Conserving the Glossy Black-Cockatoo

Lockyer Uplands Project

Guy Castley, Diane Guthrie, Tim Roselli
& LUCI Members

Supported by Lockyer Valley Regional Council Community Environment Grants program

Griffith UNIVERSITY
Queensland, Australia

Feed Tree Monitoring – Phase 2

Transects 2017 - 2020

- 20 x 100m transects
- Eight 5m radius plots
- 675 trees tagged (incl. 33 single trees)
- 3 primary species recorded
- Monitored at various intervals

Feed Tree Monitoring – Phase 2

Transects 2017 -2020

- Most trees monitored at least four times since Aug 2017
- 80 % of transects monitored six times to October 2020 (90% monitored >5 times)
- All circular plots monitored four times to August 2019

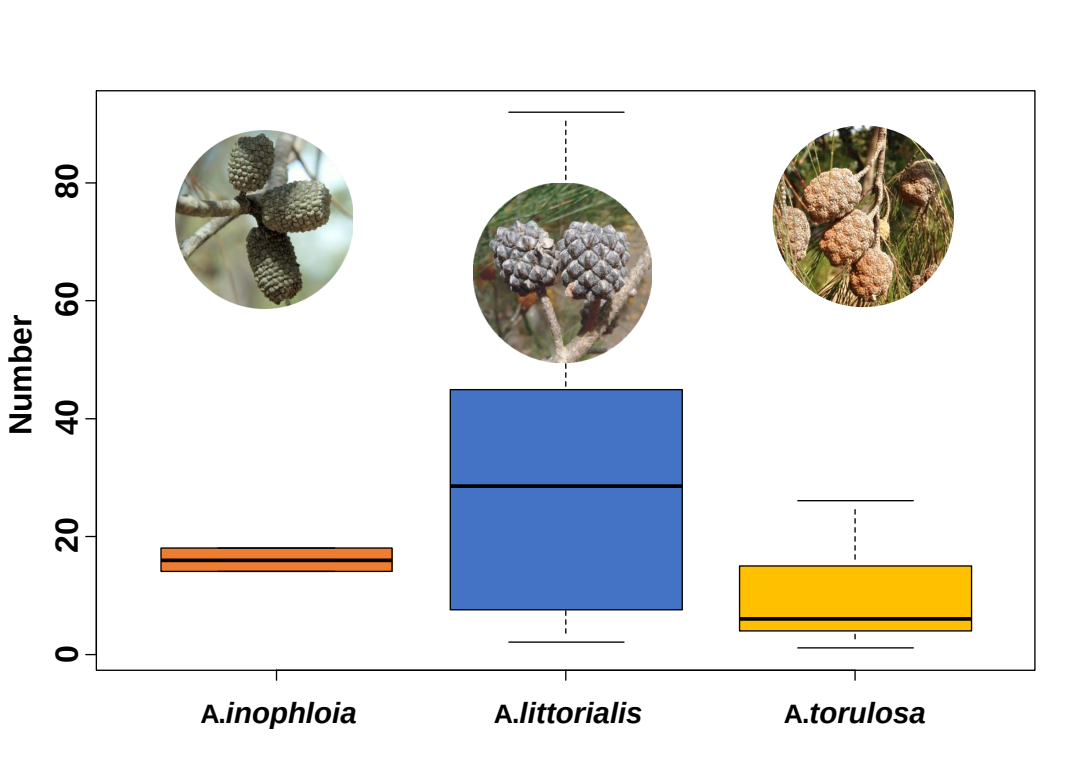
Species Breakdown – Phase 2

Species summary – all sites

- 483 *A. littoralis*
- 160 *A. torulosa*
- 32 *A. inophloia*

Which trees are being used from one year to the next?

Feed Tree Monitoring – Phase 2



- Most transects (87%) only have a single species
- Greater variability in the number of trees / transect for *A. littoralis*

Tree Density Data – Phase 2

Total tree density

75-2325 trees / ha (mean 674 ± 98)

Species density

***A. littoralis* have the highest density among sites (757.7 trees/ha), followed by woollybark and then forest oaks**

Tree Density Data – Phase 2

Feed tree density

75-2325 trees / ha (mean 674 ± 98)

Species density

***A. littoralis* have the highest density among sites (757.7 trees/ha), followed by woollybark and then forest oaks**

Feed Tree 2017 - 2020

How many feed trees were there? (*those with orts*)

Total N = 187 (27.7%)

87.2 % *- A. littoralis*

8.0 % *- A. torulosa*

4.8 % *- A. inophloia*

Female Feed Trees

Proportion of female feed trees? (those with orts)

N = 244 (75.1 %)

66.8 % ***- A. littoralis***

N = 63 (19.1 %)

