

The impact of bird loss on treefall gap dynamics

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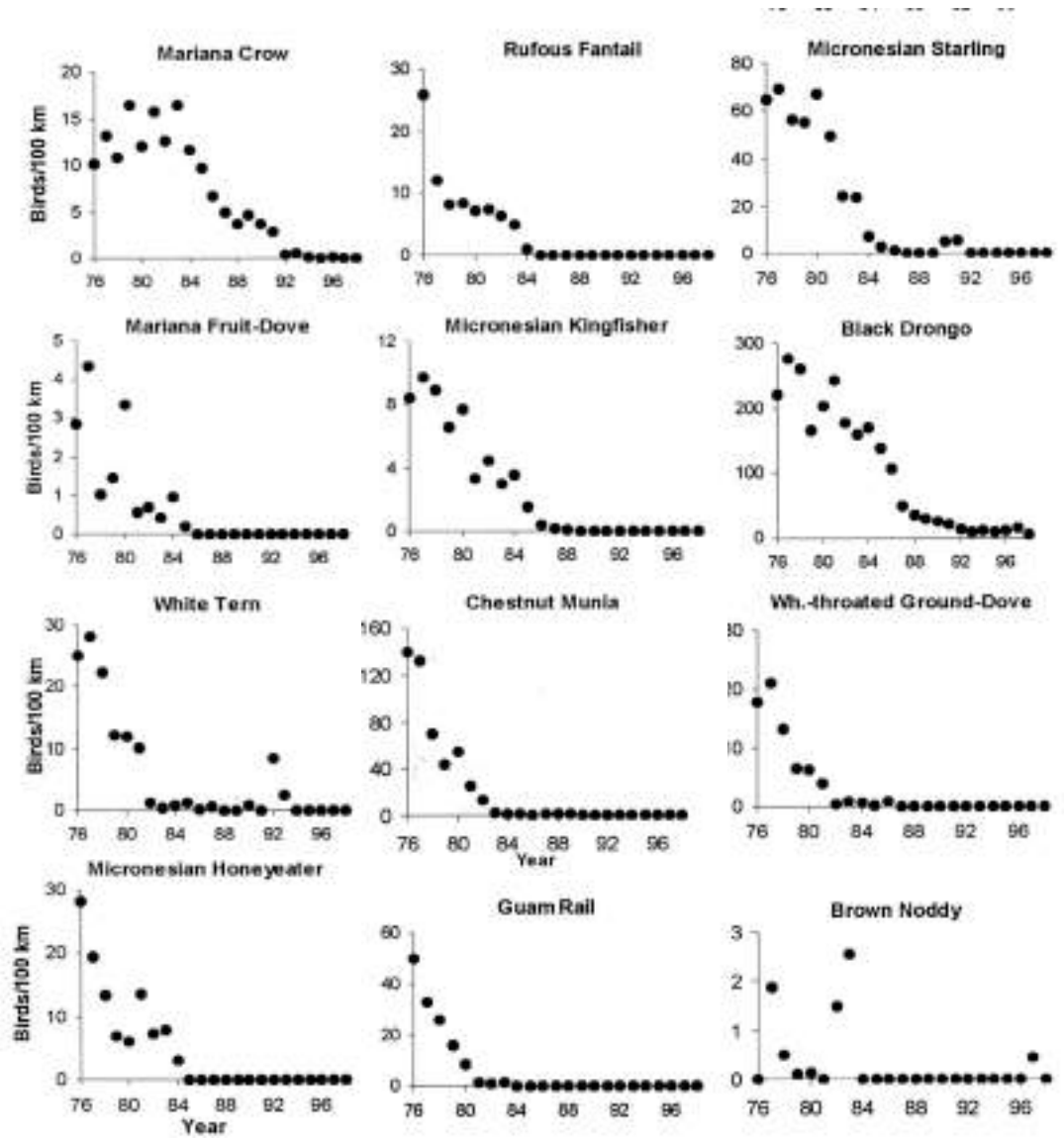
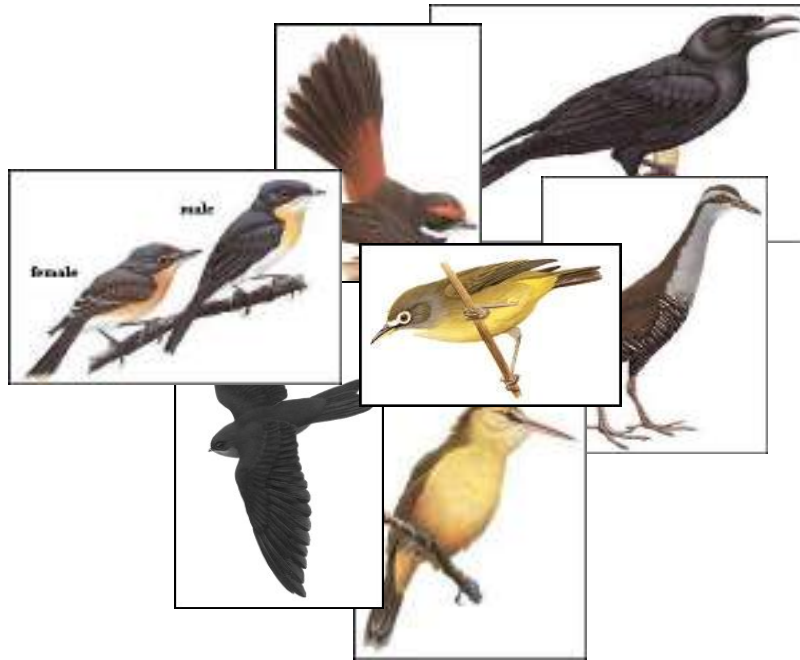


