

TESTING FOR APOMIXIS IN AN OBLIGATE POLLINATION MUTUALISM

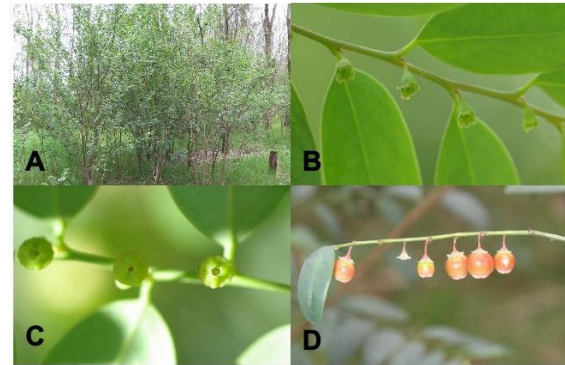
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Many Plants with a small number of specific pollinators may be vulnerable to fluctuations in the availability of those pollinators, which could result in pollination failure. Plants can develop mechanisms to mitigate the risk of pollination failure, such as apomixis. Apomixis is the clonal reproduction of plants through seeds without pollination or fertilisation.

We performed a flower-bagging experiment to test if the unisexual flowers of *Breynia oblongifolia* (Phyllanthaceae) could set fruit in the absence of its highly specialised seed-eating moth pollinators. Surprisingly, many bagged female flowers developed fruits, suggesting apomixis.

We therefore conducted a second series of experiments in which we 1) added or excluded pollinators from caged plants; and 2) surveyed a wild population for apomictic reproduction using mother-offspring genotyping.

In the absence of pollinators, no fruits developed. In addition, we detected no genetic evidence for apomixis when comparing between mothers and their offspring or between adults in a wild population.



A) The “coffee bush” *Breynia oblongifolia* (Phyllanthaceae) in Richmond, NSW, Australia B) female flowers C) male flowers with enclosed stigmas and D) mature fruits.

We explain the production of fruits on bagged branches in our initial bagging experiment by our discovery that *B. oblongifolia* can retain pollinated female flowers over the winter period. These flowers develop to fruits in the spring in the absence of male flowers or pollinators. Our study thus shows that *B. oblongifolia* is unable to produce fruit in the absence of its specialist moth pollinators. Thus, the highly specific interaction between plant and pollinators appears to be truly obligate.