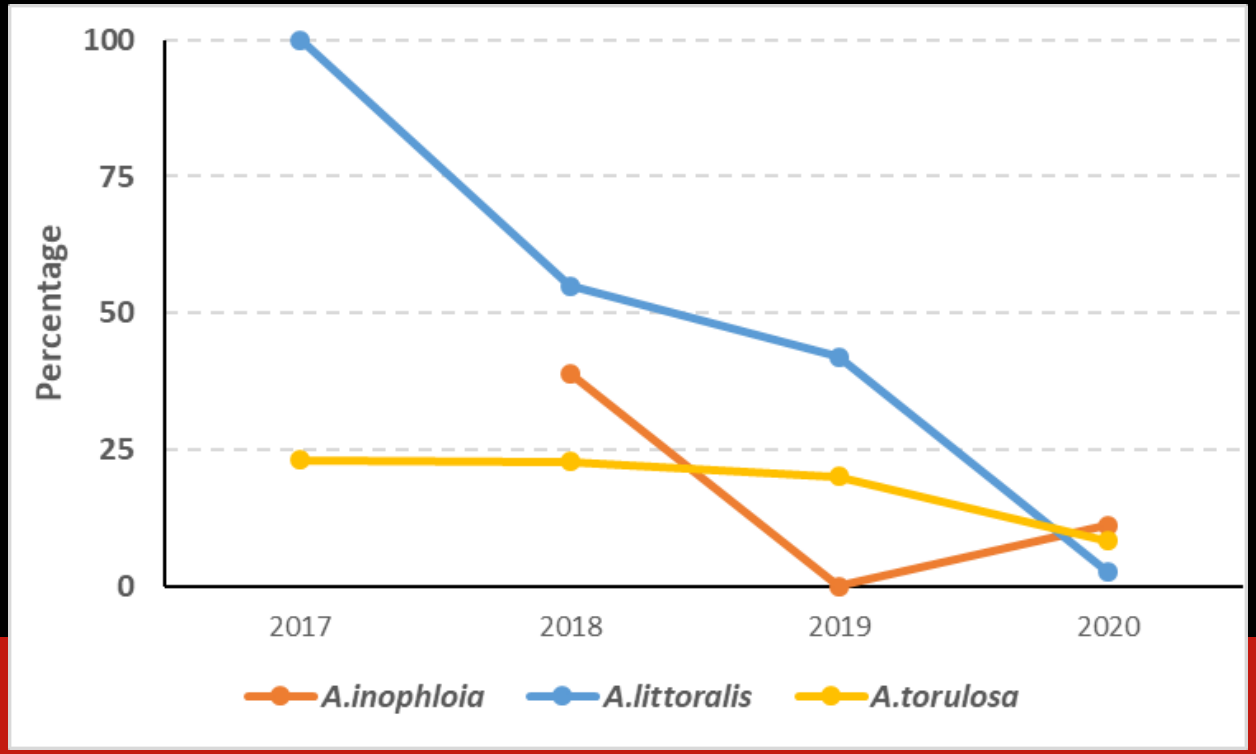
23.8 % ***- A. torulosa***

N = 18 (5.5%)