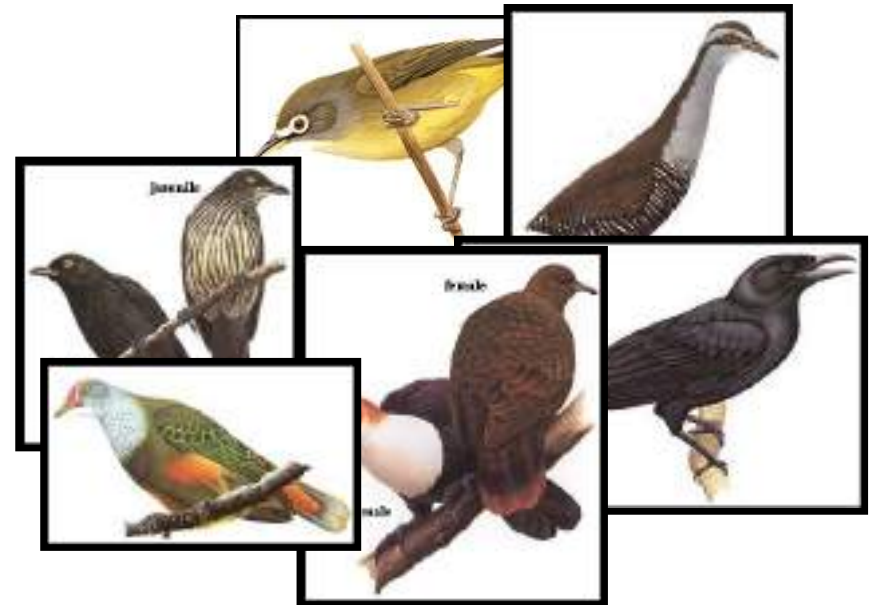
Figure 2. Population trends for Guam birds as indicated by roadside surveys, 1976–1998.

What functions do birds perform?

Predators



Frugivores



Frugivory

Birds consume fruits

Defecate seeds

Moves seeds away from parent plants:

DISPERSAL

Mutualistic interaction



Photo by Lainie Zarones

Why disperse your seeds?



1. Increase germination
2. Colonize new areas
3. Escape pest and pathogens
4. Move to microsites more suitable for germination



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Treefall Gaps

- Increase space & light
- Important for the successful regeneration of many tree species



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Birds can influence the regeneration of gaps by:

- Drawing seeds from a wider area and so bigger species pool
- Ensuring light-demanding species reach gaps

