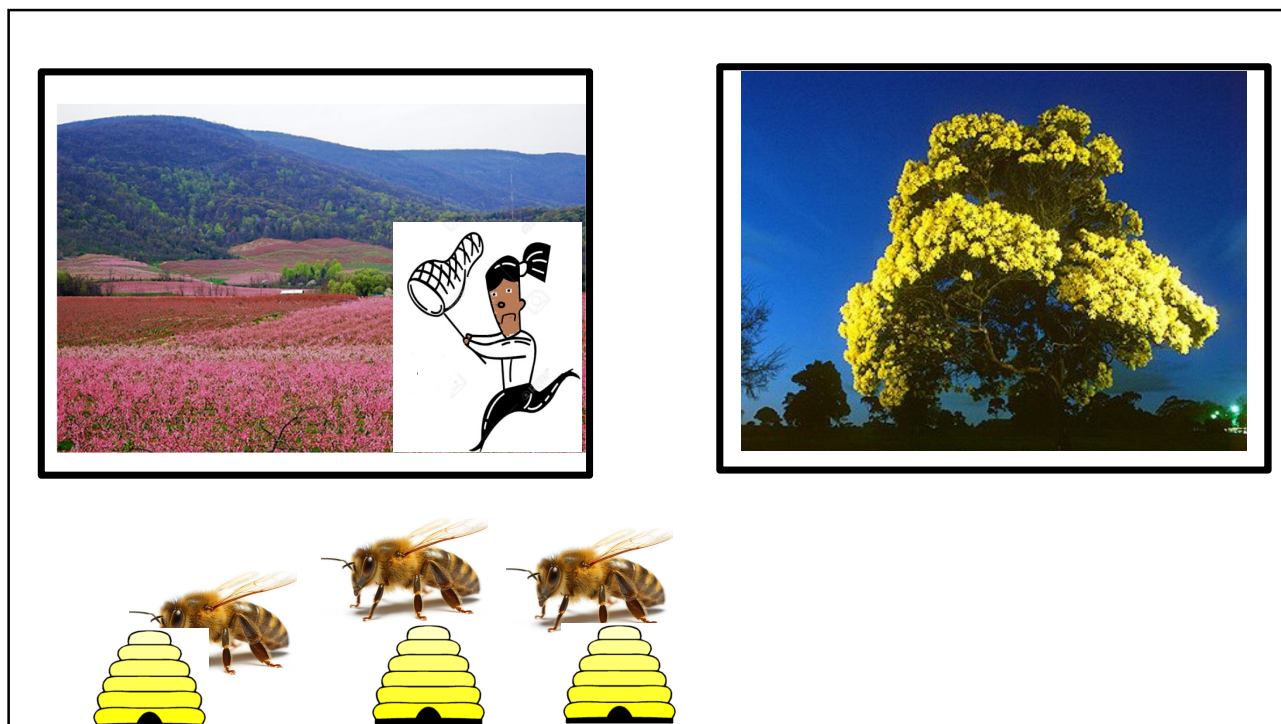