50 % ***- A. inophloia***

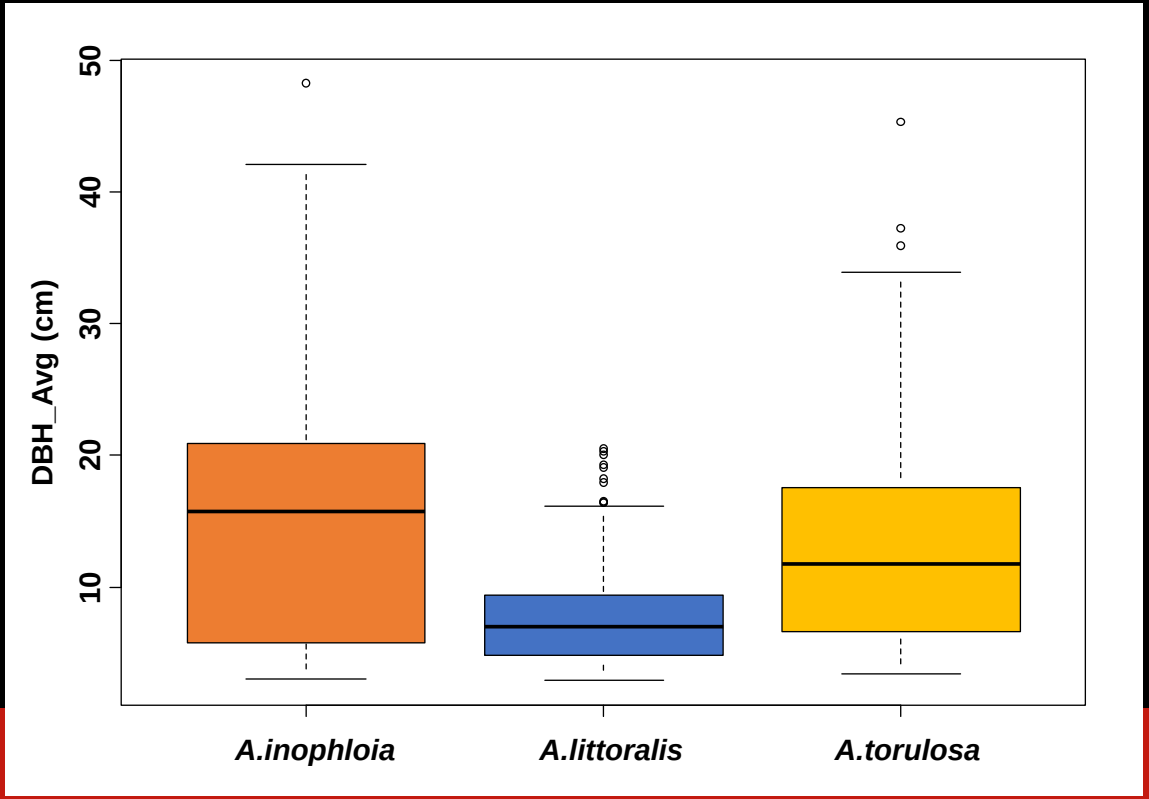
Female Feed Trees

Proportion of female feed trees over time?



- **Sharp drop in the number of *A. littoralis* trees with feeding evidence**
- **Gradual decline for *A. torulosa***

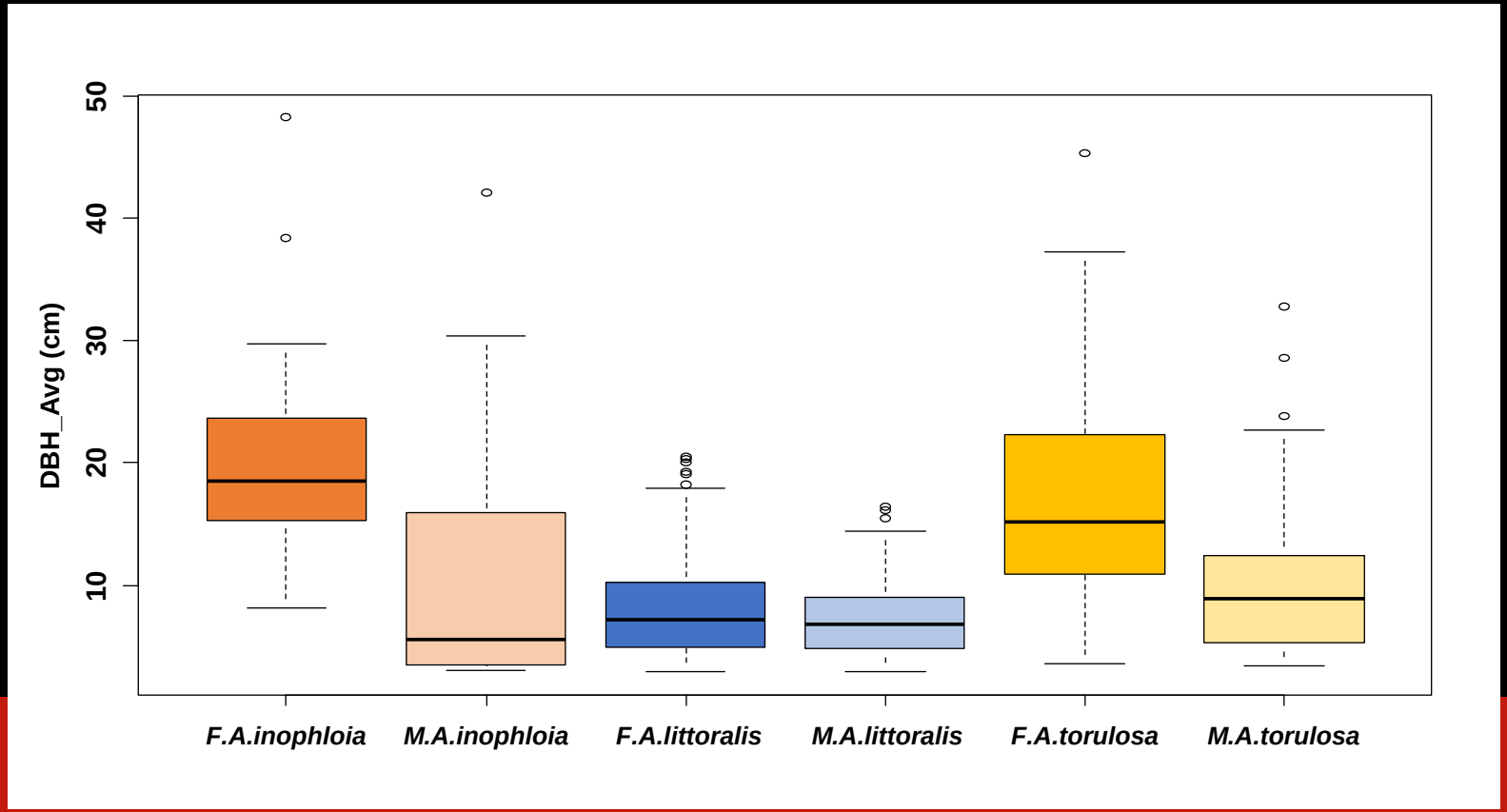
Feed Tree Patterns



- Woollybarks are the biggest trees
- Black she-oaks the smallest

	Mean	LCL	UCL
A. inophloia	16.9	15.3	18.7
A. torulosa	12.6	11.9	13.2
A. littoralis	7.6	7.5	7.8