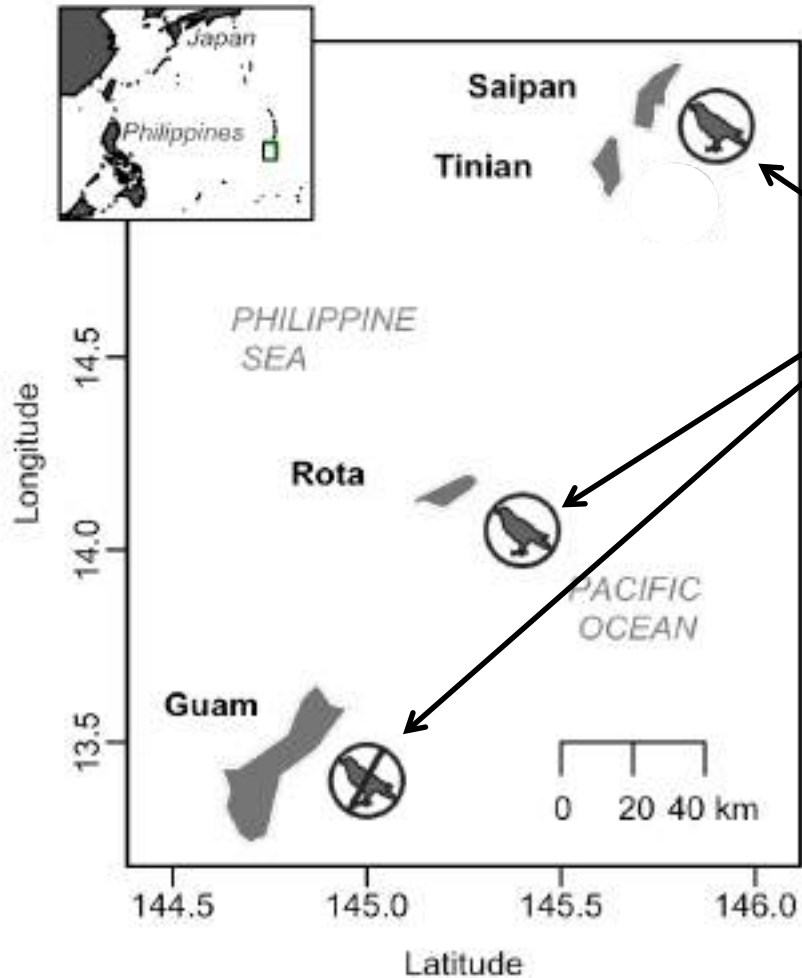


Photo by Lainie Zarones

Hypotheses

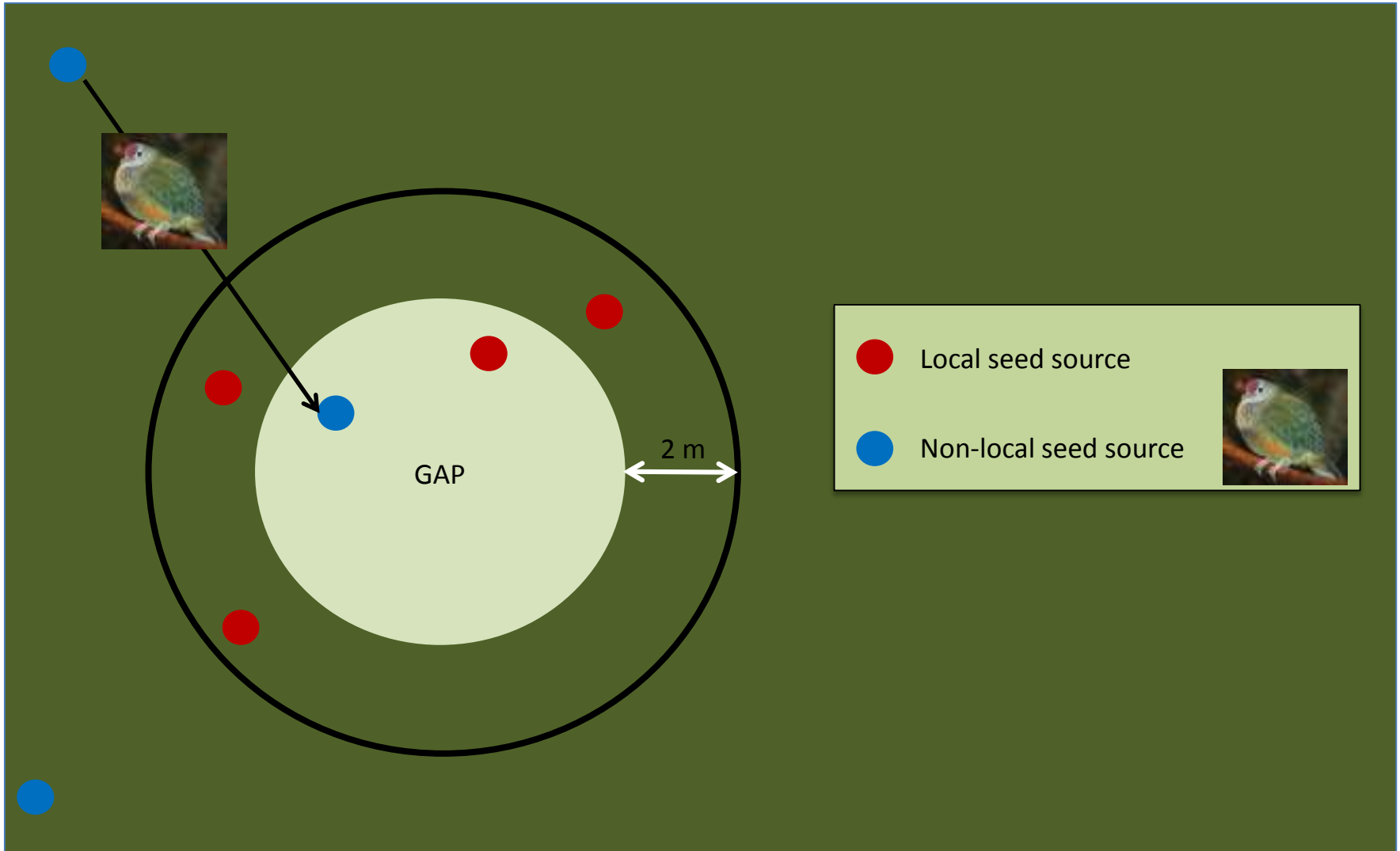
1. Species richness in gaps is lower without birds
2. Without birds there are fewer light-demanding 'pioneer' species

Experimental design



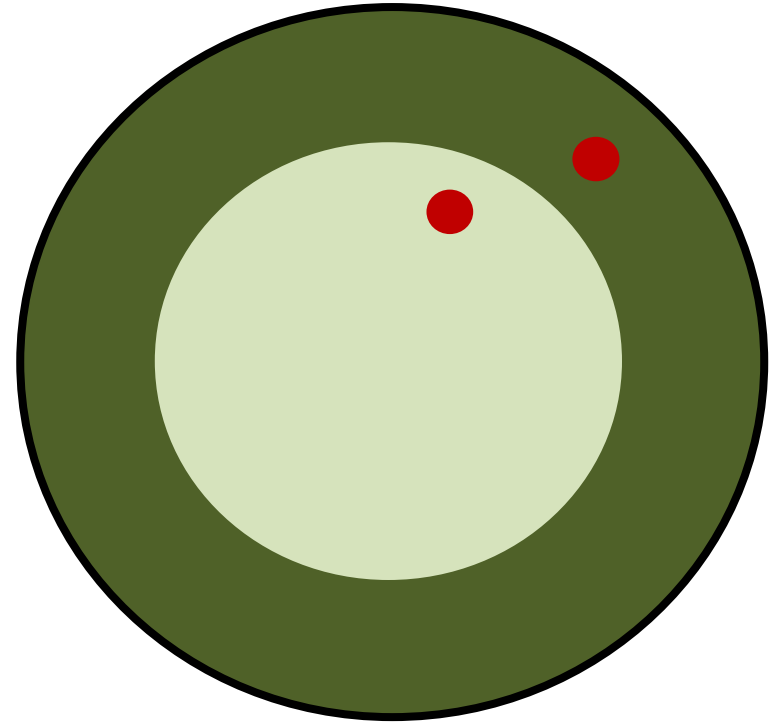
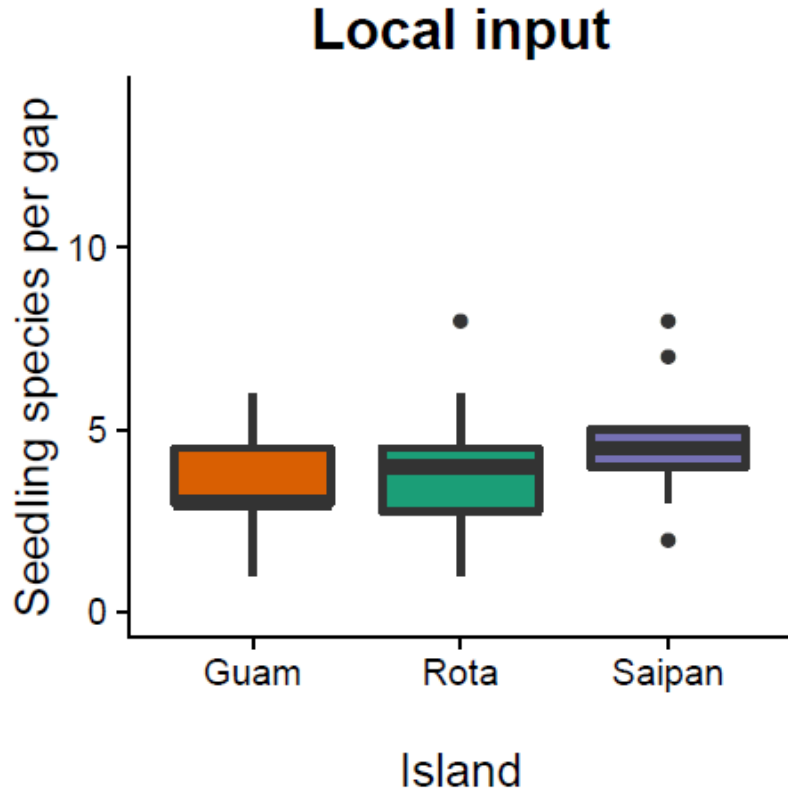
Guam	5 sites x 3 gaps	Total: 15
Rota	2 sites x 2 gaps	Total: 4
Saipan	3 sites x 2 gaps	Total: 6

