

# Will she be right? long term considerations for ecosystem restoration

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**Sandra Anderson**, University of Auckland

Dave Kelly, University of Canterbury

Alastair Robertson, Massey University

George Perry, University of Auckland

Acknowledgements : Vivian Ward, Jennifer Ladley

# Considerations:

- What (if any) management is necessary ?
- What species are appropriate ?
- Availability of mutualists (pollinators / seed dispersers) ?
- Condition of the site (weeds / pests) ?
- Success(ion) ?









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1. 'alright' pollination:

Does selfed seed survive?

Do those seedlings grow and reproduce?





2. 'alright' dispersal :

Do small seeds germinate?

Do they grow and reproduce?



Nga manu images

Theres a degree of resilience...

but where native pollinators and seed dispersers are missing,  
native plants often now 'get by' with the least effective service.

Many plant populations look as if they are managing despite  
operating in quite modified circumstances...

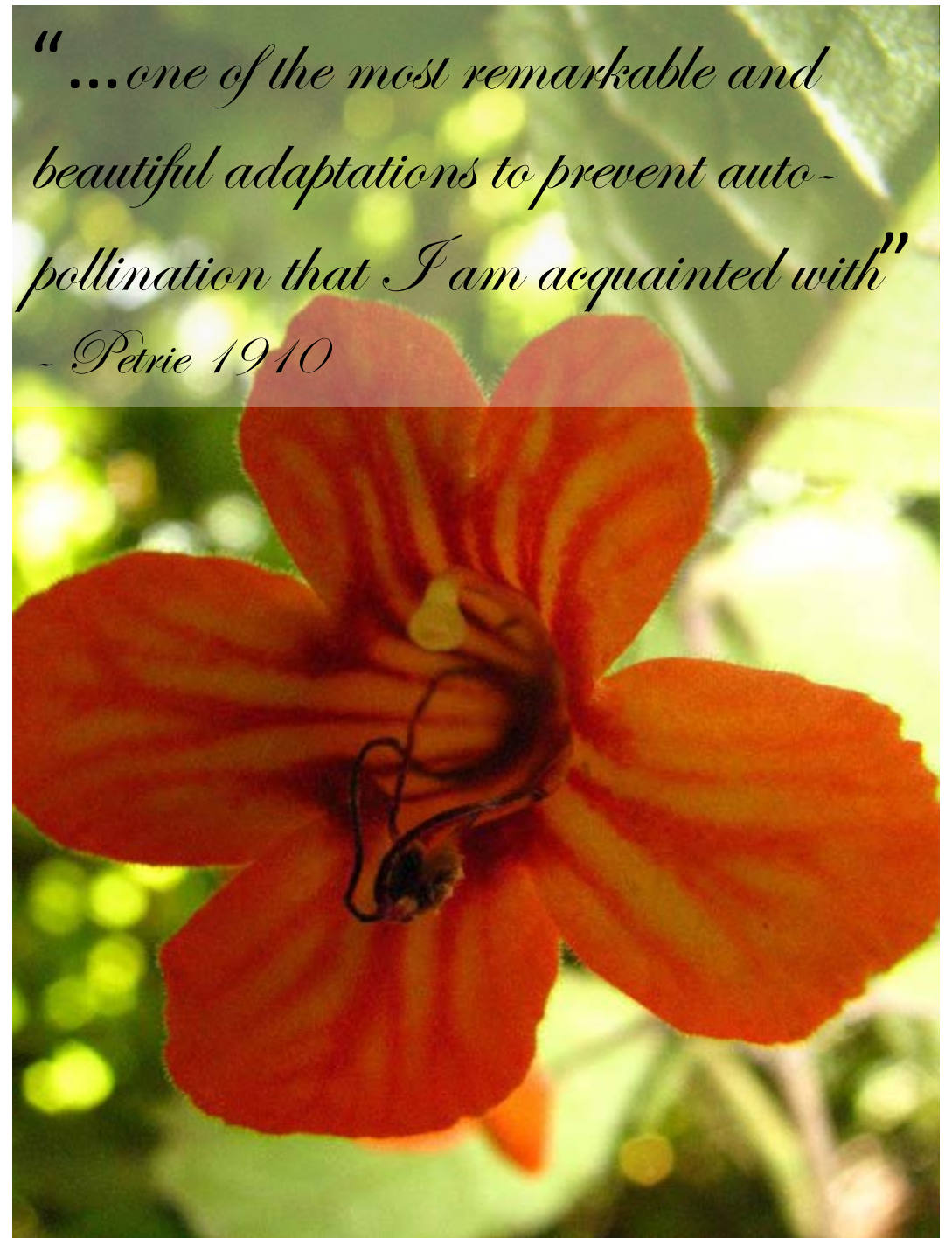
**but are they?**



# 1. Pollination



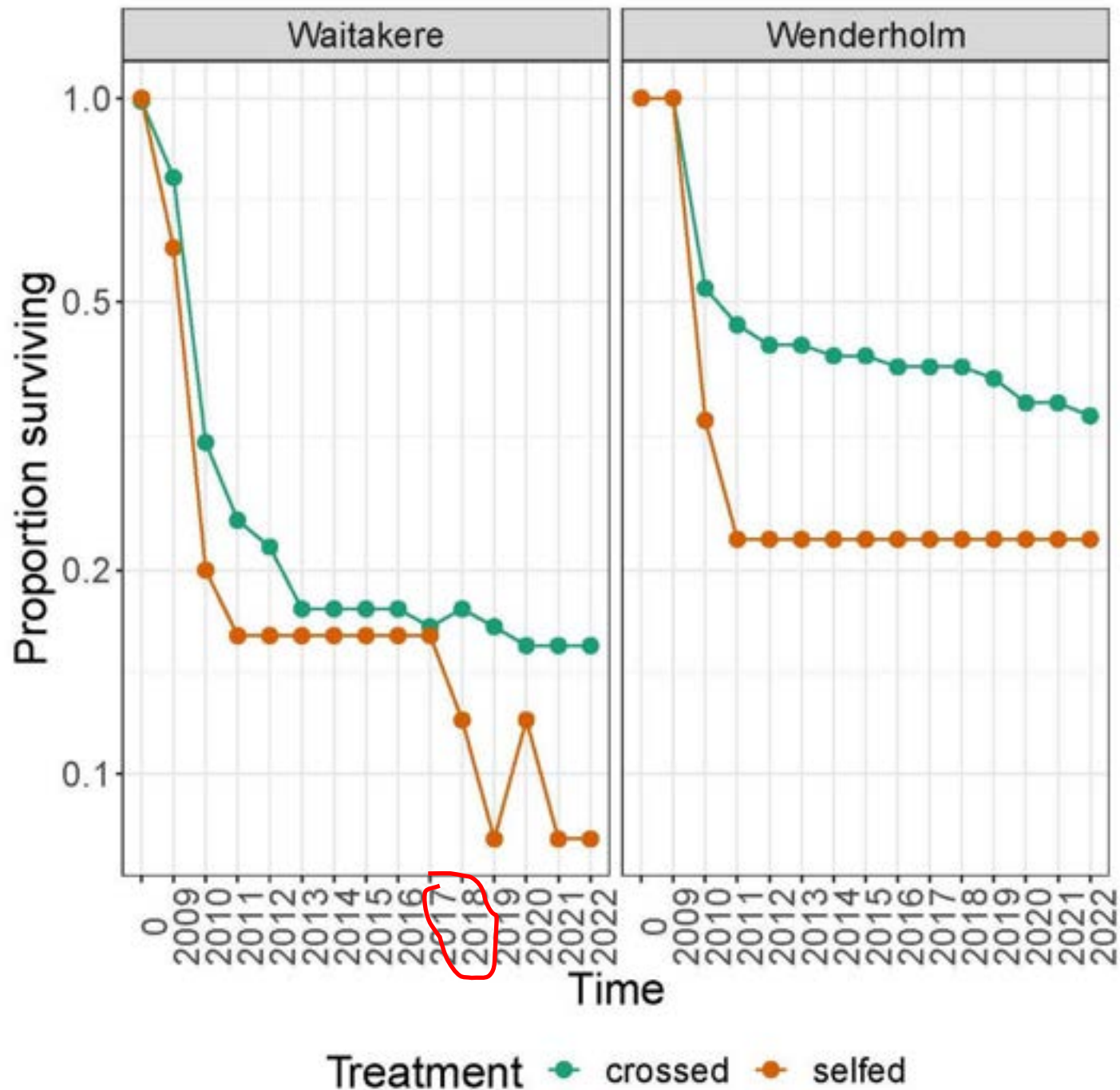
*"...one of the most remarkable and beautiful adaptations to prevent auto-pollination that I am acquainted with"*  
- Petrie 1910