Feed Tree Patterns



Feed Tree Patterns

	Odds ratio	P value
A. inophloia	1	-
A. littoralis	5.97	0.002
A. torulosa	1.42	0.581

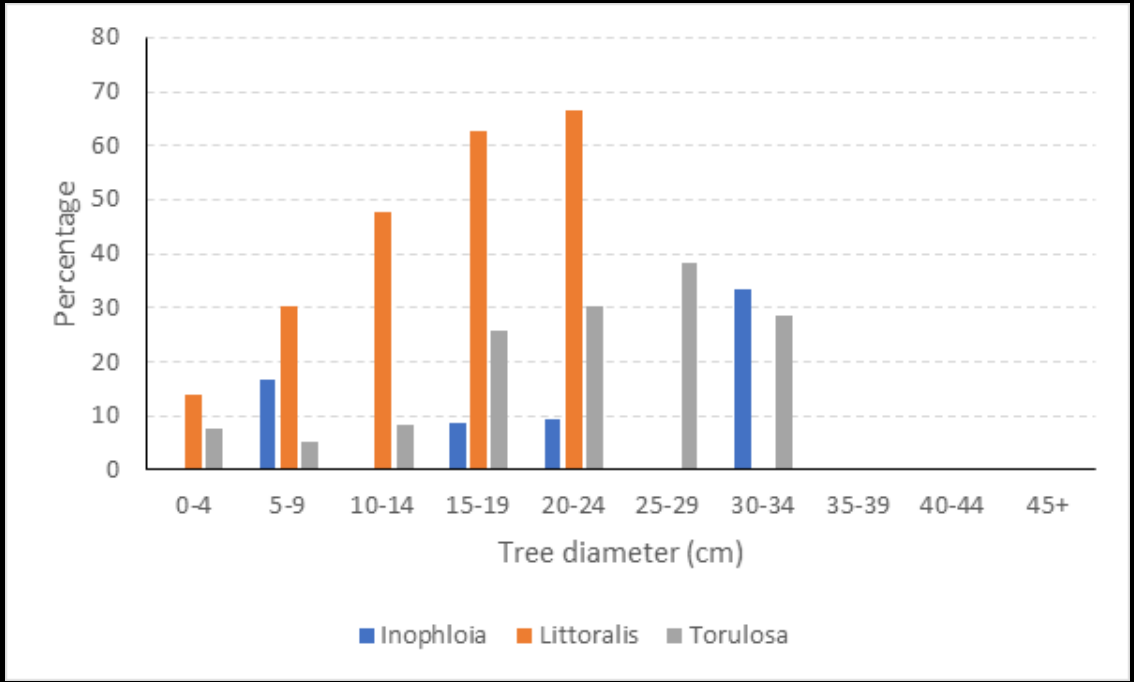
Odds of being a feed tree

- *A. littoralis* are far more likely to be feed trees (controlled for relative abundance in the landscape

- No difference in the likelihood of *A. torulosa* or *A. inophloia* being a feed tree

Is age of the tree related to desirability of the seed?