Data collection

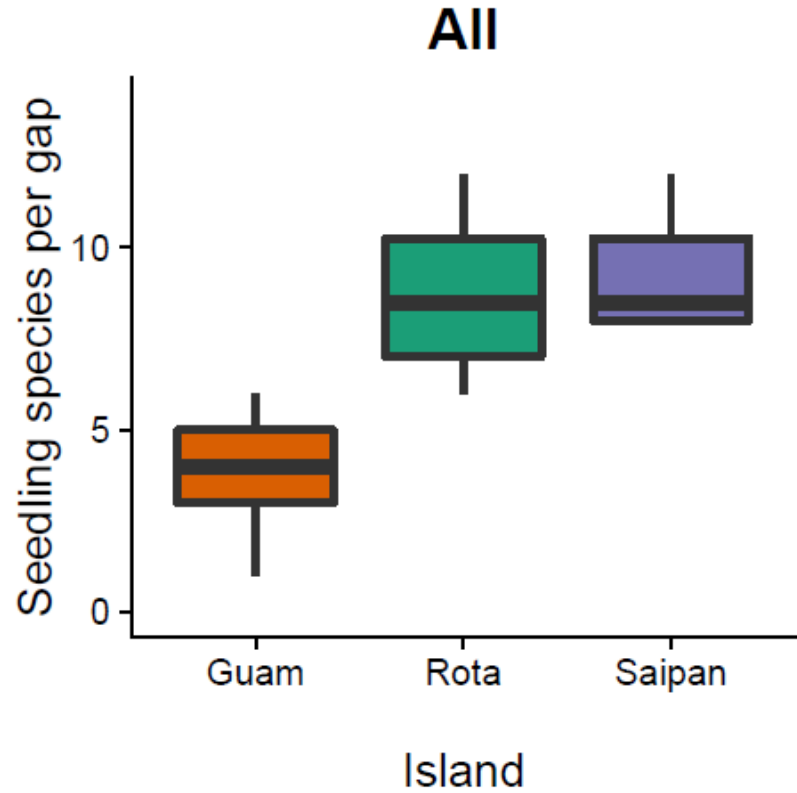
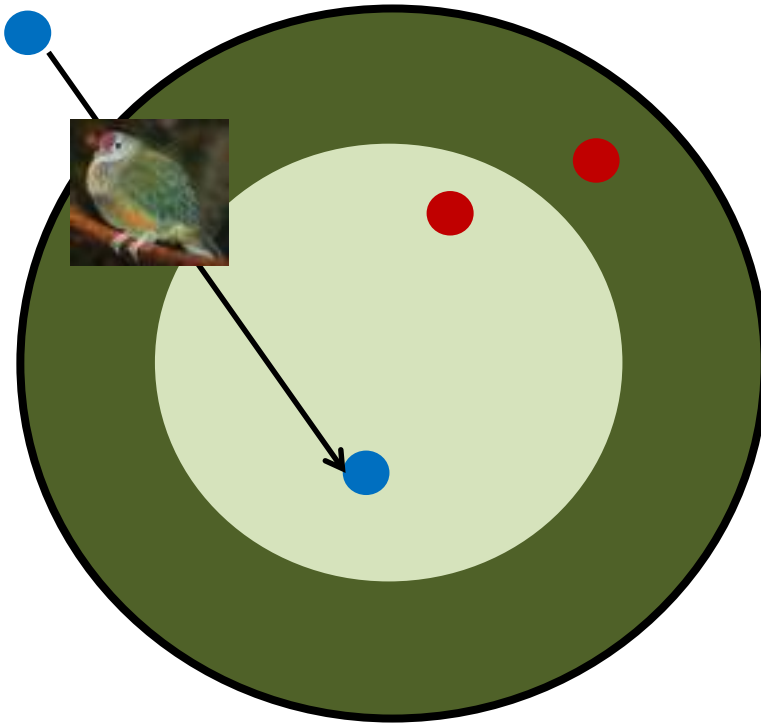


