

# Sympatric speciation contributes to island biodiversity

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Howea palms on Lord Howe Island have undergone sympatric speciation. Credit: Bill Baker

Scientists discover at least 11 examples of sympatric speciation on Lord Howe Island.

How does a single species divide into two new species? For decades, the prevailing idea among [evolutionary biologists](#) was that geographic barriers (e.g. a river or mountain range) must exist between populations of a species for speciation to occur (a process known as allopatric

speciation). Geographic barriers prevent reproduction between populations, allowing them to evolve independently and, given enough time, to become genetically and ecologically distinct from each other.

The last ten years have seen a slow increase in examples of an alternative speciation process which does not require a geographic barrier (sympatric speciation) and is driven instead by natural selection and biological [reproductive barriers](#) (e.g. [mate choice](#) or variation in [flowering time](#)). However, sympatric speciation is often considered to be a very rare, freak event that is unlikely to have made a significant impact on current patterns of biodiversity.

Research led by a team of scientists at Kew and Imperial College (Alex Papadopoulos, Vincent Savolainen, William Baker and Ralf Kynast), in collaboration with colleagues in the UK and Australia, has challenged the status quo by demonstrating that sympatric speciation may be relatively common in some instances.

Using genetic and ecological information on endemic plant species on a tiny, subtropical, Pacific island (Lord Howe Island, Australia) the researchers have discovered at least eleven new instances of sympatric [speciation](#) and suggest that as many as one in five species on the island may be the products of this process.

**More information:** Papadopoulos, A. S. T., et al. (2011). Speciation with gene flow on Lord Howe Island. *Proceedings of the National Academy of Sciences* 108: 13188-13193.

Provided by Royal Botanic Gardens, Kew

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