Feed Tree Patterns



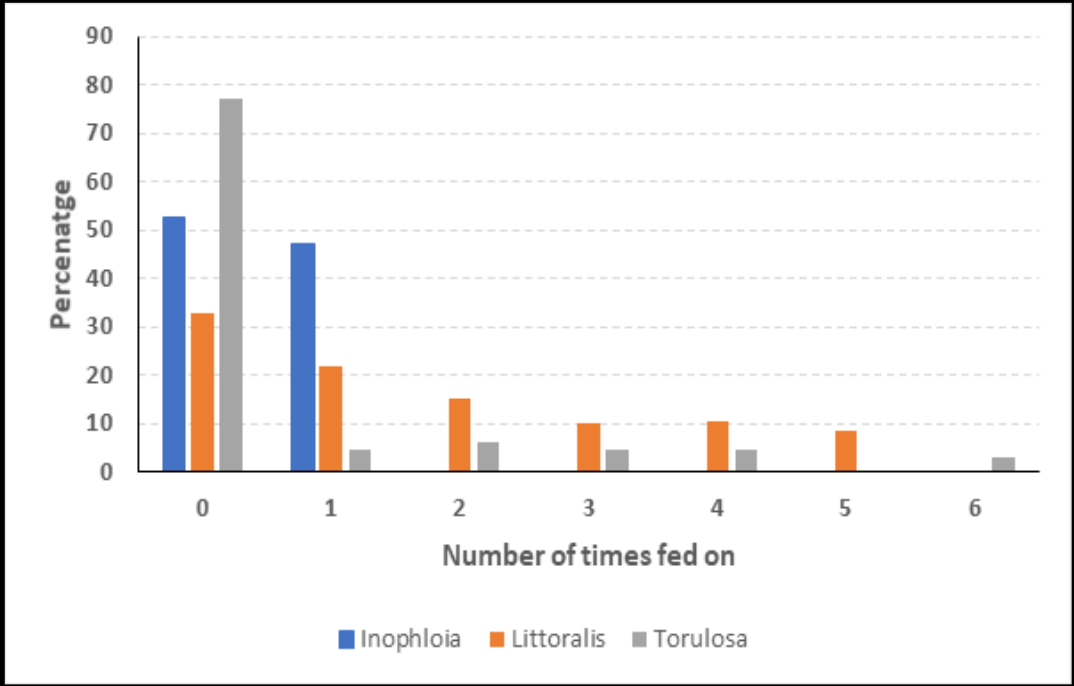
Tree size is a proxy for age

- ***A. littoralis*** **is more likely to be a feed tree as the tree gets bigger**

- ***A. torulosa*** **is more likely to be a feed tree in the range of 15 - 34cm diameter**

Can a tree be fed on multiple times?

Feed Tree Patterns



- ***A. inophloia*** **only are fed on once (53% never & 47% once)**
- ***A. littoralis*** **can be fed on multiple times**
- **77% of** ***A. torulosa*** **trees never fed on, the rest can be fed on multiple times**

Does feed tree status depend on size, species, density and time of year?

Feed Tree Patterns - Modelling

A.inophloia

- are more likely to be fed on in spring/summer and is not related to size/age or density of male trees

A.littoralis

- Odds of feeding increase by 27% for every cm diameter increase in tree size
- More likely to be fed on during the Spring and Summer
- Not related to tree density

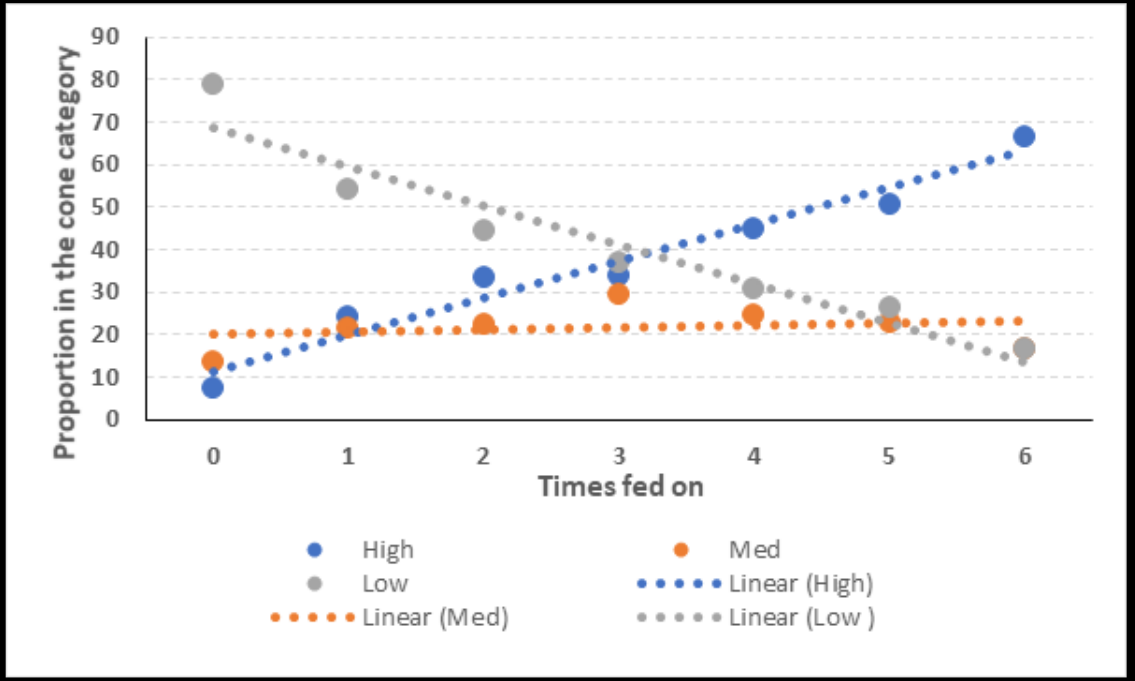
A.torulosa

- Not related to any predictor modelled

Is cone abundance associated with a tree being a feed tree?