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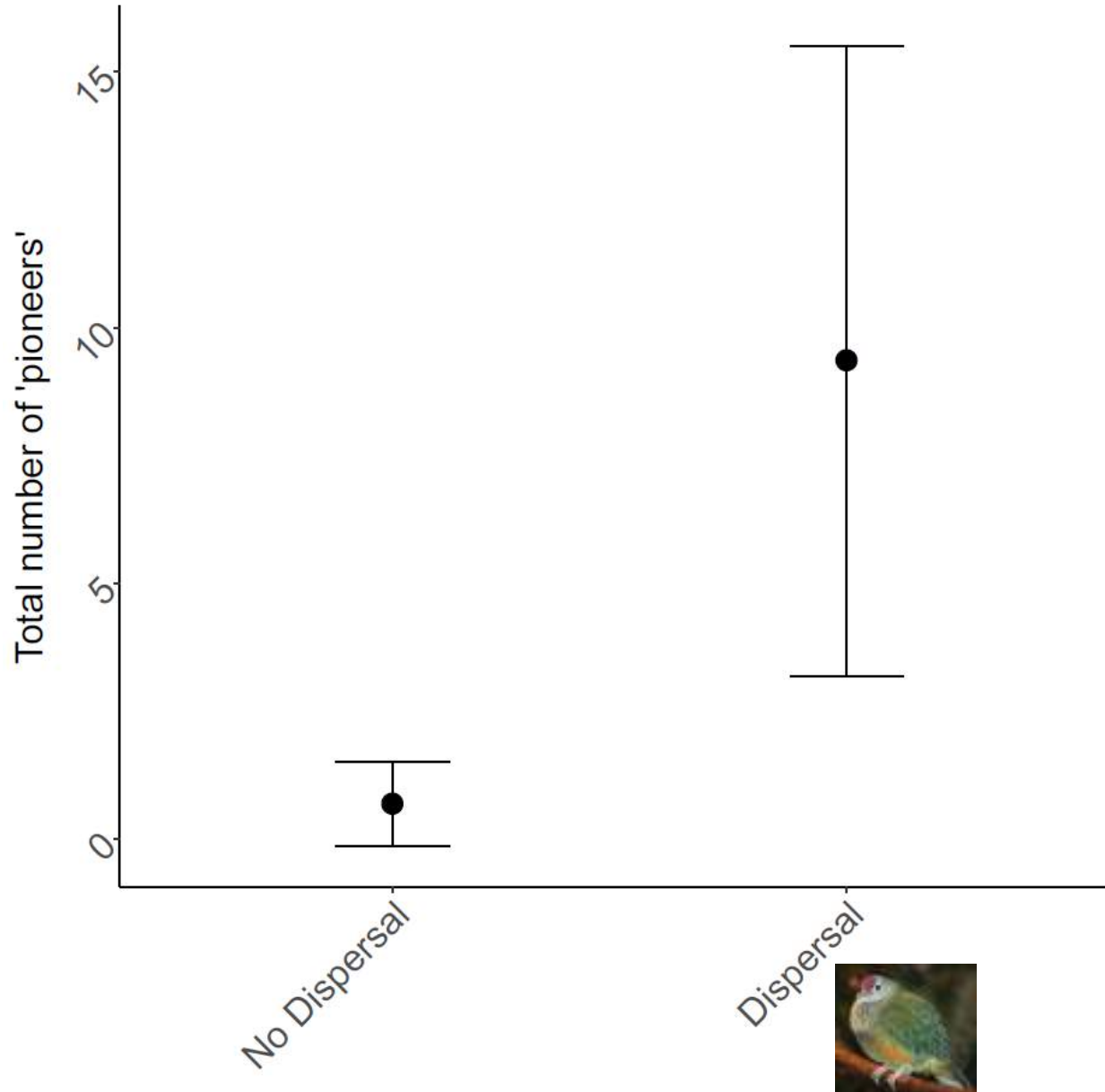


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**What does this mean for gap
regeneration?**