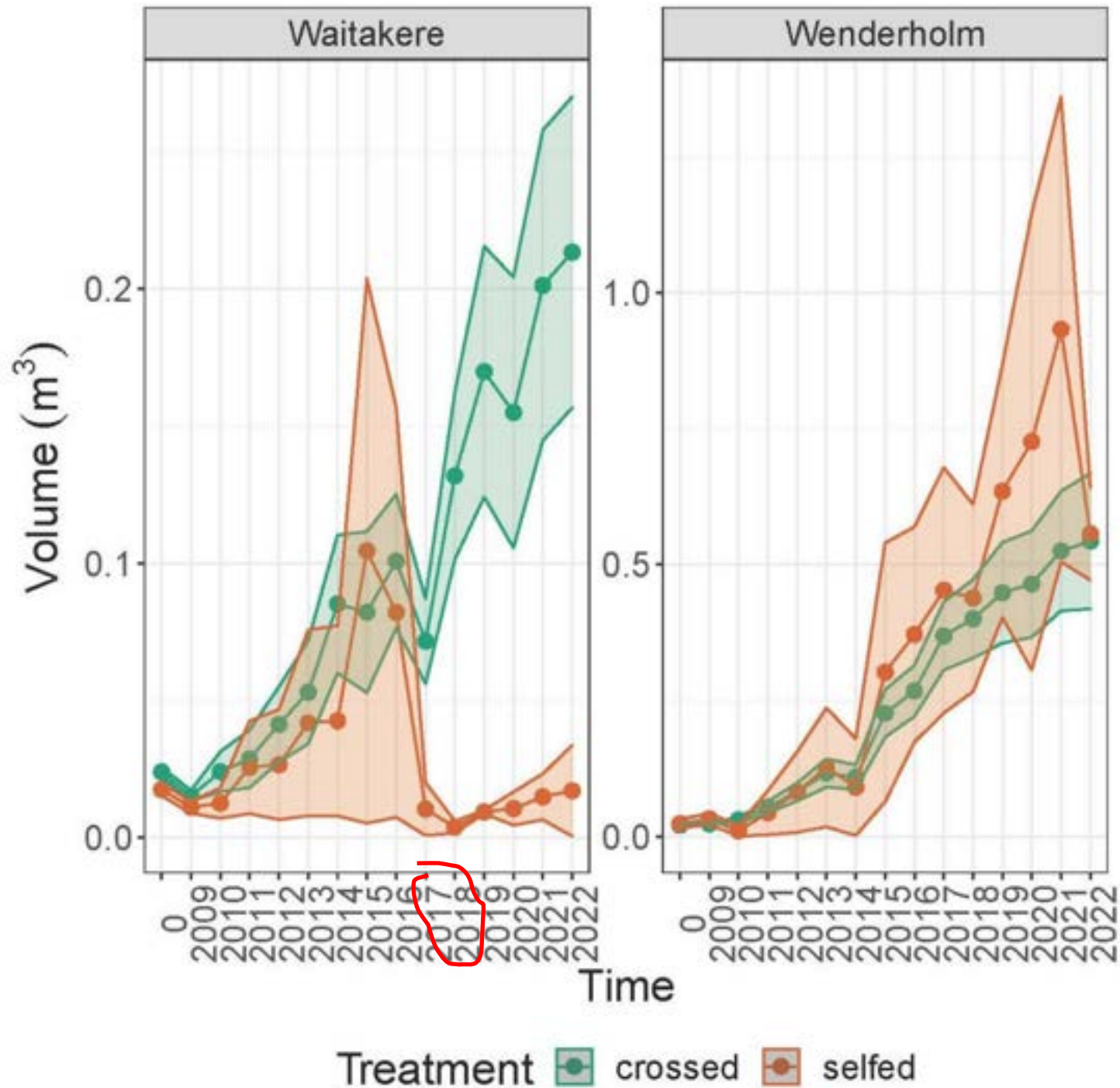


## 1. Pollination:

variation between the sites (\*\*\*)

**survival** in crossed plants consistently higher than selfed (\*\*\*)

stress knocks out the selfed progeny



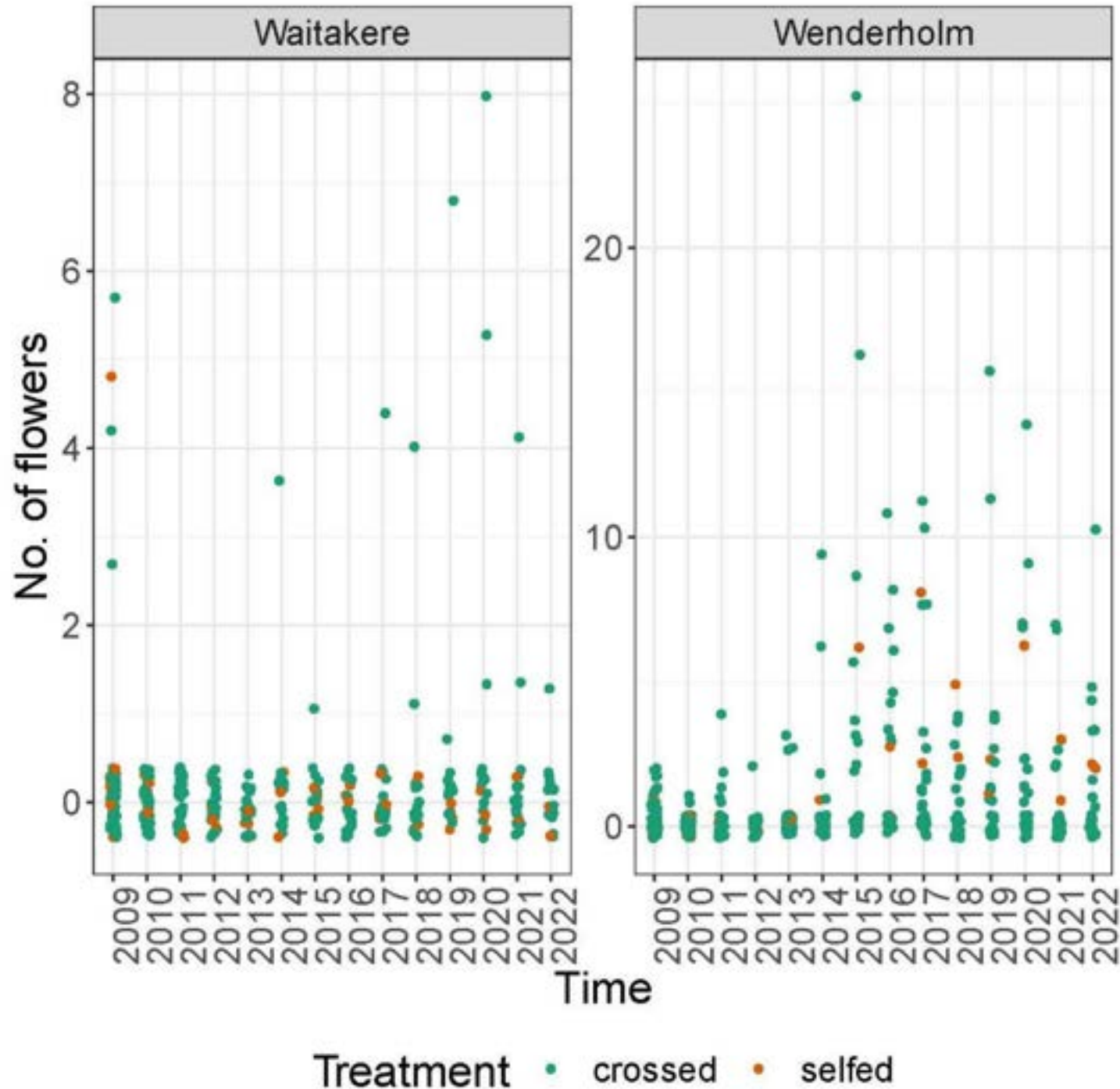
## 1. Pollination:

variation between the sites

**growth rate** in crossed plants similar to selfed

BUT

selfed plants don't recover from stress



## 1. Pollination:

variation between the sites (\*\*\*)

**flowering** in crossed plants similar to selfed

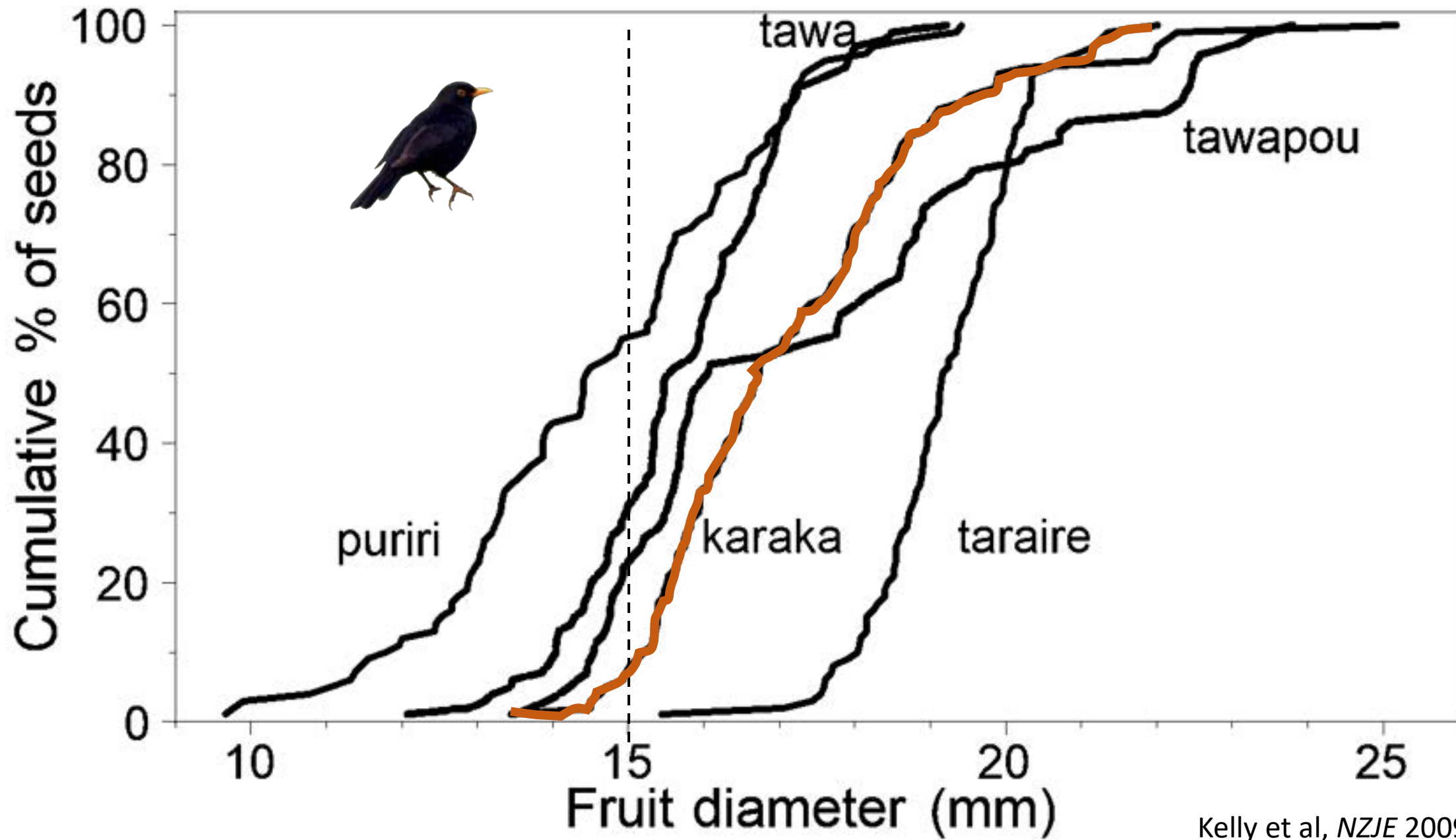
1. Pollination: Getting by with lower quality seed works .....until there is stress