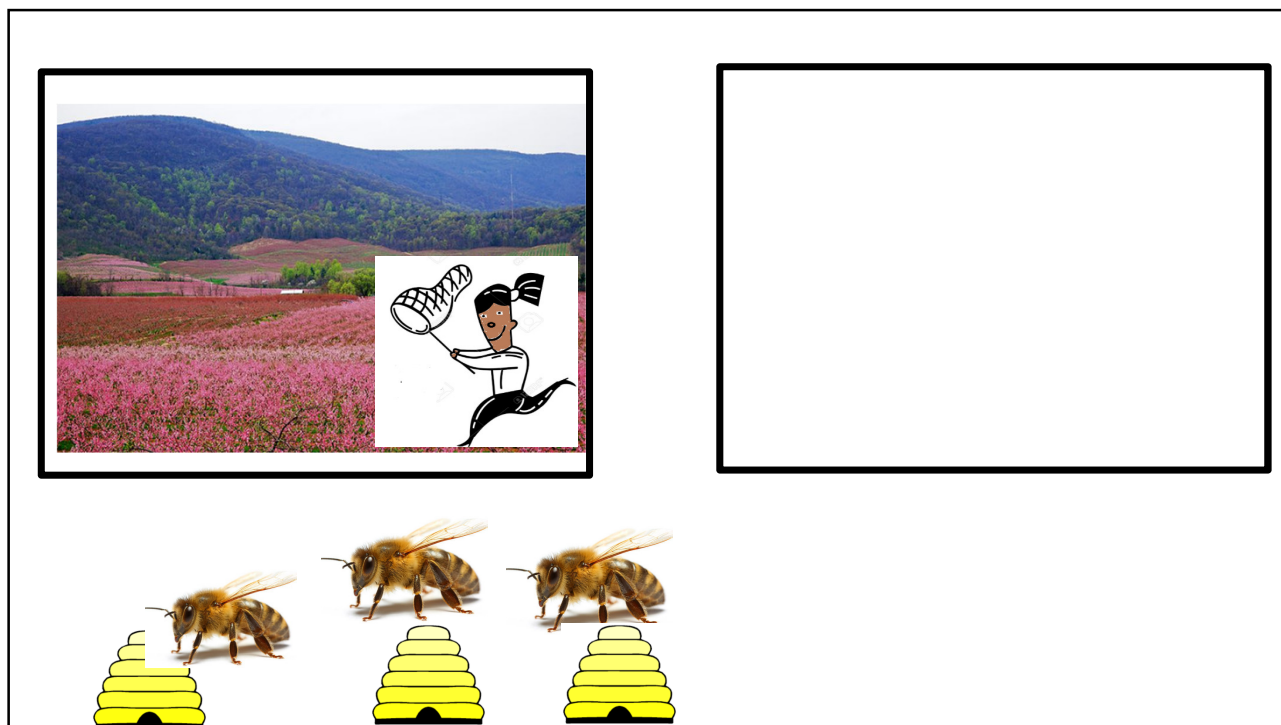


