

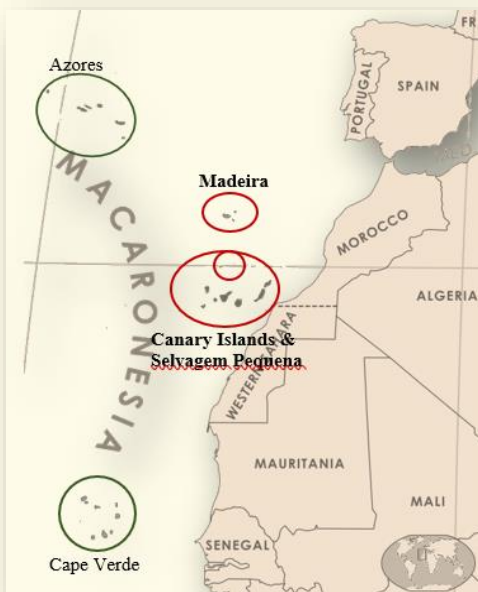
Argyranthemum

Marguerite Daises



These have long been a favourite of Australian gardeners, they're easy to propagate and colourful throughout much of the year. We know them as Marguerite Daises, but the genus, *Argyranthemum*, is quite extraordinary, a classic tale of biogeography to challenge Darwin's Galápagos Island finches. Those we know as garden plants are small, perennial, bushy shrubs that produce an abundance of daisy flowers. The flowers can be single or double and come in

a range of colours from white and yellow to pinks, reds and purple, and as plant breeders hybridise them with other species and sometimes other genera, have come to attract even more of our attention.



Argyranthemum species occur islands off the north-western coast of Africa: Canary Islands, Madeira, and on Selvagem Pequena (Savage Islands).



There are 24 *species* of *Argyranthemum*, all from islands of the Macaronesian Archipelago which lies off the north-western coast of Africa, encompassing the Canary Islands, Madeira and the island of Selvagem Pequena in the Savage Islands. Remarkably, the genus doesn't occur on the African mainland at all and *Argyranthemum* is the largest endemic genus of flowering plants found in the archipelago. Three species are endemic to Madeira, one to Selvagem Pequena, and twenty to the Canary Islands, but there is one endemic species on each of twenty-one of the islands of the archipelago. These are referred to as *single-island endemics*.



The islands where *Argyranthemum* species evolved have remarkably diverse habitats, from coastal to subalpine and the combination of separated islands and diverse habitats is classically a powerful driver for the evolution of new species – think Darwin's finches! Indeed, the evolution of so many distinct *Argyranthemum* species can be related to geographic isolation and differences in habitat. Adding further complexity, hybridisation *between* species has also occurred, contributing to the genetic 'churn' required for survival in specific niches.

Island biogeography has made a fascinating contribution to our understanding on evolution. The theory implies that the number of species that occur in an isolated environment (typically, an *island*) is determined by immigration and extinction and this in turn is determined by the distance from the closest source (landmass) of colonisers. The classic example of island biogeography, Darwin's observations of finches in the Galápagos Islands, has now been expanded to occupy the core of evolutionary theory. Other major factors in biogeographical studies include the length of time that the *island* has been isolated; the size of the *island* (the larger the *island* the greater potential for



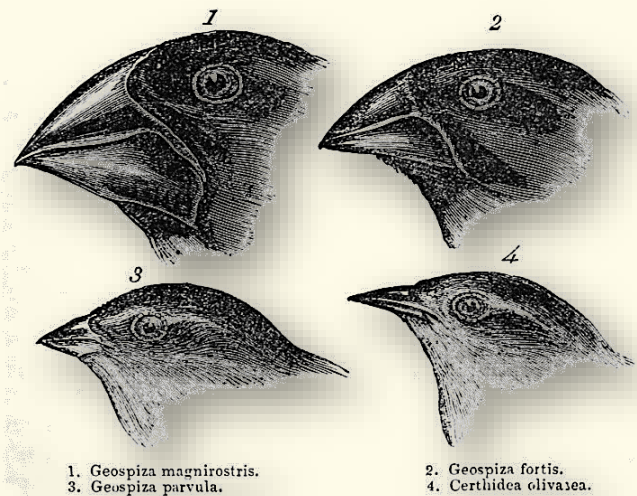
Teneriffe, Canary Islands Photo: Julian Schrader

diversification); habitat; ocean currents and/or prevailing wind directions; human activities.



Selection of *Argyanthemum* species from different islands of Macaronesia. Superficially similar, but each a different species.

1. *A. broussenetii*
2. *A. haematomma*
3. *A. haouarytheum*
4. *A. maderense*



1. *Geospiza magnirostris*.
2. *Geospiza fortis*.
3. *Geospiza parvula*.
4. *Certhiidea olivacea*.

Darwin's finches. Darwin (1845). *Journal of Researches into the Natural History and Geology of the Countries visited during the voyage of H.M.S. Beagle round the world, under the command of Capt. Fitz Roy, R.N. 2d edition.*

There are 17 species of *finches* found on the Galápagos Islands and a another on the Cocos Island of Costa Rica. All are referred to as *Darwin's finches*. It is believed that their ancestor, and close relative, is the *dull-coloured grassquit*, from mainland South America. After the original birds arrived in the Galápagos, the species diversified, adapting to the many different environments encountered on the islands, to the point where they became different species, characteristically, each species with a different beak depending on the attributes of the food eaten. The species are similar but can be identified by differences in diet, habitat together with beak shape and size

Darwin, describing details of the beaks in the second edition of *The Voyage of the Beagle*, added: "Seeing this gradation and diversity of structure in one small, intimately related group of birds, one might really fancy that from an original paucity of birds in this archipelago, one species had been taken and modified for different ends."

It seems that this same statement could equally apply to the *Argyanthemum* species on their respective islands of the Macaronesian archipelago.

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Galápagos Conservation Trust: <https://galapagosconservation.org.uk/our-work/>

White O W, Reyes-Betancort J A, Chapman M A, Carine M A. 2020. Geographical isolation, habitat shifts and hybridisation in the diversification of the Macaronesian endemic genus *Argyranthemum* (Asteraceae). *New Phytol.* 228(6): 1953-1971. doi: 10.1111/nph.16980.

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Wikipedia: https://en.wikipedia.org/wiki/Darwin%27s_finches

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

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

Argyranthemum images (block of 4):

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