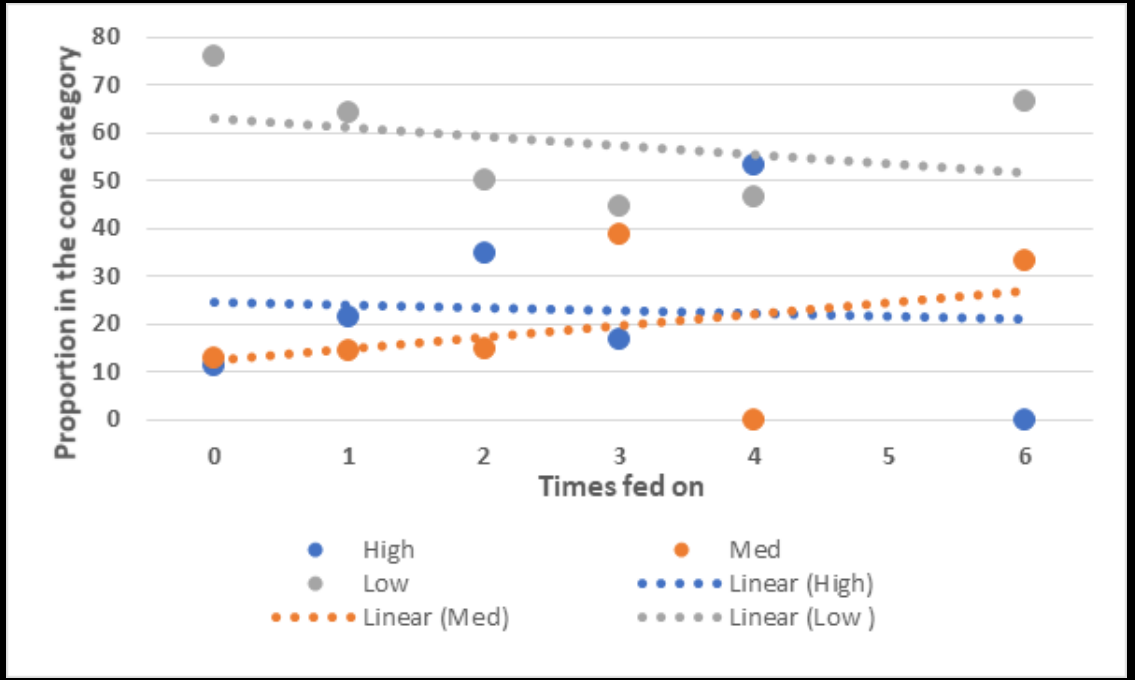
Cones and Feeding

For each species more cones means the more likely (and more often) trees will be fed on, although the pattern is less clear for *A. tolurosa*



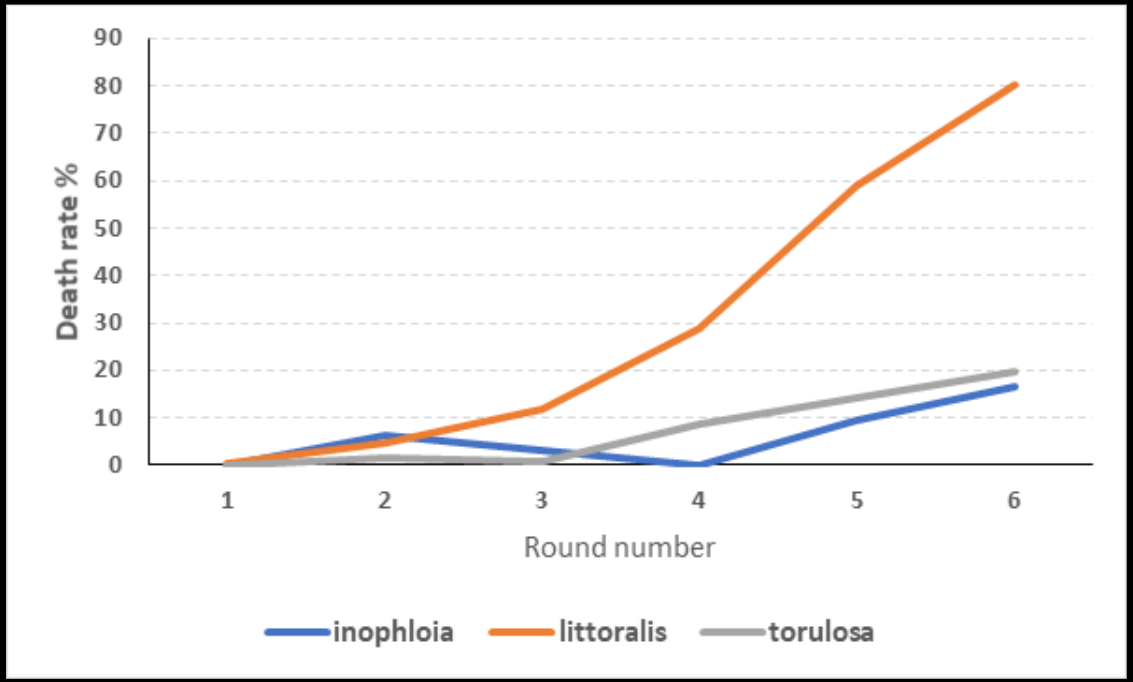
Cones and Feeding

For each species more cones means the more likely (and more often) trees will be fed on, although the pattern is less clear for *A. tolurosa*