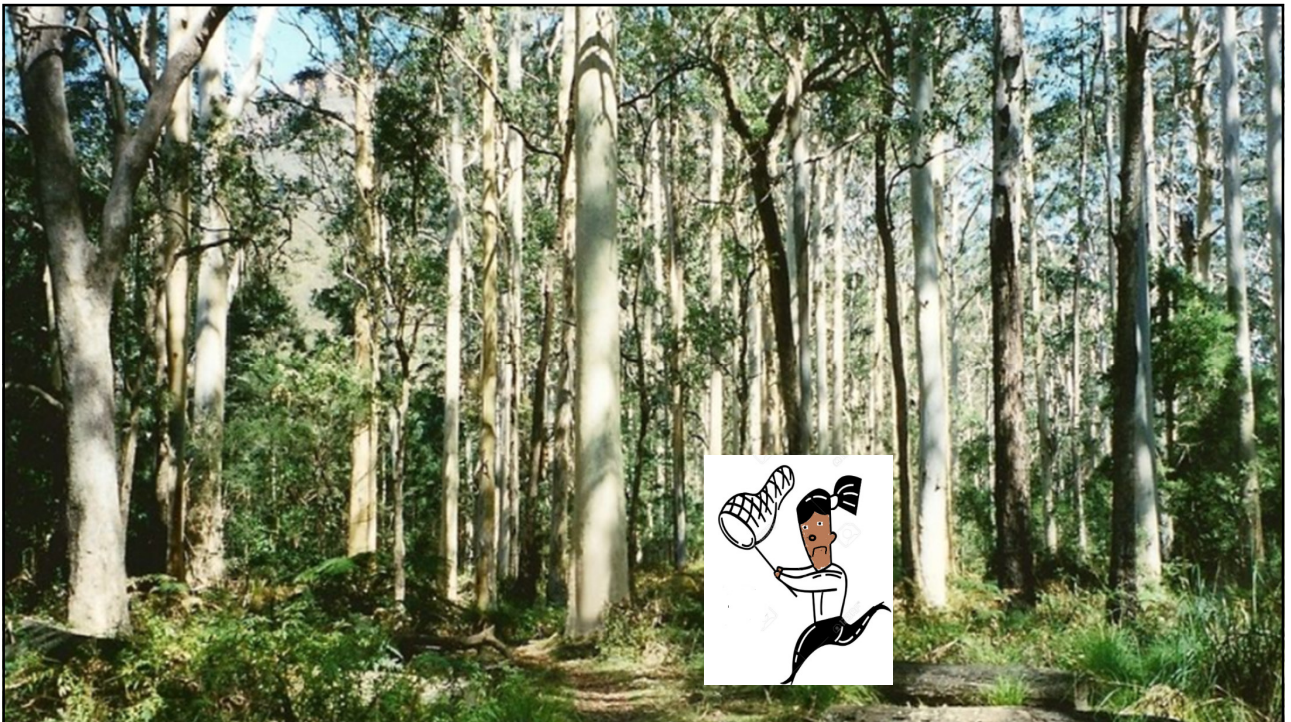
Cryptic













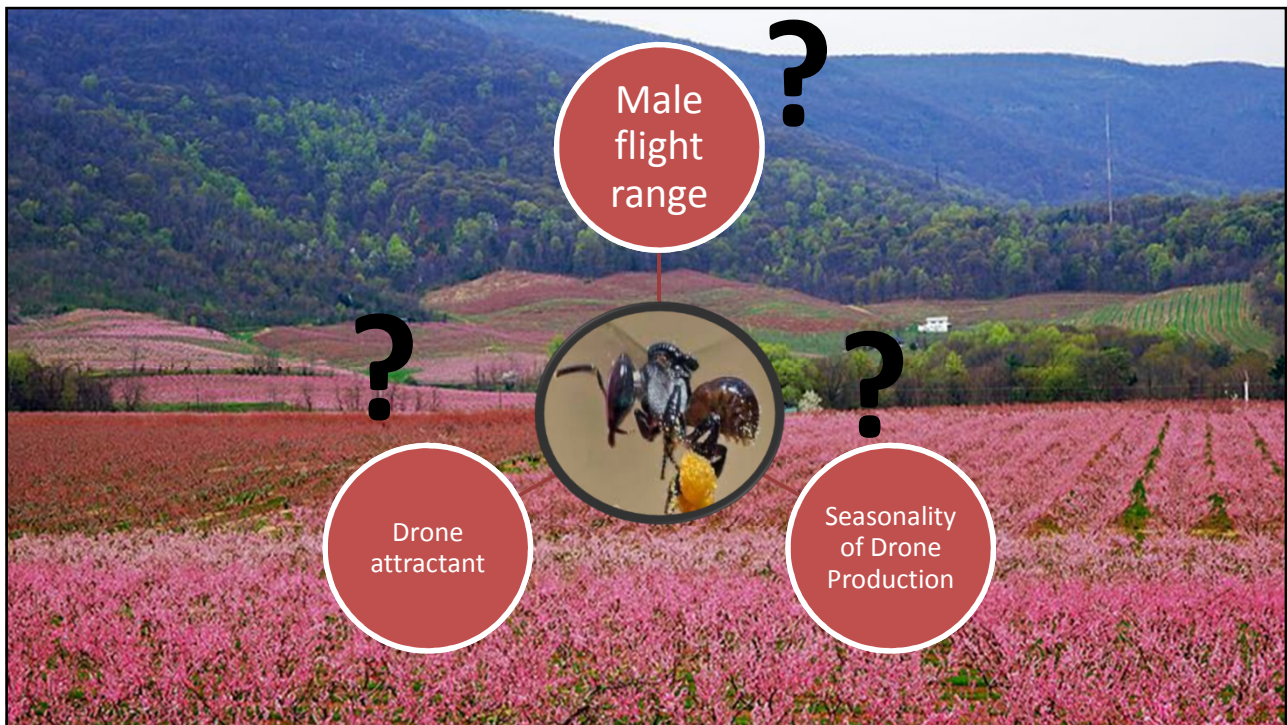
Male bees hang out together



