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Improving species delimitation for conservation planning in Malagasy *Donella* (Sapotaceae)

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Donella Pierre ex Baill (1892)

- small to large trees with typically five-seeded fruits
- 17 species accepted: six in Africa, 11 on Madagascar, one in the Indo-Pacific
- In Madagascar: 10 out of the 11 species are endemic
  1 listed as Critically Endangered (CR), 3 Endangered (EN) &
  2 Vulnerable (VU) following the IUCN criteria

D. ranirisonii

First Research Question

1a. Are the morphological close species *D. delphinensis* and *D. analalavensis* distinct?

1b. What are their relationships to *D. fenerivensis* and *D. aff. fenerivensis*?

- ***D. fenerivensis***
- ***D. fenerivensis (aff.)***

Restricted to to the Eastern coast; Littoral and sublittoral evergreen forests

- ***D. analalavensis***

Restricted to the Western Domain; Inland seasonal forests

- ***D. delphinensis***

Restricted to the Eastern coast; Littoral forests

Second Research Question

2a. Does the most common and morphologically variable *D. perrieri* represent only one species?

2b. Is *D. humbertii* merely a seasonally dry forest form of *D. perrieri*?

2c. Is *D. capuronii* merely a perhumid forest form of *D. perrieri*?

2d. Can we find hybridization signals with *D. masoalensis*?

- ***D. perrieri***

Widespread in the Eastern and Sambirano Domains; Primary & secondary evergreen and transitional forests

- ***D. humbertii***

Western Domain; Seasonal forests and woodland

- ***D. capuronii***

Eastern Domain; Perhumid evergreen forest

- ***D. masoalensis***
- ***D. mas x perrieri***

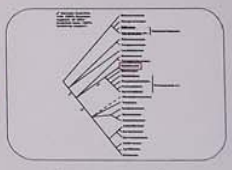
Eastern Domain; Evergreen montane forest

Workflow

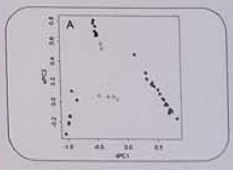
Sampling on herbarium material (G, P)

Extracting DNA from specimens up to 120 years old

Combining gene capture & Illumina sequencing



Constructing phylogenetic trees using ASTRAL & BEAST



Performing population genetic analyses using PCA & STRUCTURE

Delimiting species to provide sound data for conservation incentives

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