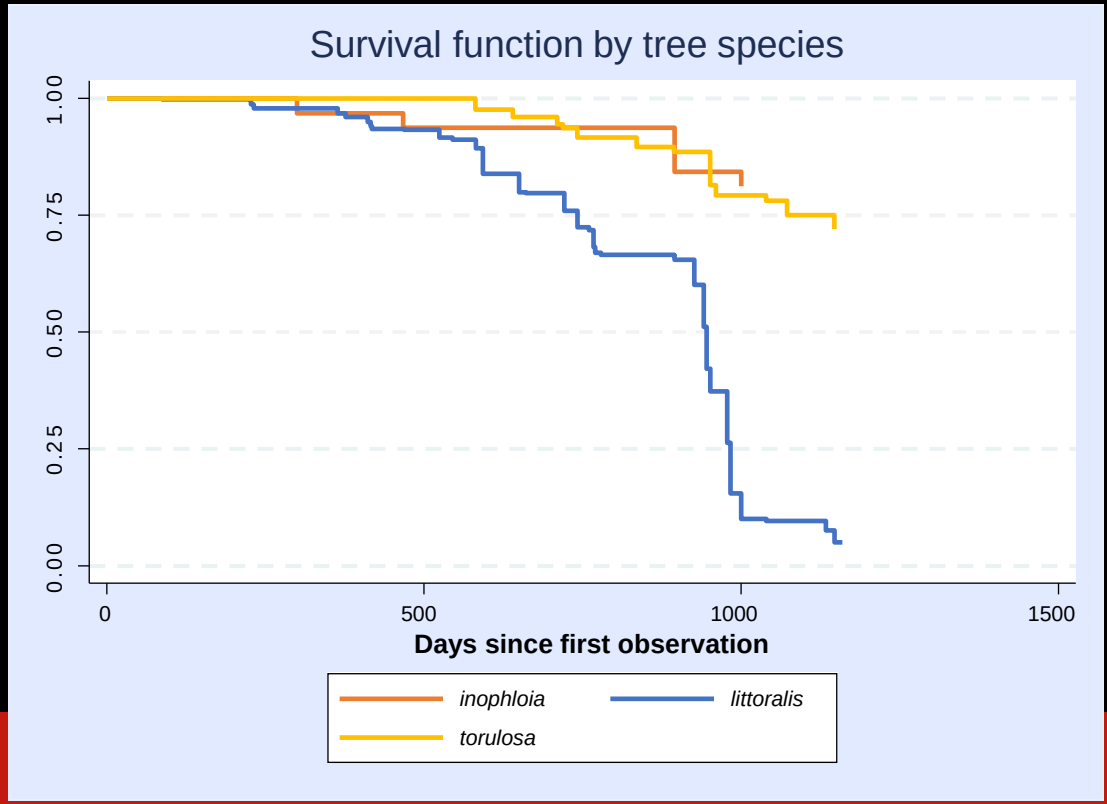


What is the relationship between die off rate and rainfall, geology type, tree density and species?

