

Breynia *oblongifolia* Coffee Bush

There are numerous boring exotic garden plants such as the ubiquitous *Murraya paniculata* which is much loved by landscapers and features in the surrounds of many fast-food restaurants. We probably would have placed *Breynia oblongifolia* (Coffee Bush) in the same category were it not for the pollination characteristics of this common native plant of Sydney's bushlands.

Breynia oblongifolia is an evergreen shrub that thrives in a wide range of habitats, from *Eucalyptus* woodlands of NSW, tropical coastal rainforests of Queensland and New Guinea, to even drier *Acacia* woodlands of Western Queensland. It is probably overlooked because the flowers are inconspicuous, small and green, and the only redeeming (horticultural) features are the red berries that turn black when mature. In

some ways, it behaves not unlike invasive privet, *Ligustrum* spp., rapidly colonising cleared sites and disturbed areas, and if natural fire frequency is reduced, it's very adept at outcompeting fire-dependent species.

World-wide there are 25 species of *Breynia*, of these, seven occur in Malesia. *Breynia oblongifolia* is one of four species that occur in Australia and the only one found in NSW. Previously the genus *Breynia* was included in the plant family Euphorbiaceae, more recently it has been moved to the Phyllanthaceae. *Breynia* is a genus that produces *separate* male and female flowers on the same plant, generally referred to as *monoecious* plants.



Distribution of *Breynia oblongifolia* in Australia and New Guinea. Map modified from Atlas of Living Australia:

https://avh.ala.org.au/occurrences/search?taxa=Breynia+oblongifolia#tab_mapView



Leaf Blower Moth *Epicephala lativalvaris* collecting pollen grains from stamens on male flower of *Breynia fruticosa*. Zhang J et al. 2012. *PLoS ONE* 7(7): e41657. doi: 10.1371/journal.pone.0041657



Leaf Blower Moth *Epicephala lativalvaris* actively pollinating a female flower of *Breynia rostrata*. Zhang J et al. 2012. *PLoS ONE* 7(7): e41657. doi: 10.1371/journal.pone.0041657

Breynia is closely related to a number of other genera (for example, *Glochidion ferdinandi* - the Cheese Tree) in the plant family Phyllanthaceae which are pollinated by specific moths in the genus *Epicephala* – leaf blower moths. The moths not only actively pollinate the flowers ensuring production of viable seeds, but also lay eggs in the ovaries of the flowers. The plant benefits when its flowers are pollinated by the moths, and moths benefit by their offspring being able to consume *some* (but definitely *not all*) of the developing fruits.

The origin and development of this mutualism (a mutually beneficial relationship) between *Breynia* species and leaf blower moths is referred to as *co-evolution*. The famous biologists Paul Ehrlich and Peter Raven defined co-evolution as the *interaction between two major groups of organisms with a close and evident ecological relationship, such as plants and herbivores*.

Of course, there are always some individuals that don't toe the line. Larvae of some *Epicephala* moth species eat the seeds of some species in the Phyllanthaceae, but the adults don't pollinate the flowers; in other words, they're parasites not mutualists. Interestingly, some of these parasitic species evolved from ancestors that were dutiful pollinators. A relatively recent study in New South Wales identified two species of leaf blower moths, *Epicephala* spp., co-existing in mutualistic relationships on *Breynia oblongifolia* alongside a *third* moth species from the genus *Herpystis* that is distantly related and acts as a non-pollinating parasite.

Breynia oblongifolia might be a bit boring as a plant but Jeff Howes of the Australian Plants Society reminds us that *Breynia oblongifolia* provides resources for many bird and animal species that feed on berries, leaves and flowers.





Breynia disticha is a native of
New Caledonia and Vanuatu



Breynia cernua
Native to Australia & Malesia

Distribution map for *Breynia oblongifolia* modified from Atlas of Living Australia:

https://avh.ala.org.au/occurrences/search?taxa=Breynia+oblongifolia#tab_mapView

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