

## Recruitment in the Western Myall (*Acacia papyrocarpa* Benth.)

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The western myall (*Acacia papyrocarpa* Benth.), a long-lived small tree, is restricted to arid and semi-arid pastoral lands of South and Western Australia where it characterises the beauty of much of the landscape. Little research has been conducted into the life history of this tree species, particularly its recruitment and subsequent regeneration but it is known that the combined influences of grazing by introduced and native herbivores (sheep, rabbits and kangaroos) usually precludes the regeneration of the species. The species is a **non-resprouter** and thus reliant on regeneration by seed alone. It is known that seedling establishment occurs only rarely, about once in 25 years. A key feature of its regeneration ecology to emerge from my study is that effectively all seed is quickly removed and destroyed by harvester ants. I propose the following hypothesis model that it is the rare co-occurrence of: very heavy rainfall (for germination and establishment), scarification of hard seeds (by movement of sheet flow across the land surface) and shallow burial of seeds in soil and debris (to protect them from harvester ants) which enables a large recruitment event in the western myall.

My research has shown that the western myall has a seasonal cycle of flowering and seed set which differs markedly from tree to tree and in abundance from year to year. Ants, not vertebrates remove the seeds rapidly and usually take them too far underground for **recruitment** to occur; they are predatory seed harvesters rather than seed **dispersers**. **Seeds with arils**, once scarified, germinate more successfully than seeds without arils (more of which die): seeds do, however, exhibit innate dormancy. Seed fall occurs every year in late summer: this is also the most likely time for large episodic rainfall events which occur approximately every 20 years. Onward growth of seedlings appears to require more than 80 mm of rain falling in one germination event, i am currently testing the hypothesis that it is the rare co-occurrence of inundation with its consequent overland sheet flow of water, scarification of seeds by the tumbling action of soil and water and the burial of the seeds away from the harvester ants which are crucial for large recruitment events in the western myall. Results so far indicate that even shallow burial will protect seeds from harvester ants: these results will hopefully be presented at the **ESA** in Canberra in September this year.

### Publications:

Ireland C. and Andrew M.H. The effects of arils on the fate of *Acacia* seeds: dispersal and **predation**; dormancy and germination. *Ecol. Soc. Aust. Open Forum, Roseworthy, SA.*, September 1992.

Ireland C. and Andrew M.H. A model of recruitment in the western myall: the importance of **concurring** episodic events. *Aust. Rangeland Soc. 7th Biennial Conf.* October 1992.