Tree Mortality – Phase 2

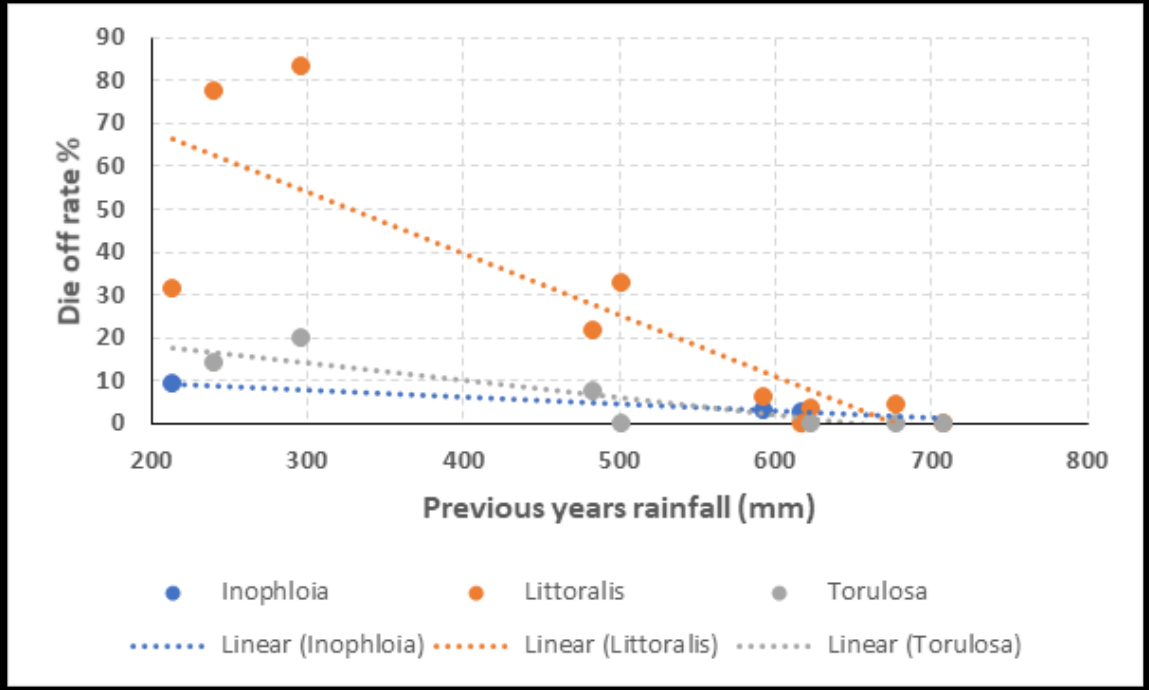


Tree Survival – Phase 2



Tree Mortality – Rainfall

- ***A. littoralis*** **dies off fastest when the previous year's rainfall reduces**
- ***A. torulosa*** **and** ***A. inophloia*** **appear to be more tolerant of reduced rainfall**



Tree Mortality – Modelling

A.inophloia

- Not related to density or rainfall or soil type

A.littoralis

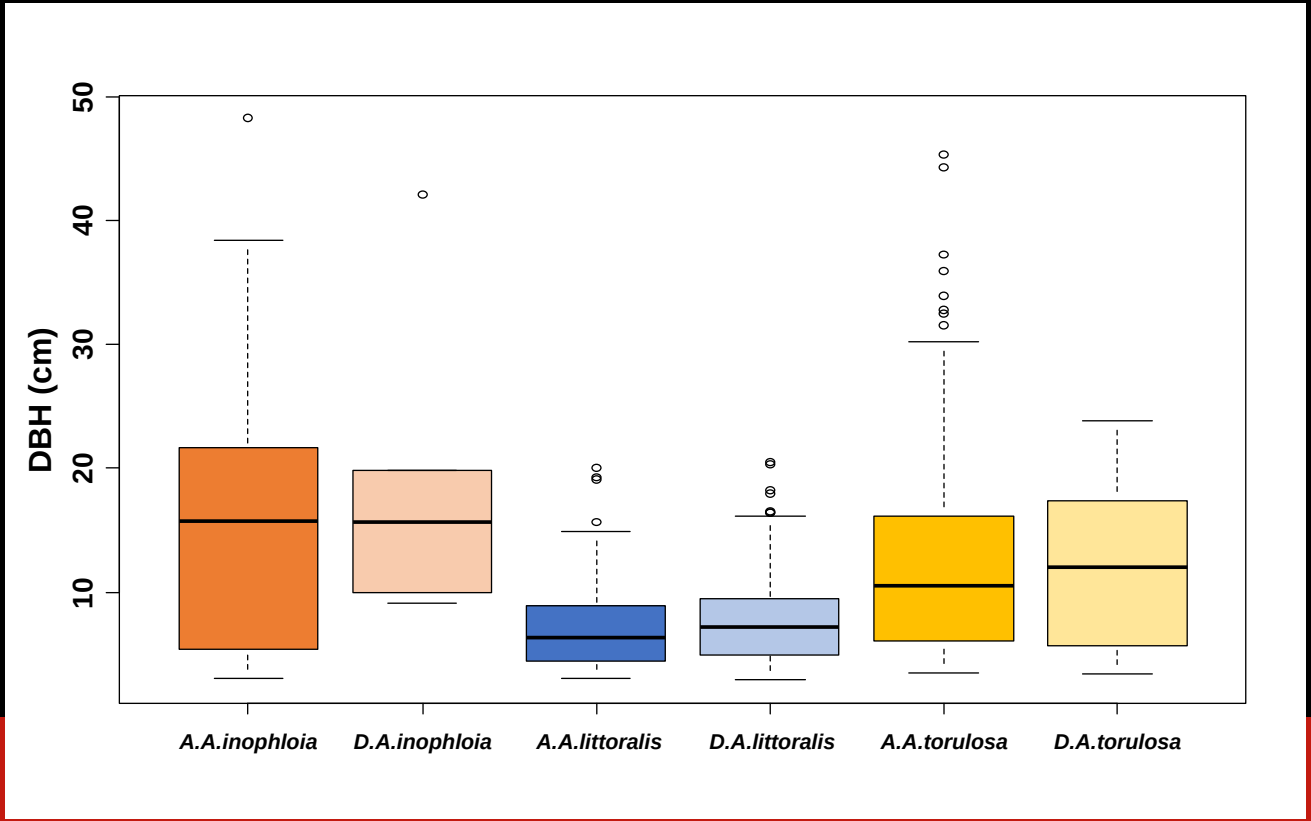
- Increased die off significantly related to rainfall and soil type
- Odds of die off increases by 5.4% for every mm drop in the rainfall moving average
- Odds of dying off doubles for the Basalt/Sandstone soil types

A.torulosa

- Odds of die off increases by 6.0% for every mm reduction in the rainfall moving

Tree Mortality – Tree Size

The size of the tree across all species does not appear to affect the die off rate



Conserving the Glossy Black-Cockatoo

Lockyer Uplands Project

Thanks to all LUCI Members !!

Griffith UNIVERSITY
Queensland, Australia