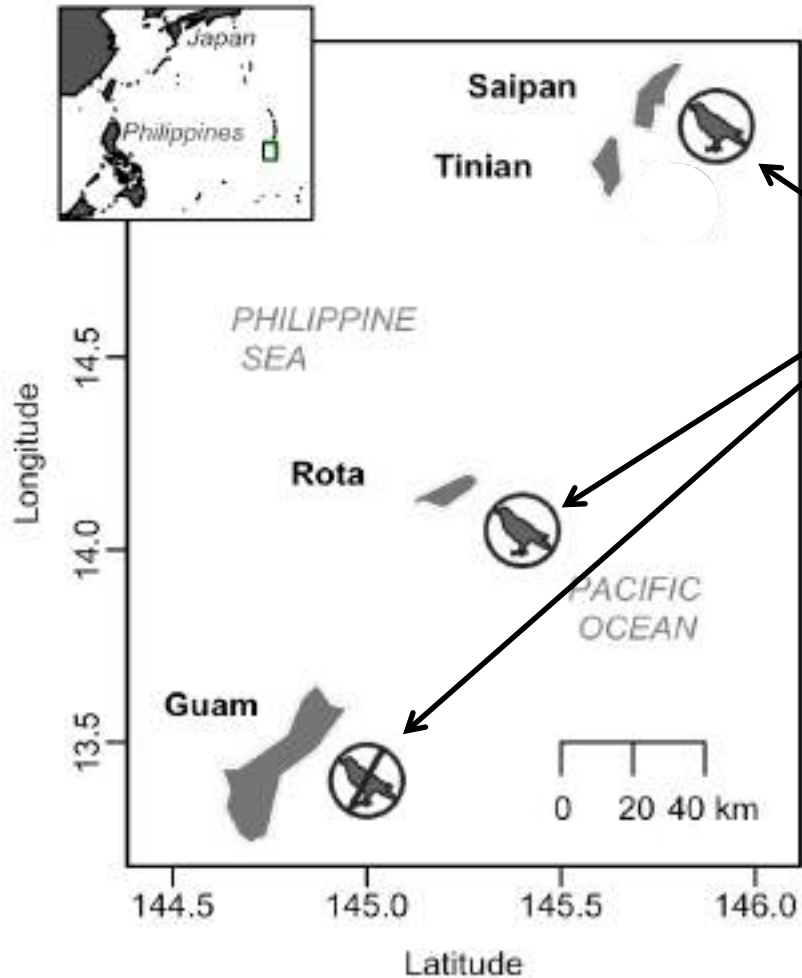
Hypotheses

1. Without birds species richness in gaps is lower 

2. Without birds there are fewer light-demanding 'pioneer' species 

3. Without birds gap regeneration will be slower

Experimental design



Guam 5 sites x 3 gaps

Total: 15

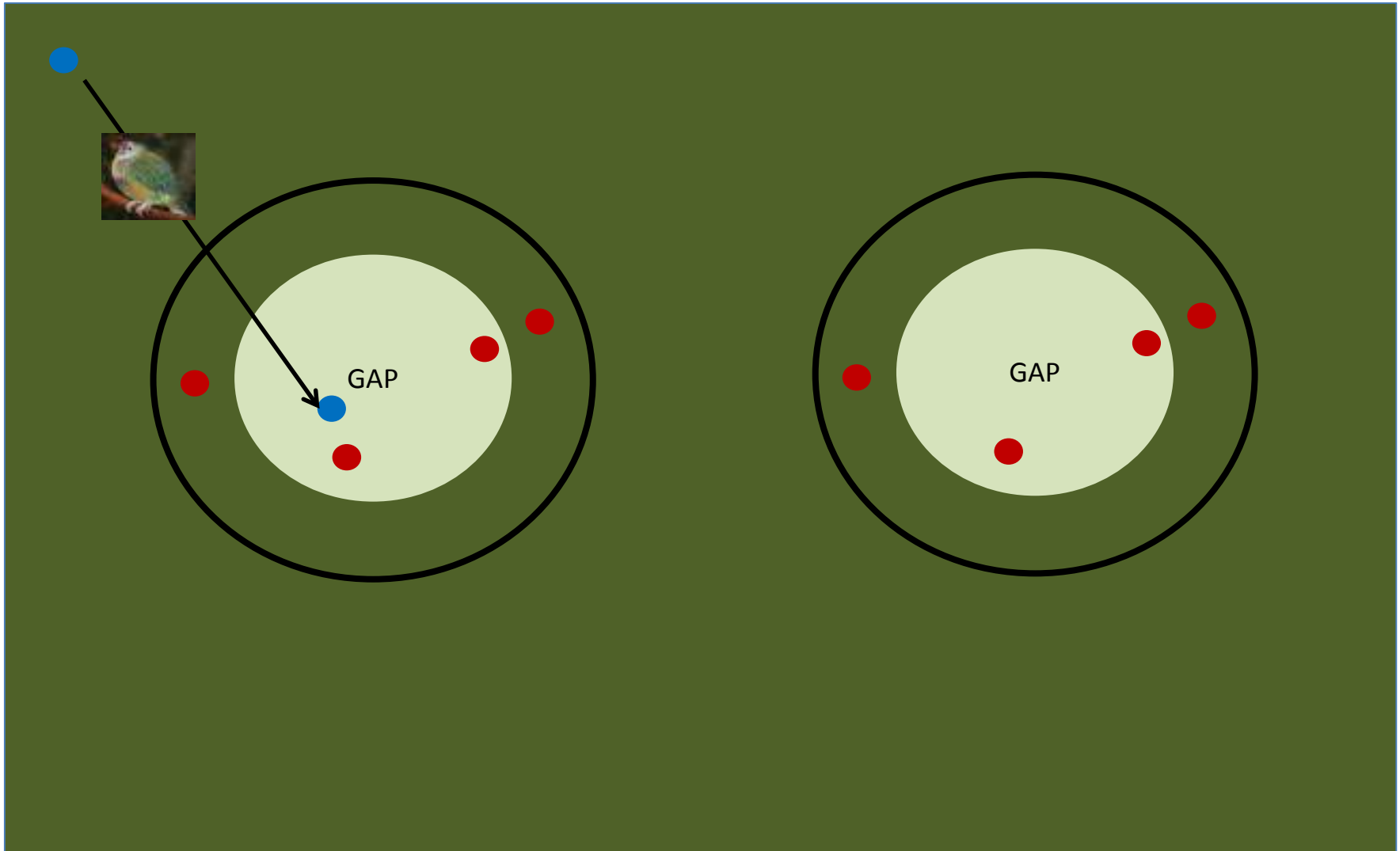
Rota 2 sites x 2 + 2 gaps

Total: 8

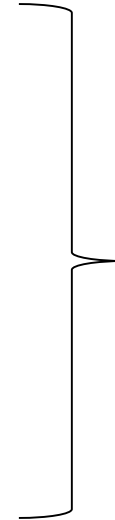
Saipan 3 sites x 2 + 2 gaps

Total: 12

Manipulation



Data collection



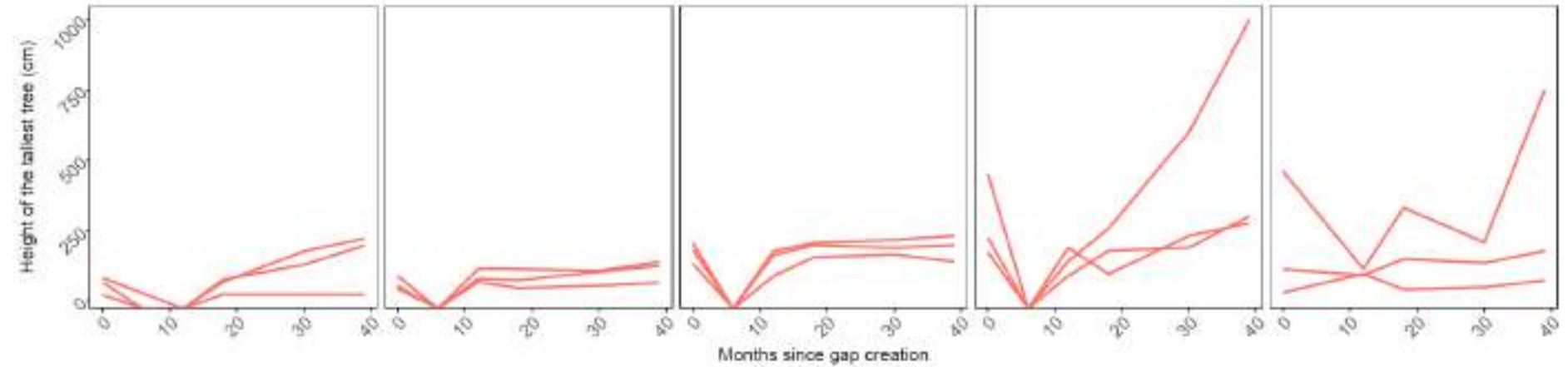
With birds
vs
without birds?