Catching honey bee drones







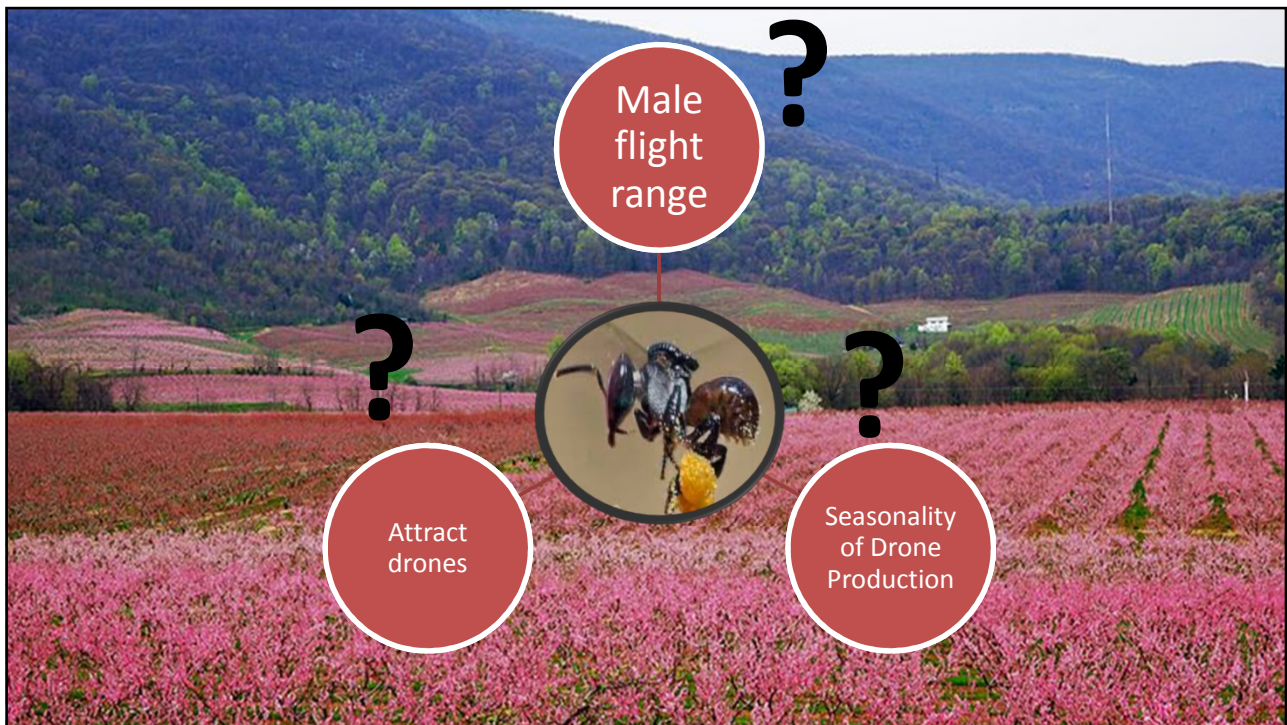
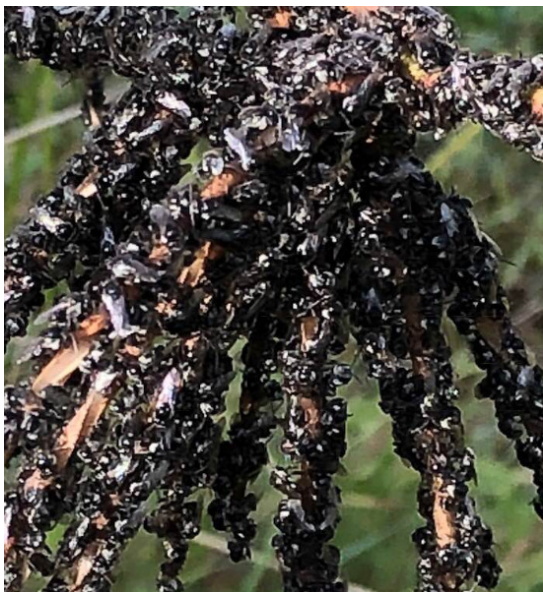




