

Wolffia australiana—mealweed

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THE ROOTLESS DUCKWEED

Wolffia is a worldwide genus of 11 species of tiny duckweeds. One species, *W. australiana*, occurs in New Zealand and south-eastern Australia. It is widespread but easily overlooked because it is so tiny: Wolffias are the smallest flowering plants in the world, being less than 1 mm long (Fig. 1).

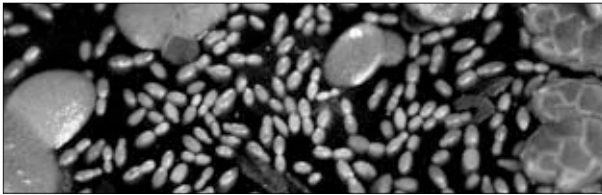


Figure 1. *Wolffia australiana* growing amongst much larger *Lemna minor* (left and top) and *Azolla filiculoides* (right). Photo: Jeremy Rolfe.

Each plant produces a male flower, of a single stamen, and a female flower, of one stigma and ovary, in a floral cavity on the dorsal surface. Flowers appear during summer, although they are rarely seen (Fig. 2).

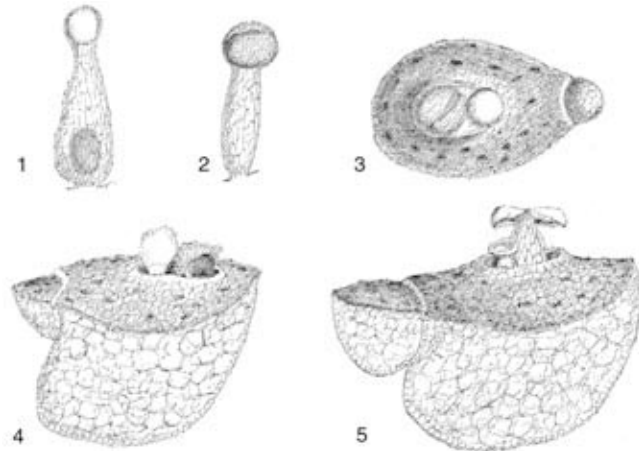


Figure 2. Illustrations by Judith Petterson, drawn in 1950 for Dr H.H.Allan from a specimen collected by V.D.Zotov at Waikanae. 1. Female flower; 2. Male flower; 3. Whole plant, top view; 4. Whole plant side view showing round white stigma with pollen grains on top and the ripe stamen shedding pollen; 5. Whole plant side view showing wide-open empty stamen and shrinking disc-shaped stigma.

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However, *Wolffia* reproduces primarily vegetatively—buds push through a pouch at the basal end of the plant until they break free (Figs 3, 4).

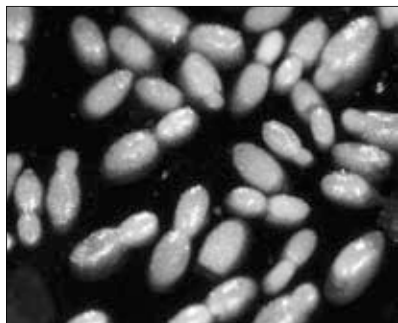


Figure 3. *W. australiana* showing various stages of buds.
Photos: Jeremy Rolfe.

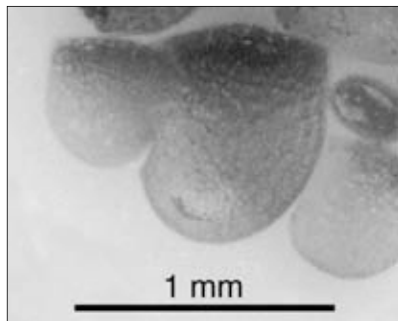


Figure 4. Side view showing the bright green 'platelet' atop the submerged portion and a new plant budding.

When first recorded in New Zealand in 1950, *Wolffia* was considered to be *W. arrhiza* which is found throughout the world. However, in 1972, it was reclassified as *W. australiana*: it is distinguished from other members of the genus by its relatively large submerged portion (fig. 4). This improves its buoyancy, and in strong winds *W. australiana* can be propelled across the water until it piles up on the shoreline.

Wolffia is best observed during summer in still, nutrient-rich water. In winter, the plants become swollen with stored starch and sink to the bottom, rising again later in the year.

FURTHER READING

- Armstrong, W.P. 1996: Weird duckweeds from India, Australia & South America. *Wayne's Word Noteworthy Plants*: August 1996. Published on the internet; <http://waynesword.palomar.edu/plaug96.htm>
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- Royal Botanic Gardens, Kew. 2002: electronic Plant Information Centre. Published on the internet; www.kew.org/epic/