

Resolving the Azores diversity enigma

Project Description

Macaronesia comprises the volcanic oceanic archipelagos of the Azores, Madeira, Canary Islands and Cape Verdes, located in the North Atlantic Ocean. Whilst the region is often treated as a single biogeographic unit, floristic diversity patterns across the archipelagos differ markedly. In many respects, the characteristics of the Canary Islands flora are typical of oceanic archipelagos more generally with intra-archipelago diversification evident in more than 50% of genera and the largest genus (*Aeonium*) containing 32 endemic taxa. Most endemic taxa in the Canaries (70%) are endemic to a single island and only 5% are distributed across all islands of the archipelago.

The Azores presents a marked contrast. Little diversification appears to have occurred in the endemic flora and in most genera (80%), a single Azorean endemic taxon has been recognized. The three largest genera in the Azores each contain just three endemic species and only 4% of endemic plant taxa in the Azores are restricted to a single island with the majority widespread across the nine islands of the archipelago.

The goal of this project is to investigate why patterns of endemic diversity in the Azores flora appear so markedly different from those of the Canaries and other volcanic oceanic archipelagos. Focusing on lineages that span the Azores and Canaries, this project aims to address the questions:

- 1 *How morphologically diverse are groups in the Azores and Canaries and how is morphological variation partitioned within and between islands in the two archipelagos?*
- 2 *How do patterns of molecular diversity compare with those of morphology?*
- 3 *What explanations (e.g. differences in palaeoclimate; differences in breeding system) may explain any differences?*

Student Training

The project builds on ongoing research exploring patterns of morphological and molecular variation in the Macaronesian flora. At its core is a critical comparison of the patterns of morphological and molecular diversity in endemic lineages that occur in both the Canaries and Azores. Fieldwork will be an integral component and the student will receive training in the generation and analysis of both molecular and morphological data to address systematic and evolutionary questions.

Supervisors

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