Photo: Corrinne Jordan



Photo: Bob Moffatt





Aim: develop a protocol for estimating colony density of *Tetragnula carbonaria*

1. Can males be reliably attracted?
2. How far do males fly?
3. When are males produced?



Francisco Garcia Bulle Bueno

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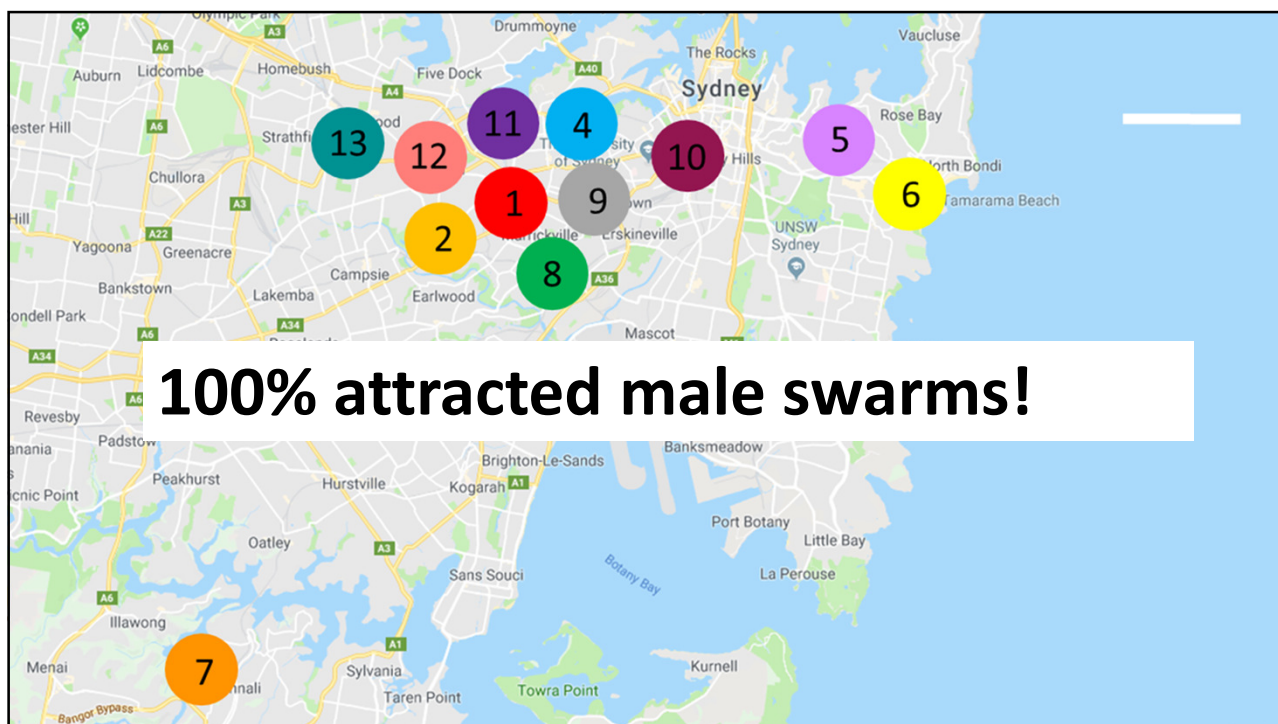
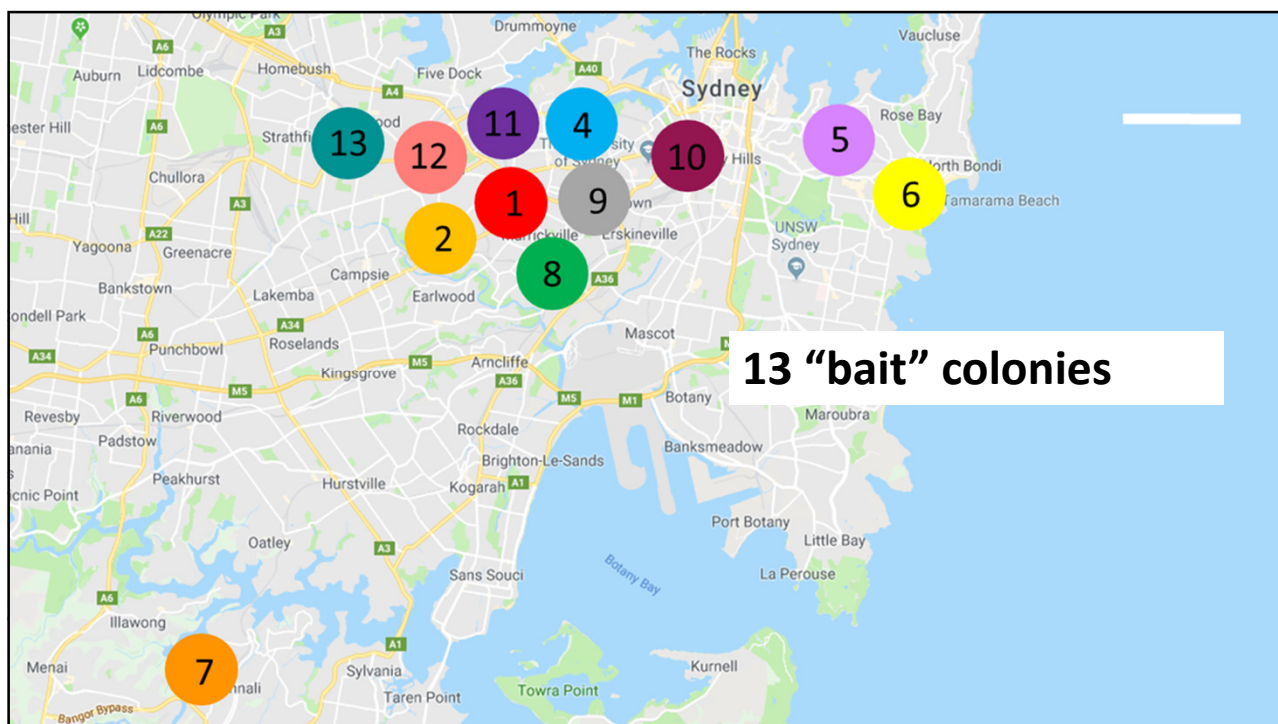
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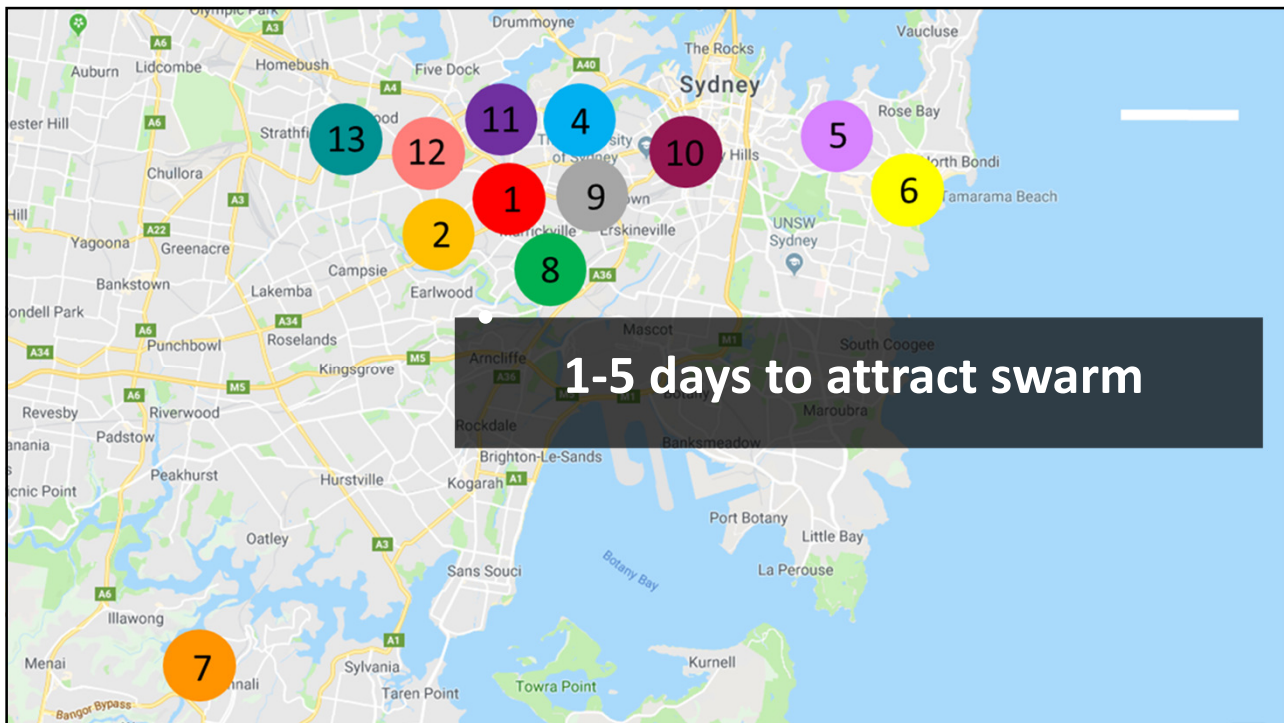
Method: Attract males using virgin colonies