## 2. Dispersal







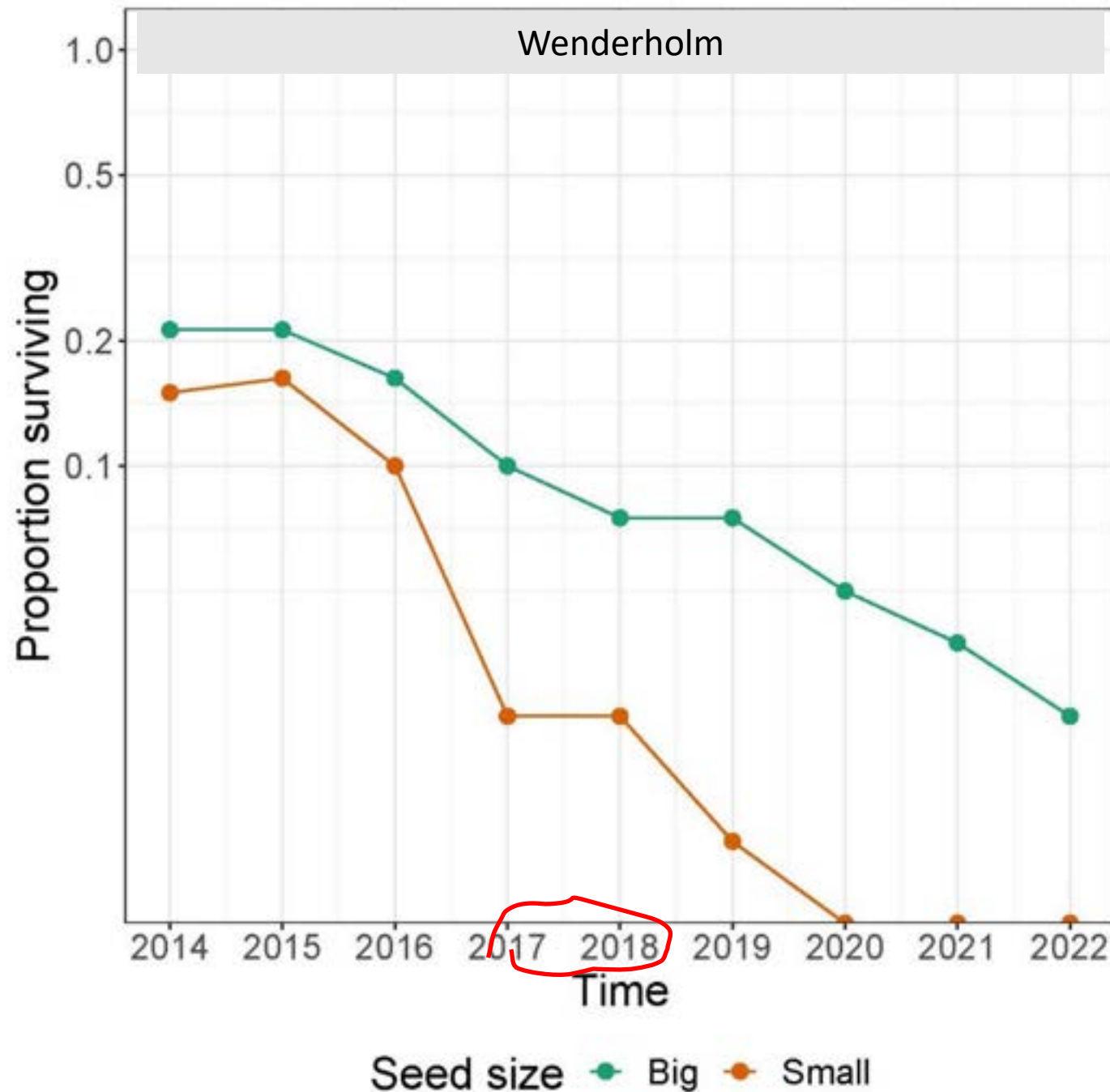




$8 \times 10 = 80$  per treatment



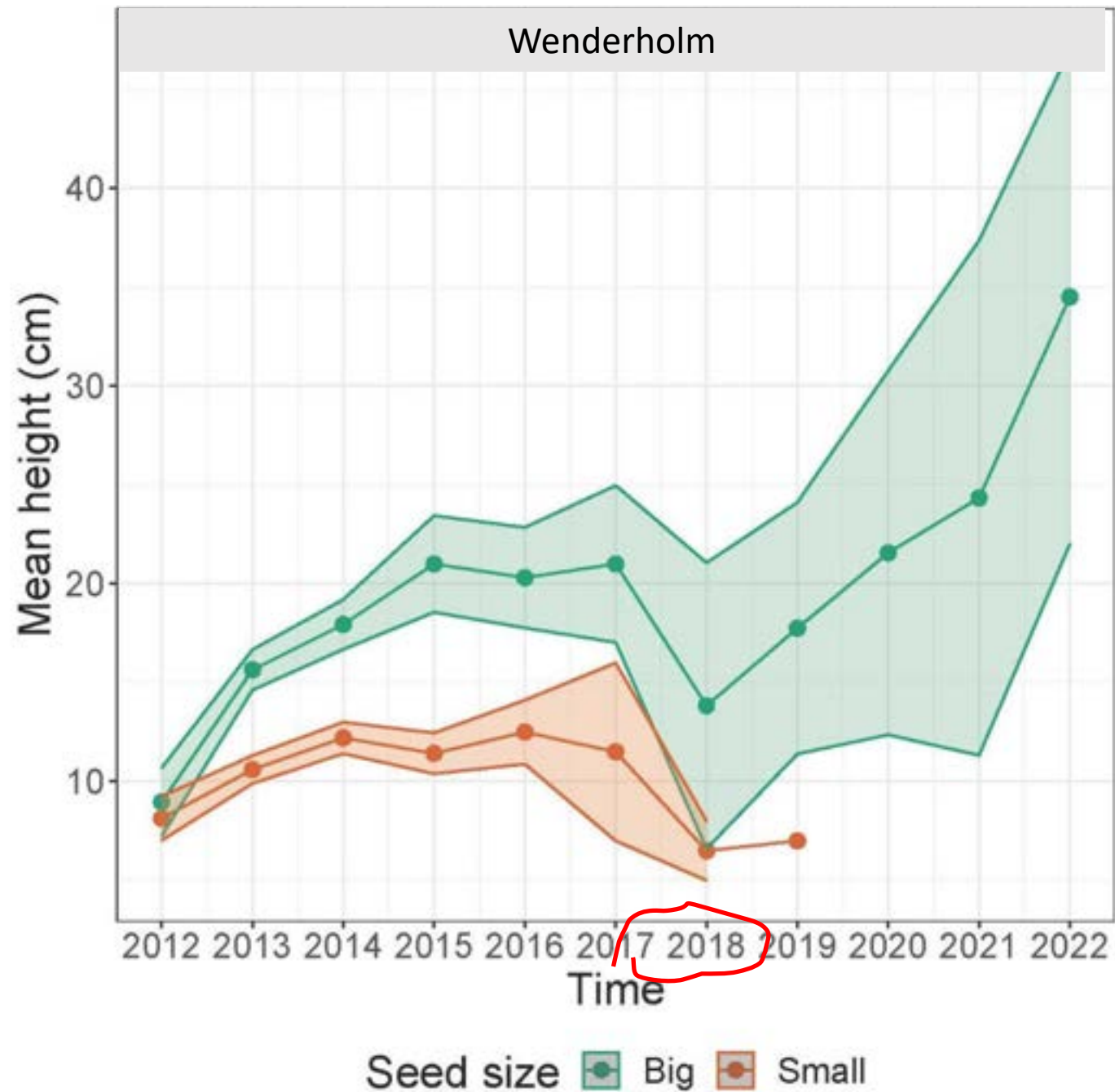




## 2. Dispersal:

**survival** in big seeds  
consistently higher than  
small seeds (\*\*)

stress knocks out the small  
progeny

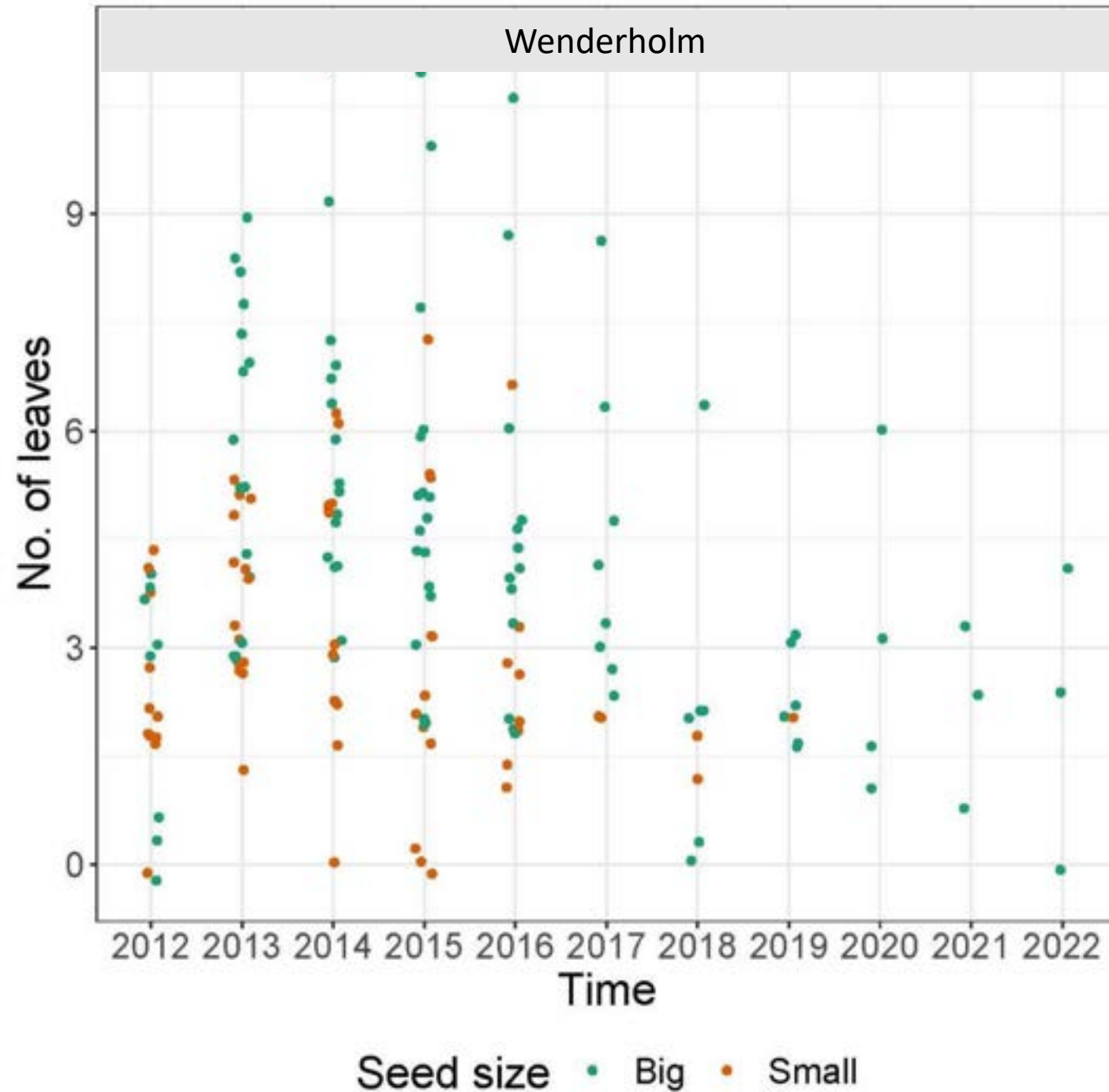


## 2. Dispersal:

**growth rate** from big seeds consistently higher than small seeds (\*\*\*)

Small progeny don't recover from stress

## Wenderholm



## 2. Dispersal:

**leaf number** consistently higher in big cf. small seed progeny (\*\*\*)

## 2. Dispersal:

Getting by with lower quality seed doesn't work

...and then there is stress



# Outcomes of 'alright' pollination & dispersal

for selfed and small seeds:

- survival is lower
- growth may be lower, and does not recover from stress
- productivity (flowers/leaves) may be lower

plants may be alright while conditions are good, but...

there's unseen consequences for long-term population resilience

# What to do?

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# Seedling density under maternal karaka