3. Without birds gap regeneration will be slower

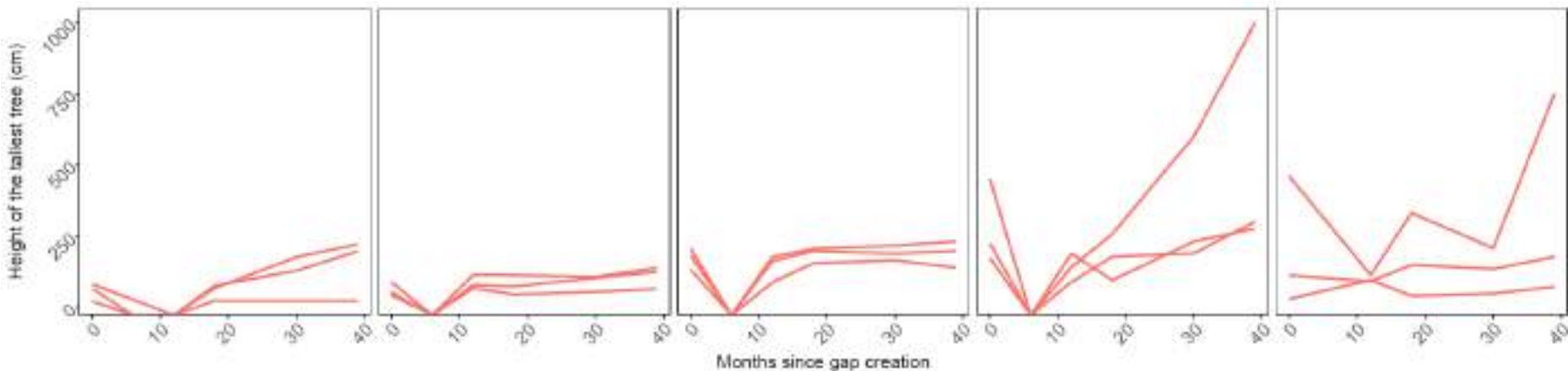
3. Without birds gap regeneration will be slower