Old brood with queen

Young brood with Virgin queen





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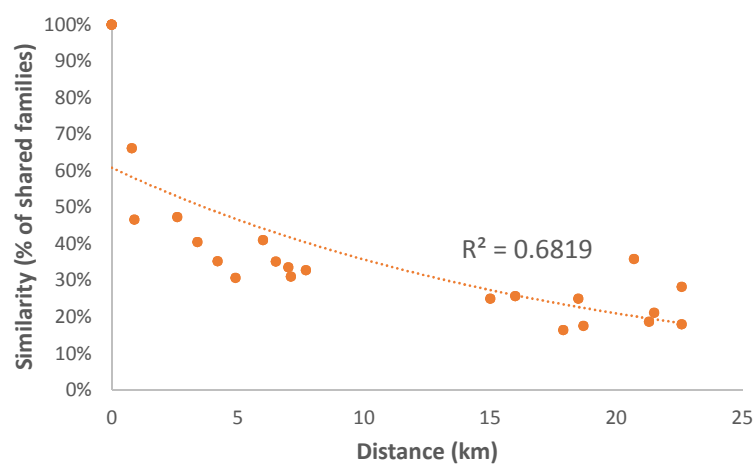
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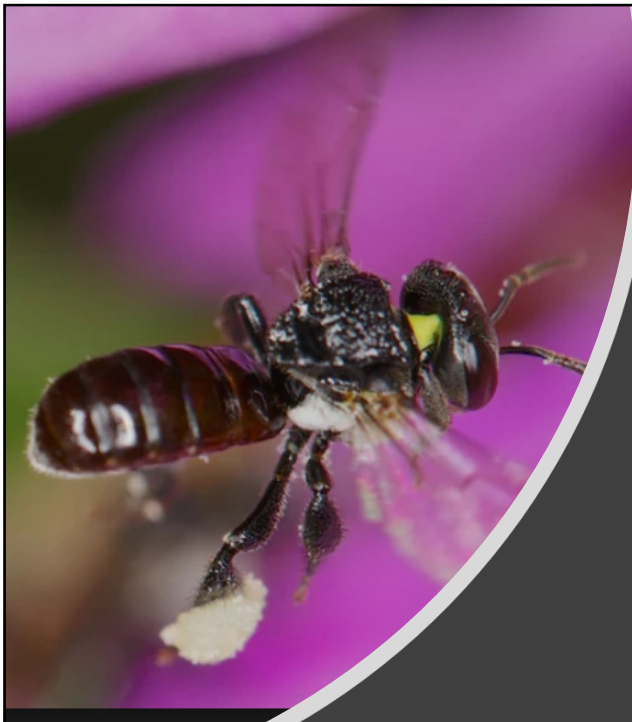
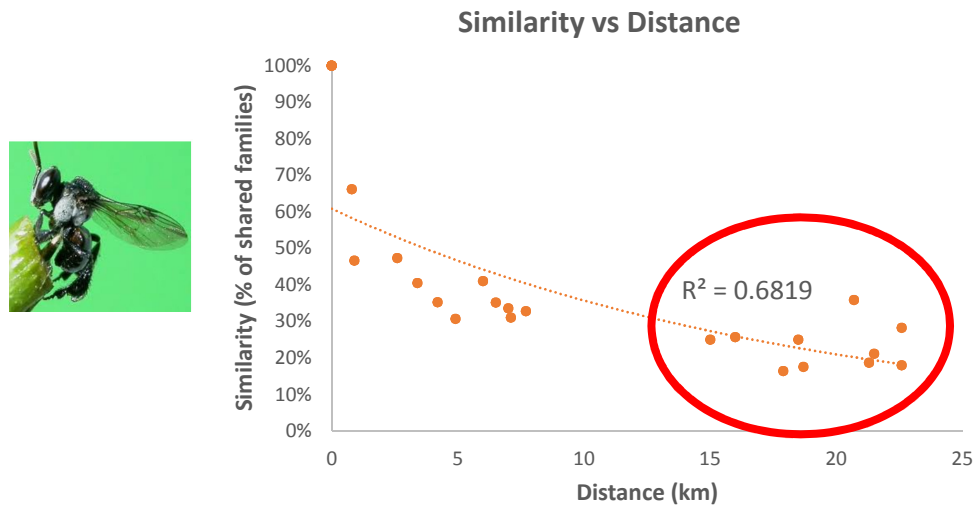


How far are males flying to reach the male swarm?

Similarity vs Distance



How far are males flying to reach the male swarm?



Males travel *at least* 10 km



Aim: develop a protocol for estimating colony density of *Tetragonula carbonaria*

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3. When are males produced?

Male are produced all year round



Summary

- We can reliably attract males
- Males fly long distances
- Males are produced year-round



Acknowledgements

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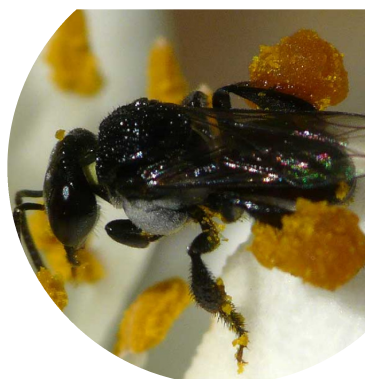
Bede Johnston