seedlings/m<sup>2</sup>       $50 \pm 8$

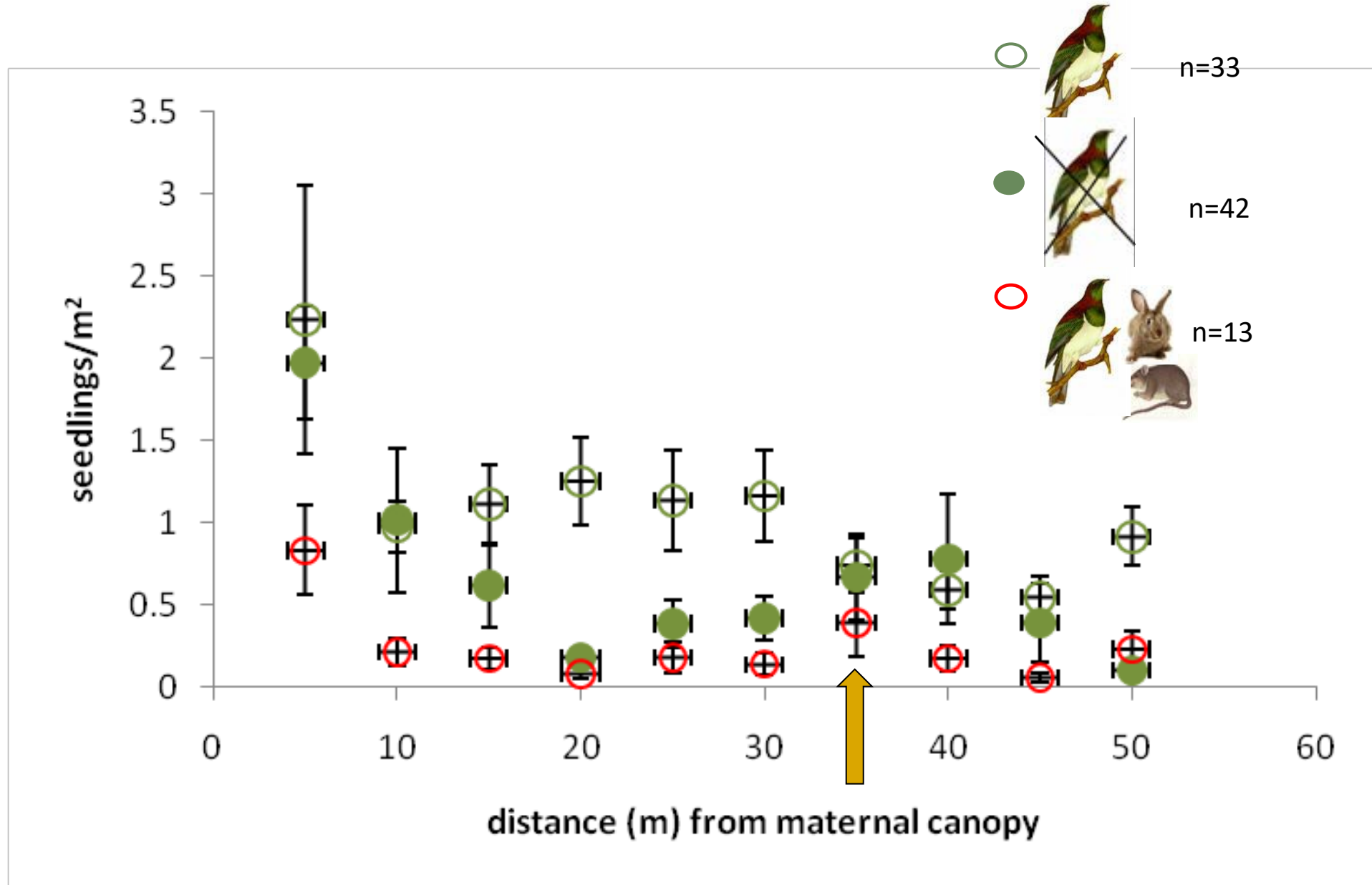


$21 \pm 2$



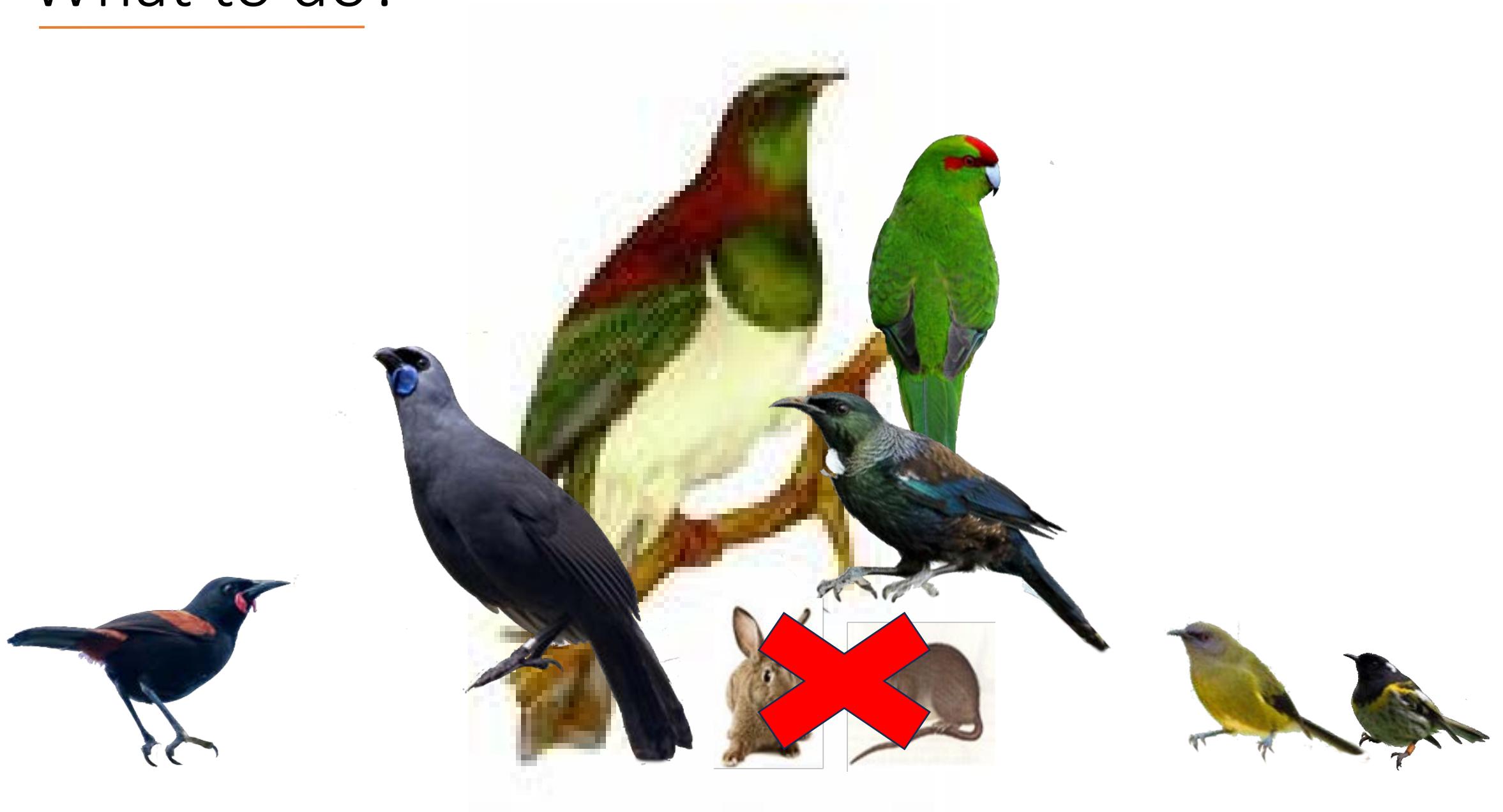
$12 \pm 2$

# Seedling density vs. distance from maternal karaka



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- Prioritise weed control (to favour natural regeneration)
- Measure the outcomes of any management (photo-points, bird-counts, seedling surveys)

