



## Keeping the kids happy: Ashbeds facilitate tuart seedling recruitment

Natural regeneration is critical for forest ecosystems. Local extinction can occur if adequate seedling recruitment does not occur before old trees die.

The urban and peri-urban environment is particularly challenging for tree recruitment. For example, although many forest species have specific requirements involving fire events, few opportunities associated with appropriate fire regimes exist in contemporary urban and peri-urban environments.

For tuart (*Eucalyptus gomphocephala*), mass recruitment can occur in ashbeds following a hot fire. However, recruitment may not occur following low-intensity, fuel reduction burns that are prescribed for many tuart woodlands and forests.

We tested whether ashbeds (constructing piles of coarse woody debris and then burning them) could be a means of providing adequate (hot) fire stimulus for tuart seedling recruitment.

### Methods and results

We carried out a series of collaborative case studies involving community groups, NGOs and Local and State Government agencies. We compared tuart seedling recruitment (facilitated through broadcast seeding) after:

- a) Creating coarse woody debris piles prior to a low intensity, prescribed burn (Figure 1);



**FIGURE 1** Creation of coarse woody debris piles in Paganoni Swamp Bushland (a) prior to a low intensity prescribed fire, and following the prescribed fire (b)

- b) Choosing naturally-occurring ashbeds following a hot summer wildfire (Figure 2); and
- c) Creating coarse woody debris piles and then burning the piles only (Figure 3).

### Results and discussion

We found that seedling recruitment of tuart can be facilitated by broadcast seeding naturally occurring or created ashbeds (Figures 4 and 5). However, protection from seed harvesters (e.g. ants) by raking the seeds after sowing, and protection from herbivores (e.g. rabbits and kangaroos) to prevent browsing, is vital. Unfortunately, there were only a few seedlings remaining at the Paganoni Swamp Bushland and the Dixon Road sites due to these two important factors.



**FIGURE 2** Seeding naturally-occurring ashbeds with tuart seeds following a hot summer wildfire in Dixon Road, Rockingham Lake Regional Park





**FIGURE 3** Creating coarse woody debris piles (a) and then after burning the piles (b) in Yalgorup National Park

The ashbed creation activity and study was deemed so successful that the NGO involved (the Peel-Harvey Catchment Council) created a training video to assist other groups and agencies in creating ashbeds. It is a freely available YouTube video: [www.youtube.com/watch?v=IFBeuzrojs0](http://www.youtube.com/watch?v=IFBeuzrojs0)



**FIGURE 5** Seedling recruitment following the sowing of tuart seed into ashbeds

### Conclusions and recommendations

Understanding the regeneration niche requirements of tuart has markedly helped increase the success of replanting. Our study has shown that seedling recruitment of this post-fire, canopy gap regenerator can be facilitated by broadcast seeding naturally occurring or created ashbeds.

Protecting seeds from seed harvesters and the seedlings from herbivores is vital.

We have provided inexpensive tools to regenerate tuart populations in urban and peri-urban environments and shown that this can be carried out collaboratively with State and Local Government agencies, NGOs, community groups and private landowners.

It is the conservation of these urban and peri-urban ecosystems that will be vital in maintaining connection between people and the environment into the future. ■

### More information

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### Acknowledgements

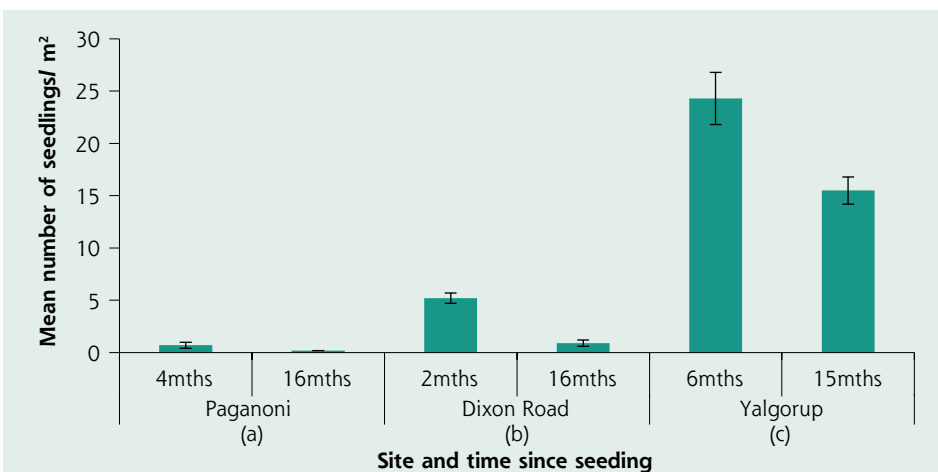
We would like to thank:

- Friends of Paganoni Swamp
- Friends of Island Point
- City of Rockingham
- City of Mandurah
- Peel-Harvey Catchment Council
- Department of Parks and Wildlife
- Greenskills and NowGreen Teams: Rockingham and Peel
- Veronica Ingrilli
- Men of the Trees, Peel Branch
- Colleagues: Marleen Buizer, Niels Brouwers, Annora Longhurst, Idger Zwiers

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This article is an excerpt from: Ruthrof, K.X., Matusick, G., Valentine, L.E., and Hardy, G. (2015). Facilitating regeneration of an iconic canopy species with specific niche requirements. *Open Journal of Forestry*. 5, 402–408.



**FIGURE 4** Mean number of seedlings/m<sup>2</sup> (± one standard error) following creation of ashbeds and broadcast seeding with tuart seed after creation of coarse woody debris (CWD) piles prior to: (a) a low intensity prescribed burn (Paganoni), (b) naturally occurring ashbeds following a hot summer wildfire (Dixon Road) and (c) creating CWD piles and then burning piles only (Yalgorup)



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