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Daniel Mantilla García

Wee Utaipanon

Dr Michael Holmes



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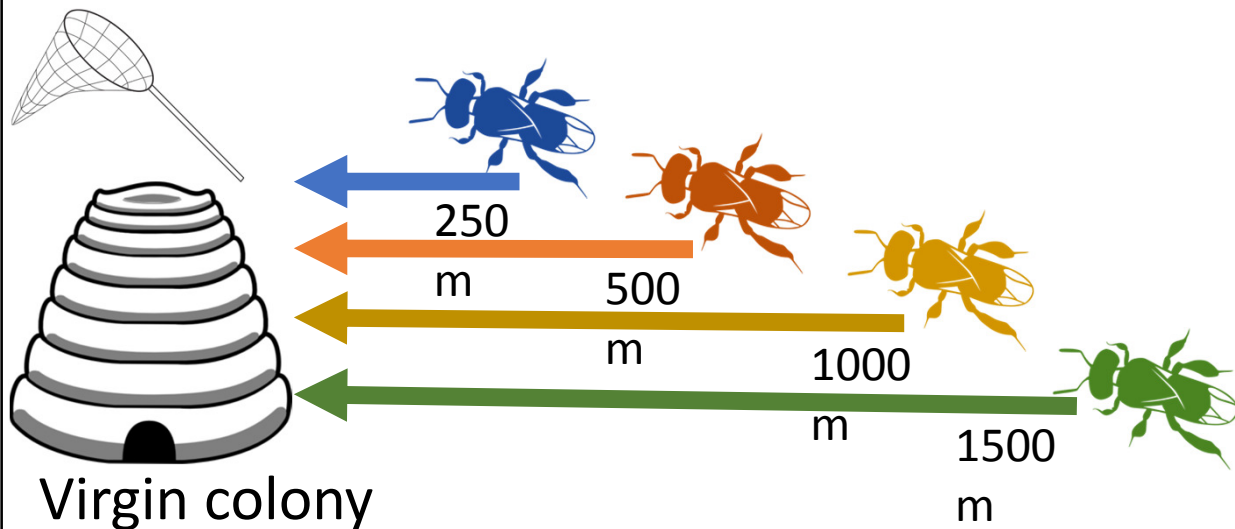
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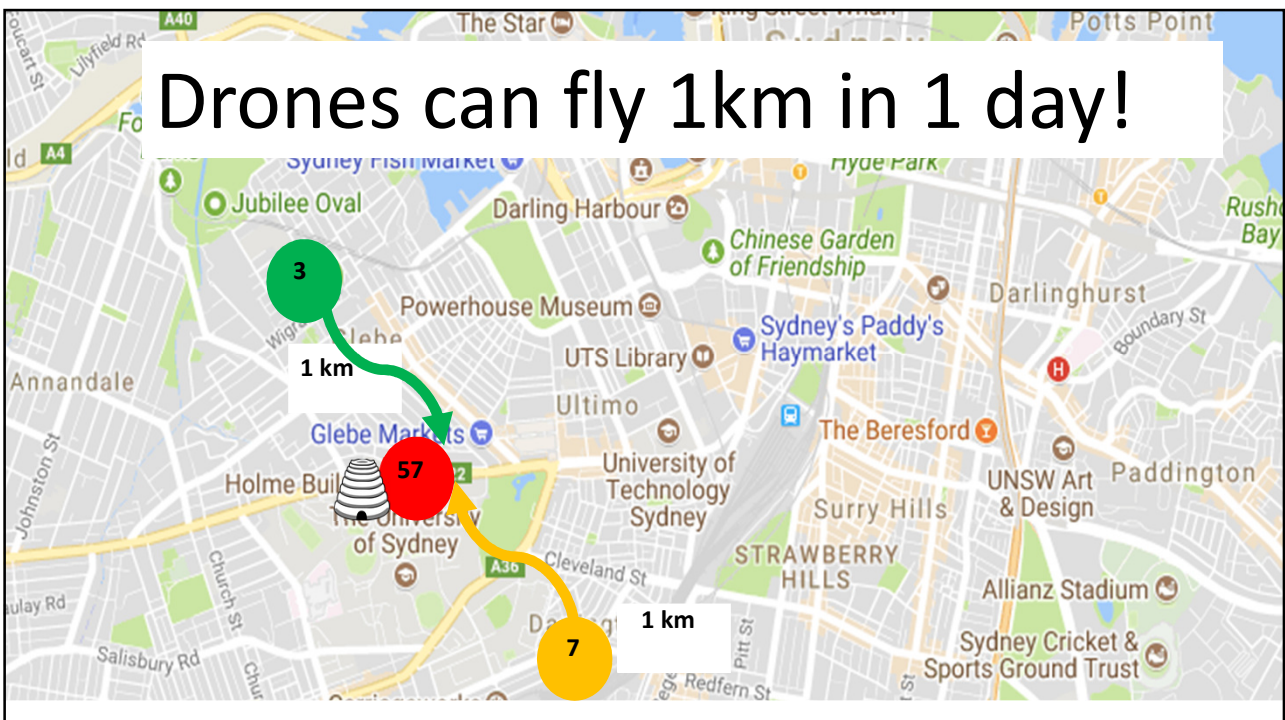
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Mark recapture experiments



Drones can fly 1km in 1 day!



Landscape types