Guam

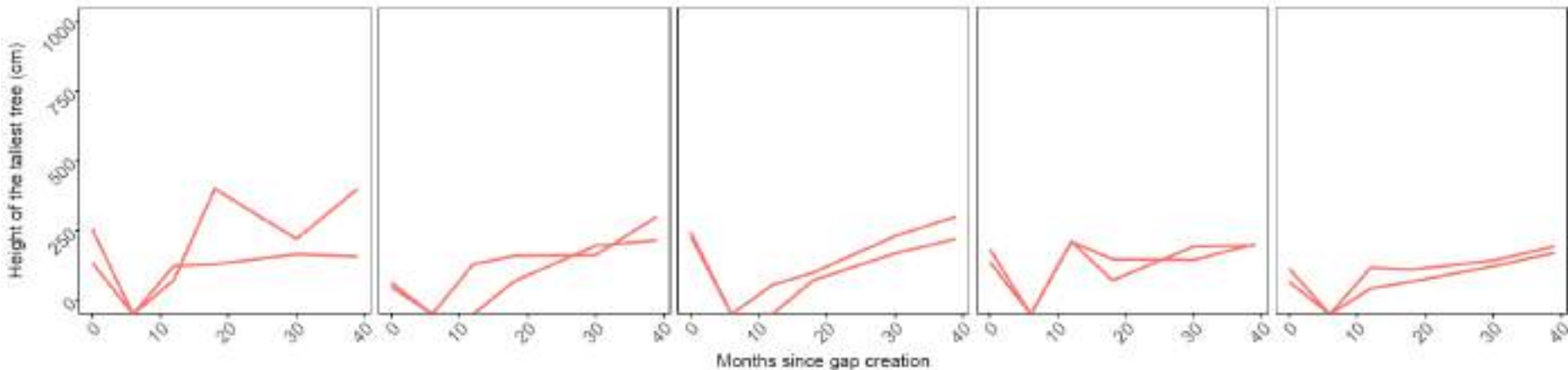


3. Without birds gap regeneration will be slower

Guam



Rota and Saipan

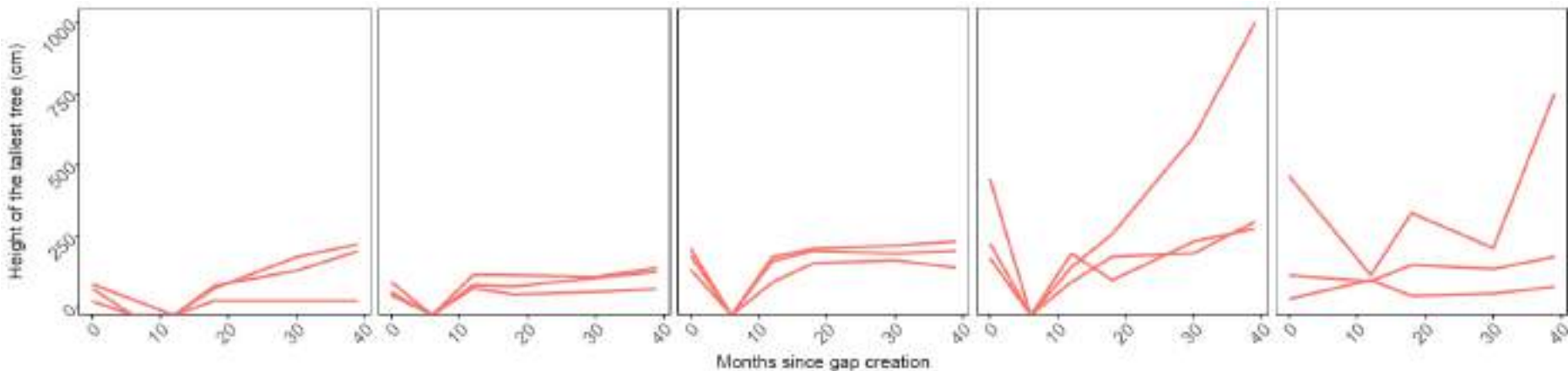


Manipulation

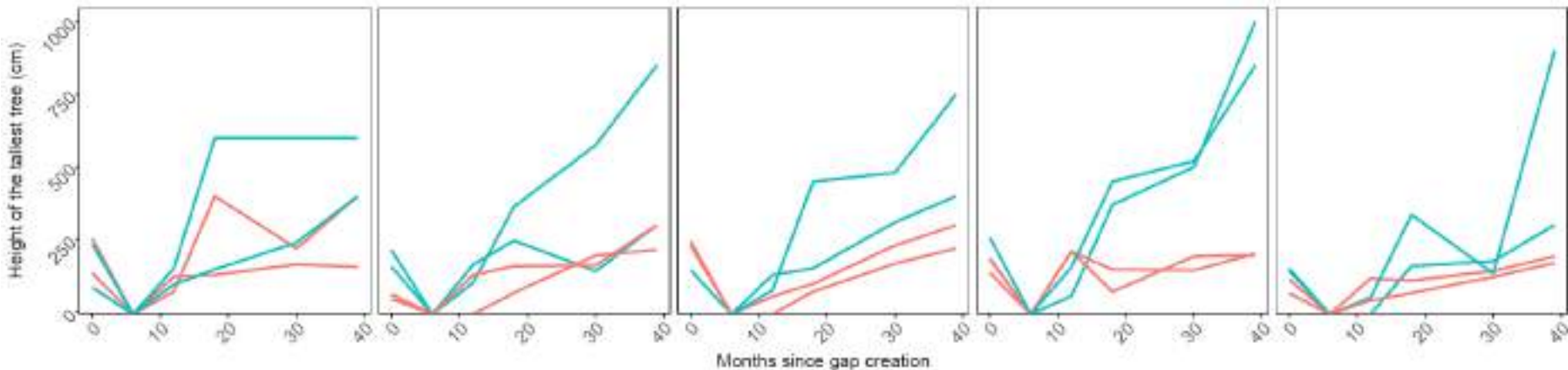
No manipulation

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Guam



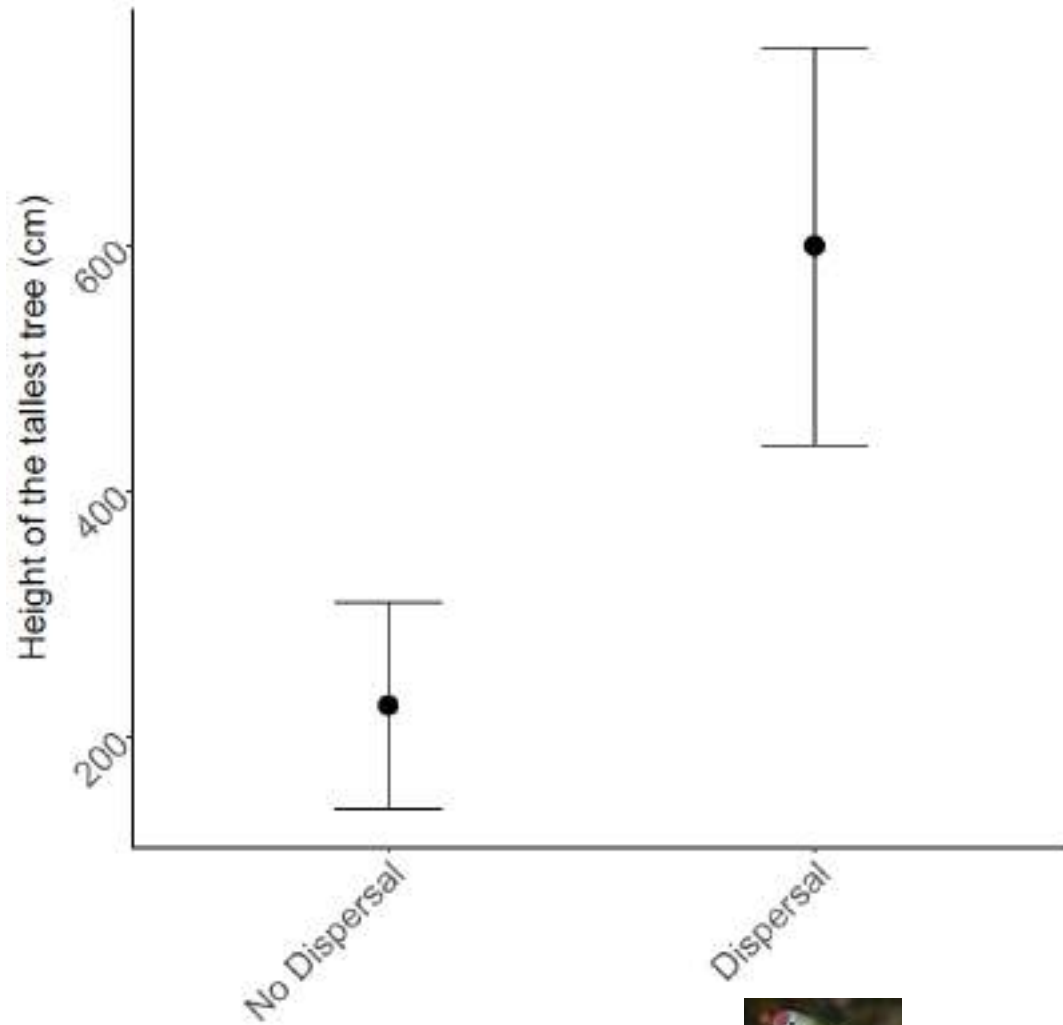
Rota and Saipan






Manipulation

No manipulation

3. Without birds gap regeneration will be slower



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Bird loss is decreasing the species richness and the regeneration of treefall gaps

Thank you

Field assistance:

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Site access:

CNMI Div. of Fish and Wildlife, CNMI Forestry, Rota DLNR, Tinian DLNR, Guam Forestry, Guam DAWR, Rota Crow Project, US Navy, Ritidian National Wildlife Refuge.



Australian Government
Australian Research Council