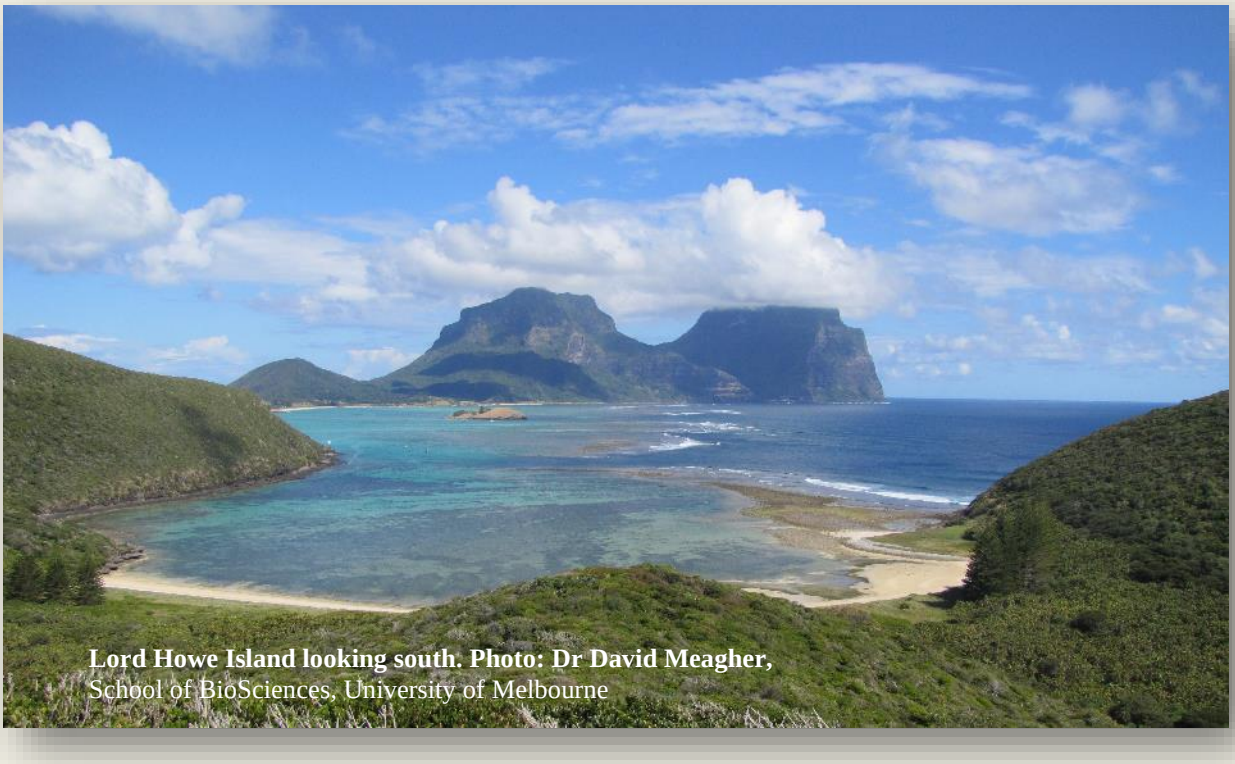
Dietes robinsoniana
Lord Howe Island Wedding Lily
A biogeographical enigma


Photo: Dr David Meagher

Bushland regenerators in Sydney will recognise a number of species of *Dietes* as increasingly problematic weeds in local bushland, and yet the geographic distribution of this predominantly African genus is quite extraordinary. There are six species of *Dietes*, five from Africa, but one, *Dietes robinsoniana*, from Lord Howe Island. How on earth did that happen?

This is one of the great puzzles of plant biogeography. The geographical remoteness of *Dietes robinsoniana* is an example of a ***disjunct distribution***. Disjunct distributions can be caused by major changes in the environment, such as sea level rises, continental drift, or mountain building (**vicariance)**, or they can be the result of ***long-distance dispersal***, for example, seeds carried long distances by migrating birds or animals.


Lord Howe Island looking south. Photo: Dr David Meagher,
School of BioSciences, University of Melbourne

Lord Howe Island Wedding Lily, largest of all *Dietes* species. Here photographed with Dr Michele Kohout, Arthur Rylah Institute for Environmental Research. Photo: Dr David Meagher

Dietes robinsoniana is also known as the Lord Howe Island Wedding Lily and grows on exposed cliffs, on forest margins and from sea level to the top of the two mighty peaks, Mount Lidgbird and Mount Gower. This is the largest of all *Dietes* species.

Dietes belongs in the Iridoideae, a sub-family of the Iris family (Iridaceae) and is closely related to *Iris* which we know from many spectacular garden hybrids as well as species. Curiously, there are *no other* genera of this *sub-family* in Australia. Long-distance dispersal from Africa well before the Pleistocene, was initially thought be the most likely explanation. At that time, Australia was separated from Africa, but India, mid-way between the two, could have provided a land bridge between them. However, molecular evidence now shows that the *Iris* family differentiated in the more southerly landmass of Antarctica-Australasia, after which species in the Iridaceae radiated into southern Africa and the temperate and montane areas of South America. The alternative hypothesis applies to the genus *Dietes,* separated into discontinuous populations by geographical barriers (vicariance) rather than by long distance dispersal.

Lord Howe Island – view from Mount Gower Summit. Photo: Dr David Meagher

Dietes grandiflora - Photo: Jann Hayman

Three African species of *Dietes*, *D. bicolor*, *D. grandiflora* and *D. iridioides*, are commonly grown as garden plants in Sydney. They are remarkably tough, have leathery, sclerophyllous leaves and are drought tolerant. Unfortunately, all three have potential as invasive plants and produce an abundance of readily germinating seeds and unwanted plants are often dumped in bushland.

Dietes iridioides – listed as a potential environmental weed in Australia

Dietes bicolor – another a potential environmental weed

Atlas of Living Australia: https://bie.ala.org.au/species/https://id.biodiversity.org.au/node/apni/2917575

Donato R, Leach C, Conran J G. 2000. Relationships of *Dietes* (Iridaceae) inferred from ITS2 sequences. In Wilson K L, Morrison D A, (eds): *Monocots: Systematics and Evolution.* CSIRO: Melbourne.

Goldblatt P. 1981. Systematics, Phylogeny and Evolution of *Dietes* (Iridaceae). *Annals of the Missouri Botanical Garden*, 68(1): 132–153.

Goldblatt P, Rodriguez A, Powell M P, Davies J, Manning John C, van der Bank M, Savolainen V. 2008. Iridaceae 'Out of Australasia'? Phylogeny, Biogeography, and Divergence Time Based on Plastid DNA Sequences. *Systematic Botany* 33(3): DOI: 10.1600/036364408785679806

Weeds of Australia, Biosecurity Queensland: https://keyserver.lucidcentral.org/weeds/data/media/Html/dietes_grandiflora.htm

Wikipedia: https://en.wikipedia.org/wiki/Dietes

Alison Downing, Brian Atwell, David Meagher, Karen Marais, Kevin Downing
Department of Biological Sciences

MACQUARIE University
SYDNEY·AUSTRALIA