Mechanisms for success in savannas: growth strategies of frequently burnt juvenile little trees

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Gulliver’s Travels.

The Fire Trap
Little Trees: “Gullivers” and “Trubs”.

Gullivers Tree/Shrubs
A “Persistence Equilibrium Model”.

Equilibrial size (★) = size at which saplings persist under frequent fire

My “Persistence Equilibrium Model”.

(L R pkg lme4)

Post-fire treatment height ~ (Pre-fire Trt Height + Pre-fire Trt Height^2) × Fire Treatment...

...which varies by Species as a random effect

...with further random effects for Time Period and Site

Long-term Unburnt
Annual Early Dry Season Burns
Annual Late Dry Season Burns

5 Annual Measurements
(4 time periods)

Eucalyptus miniata (Myrtaceae)
Eucalyptus porrecta (Myrtaceae)
Eucalyptus tetrodonta (Myrtaceae)
Erythrophleum chlorostachys (Fabaceae)
Gardenia megasperma (Rubiaceae)
Planchonia careya (Lecythidaceae)
Terminalia ferdinandiana (Combretaceae)
Xanthostemon paradoxus (Myrtaceae)
My “Persistence Equilibrium Model”.
My “Persistence Equilibrium Model”.

*eucalypt savanna (Kapalga, Northern Territory Australia)*
My “Persistence Equilibrium Model”.

eucalypt savanna (Kapalga, Northern Territory Australia)
Equilibria.
Eucs VS Neucas.

Height : Diameter Ratio.  
Wood Density.  
Leaf Area.  
Specific Leaf Area.  
Bark Thickness.  
Leaf Area : Sapwood Area Ratio.  
Crown Volume.
What’s Going On?
The CSIRO Tiwi Carbon Study.

1300 sub-adult trees tagged across 6 annual burn and 6 unburnt sites

12 species across 3 size classes
- Juvenile resprout
- Juvenile <150cm tall
- Sapling >150cm tall, <5cm DBH

Measurements taken over 2 years:
- Start of dry
- Start of wet
- Immediately post-fire

Characterising competition environment
- Understorey
- Overstorey

Post fire measurements
- Scorch height
- Char height
- Resprouting
Thankyou.

To the Balwyn Rotary Club for the travel bursary to attend this meeting

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