Haptanthus: lost and found

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How everything started

Systematic Botany (1989), 14(1): pp. 16–19

Haptanthus, a New Dicotyledonous Genus from Honduras

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ABSTRACT. **Haptanthus hazlettii** genus novum monotypicum is described. The plant is a dicotyledon with a combination of characters not found in any family. The inflorescences consist of a single central carpellate flower and two branches of 5–6 staminate flowers each. The flowers lack a perianth, merely being subtended by a minute bracteole. The staminate flowers are monandrous and the carpellate flowers have a tricarpellate, stipitate pistil with three large sessile stigmas and ovary with three parietal placentas, each with 8–15 ovules in two ranks. The plant is a completely glabrous shrub. The leaves are opposite, simple, entire and not glandular punctate. Stipules are absent and no stipular scars are evident.

Haptanthus hazlettii

- One of the most rare plants in the world
- Discovered in herbarium collections made in 1980 in North Honduras
- Has unique and unusual reproductive structures which is hard to interpret
- Did not appear to be a member of any described family of angiosperms

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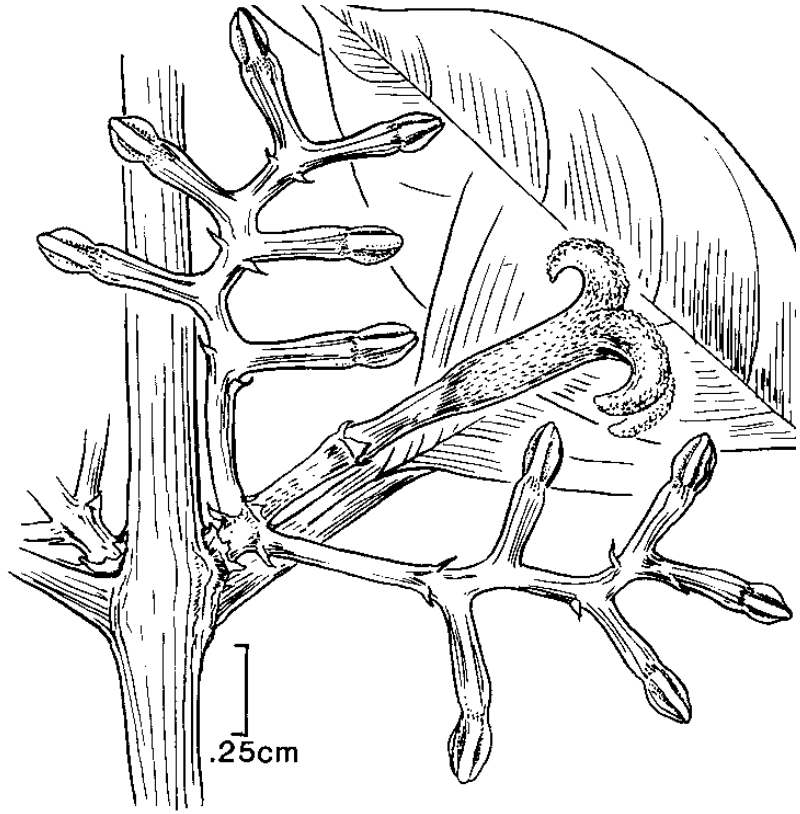
Peculiar flower morphology



Female organs (pistils with 3 carpels?) are surrounded by branched clusters of male organs (stamens??). In all, reproductive structures superficially resemble R. Melville's (1962, 1963) diagrams of flower evolution.

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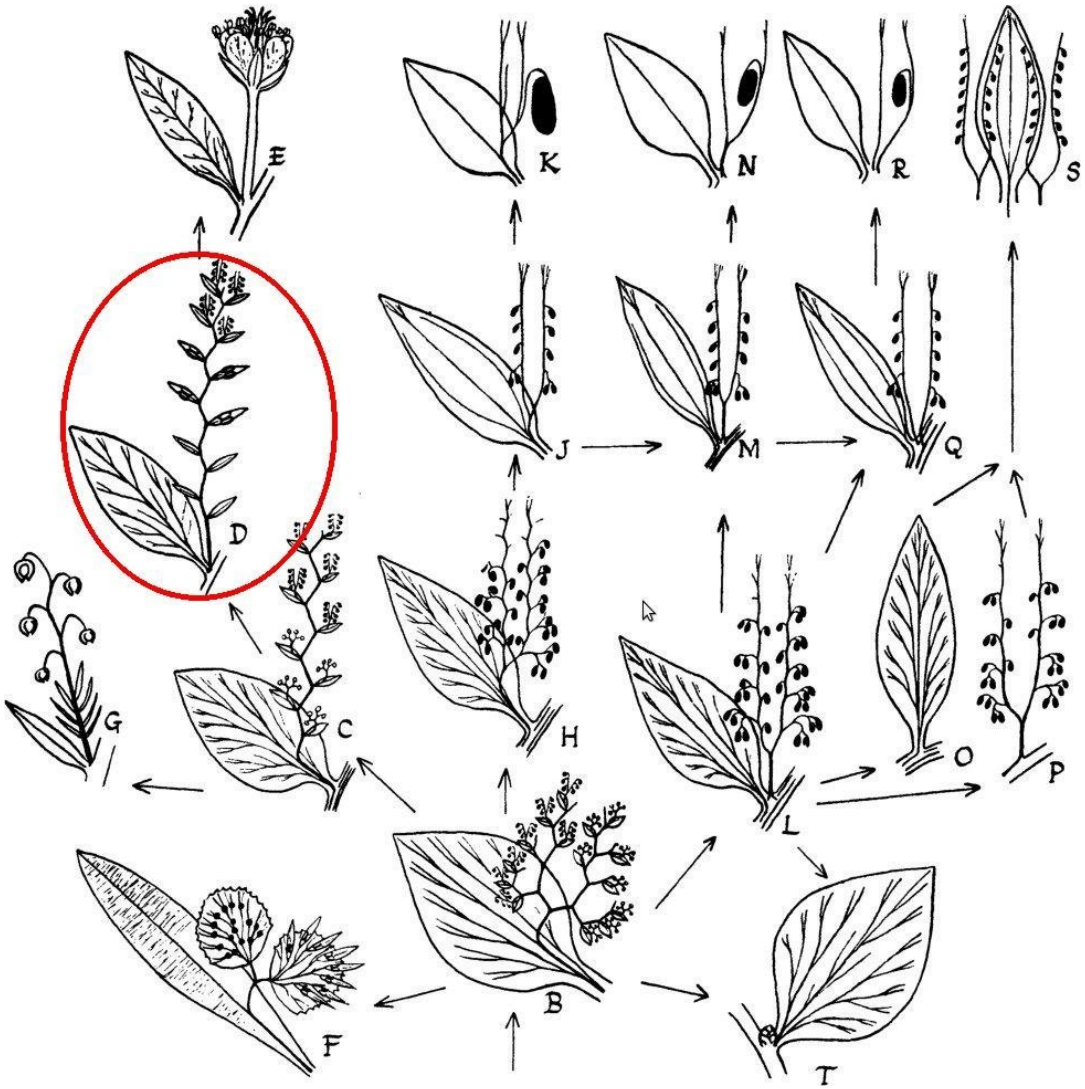
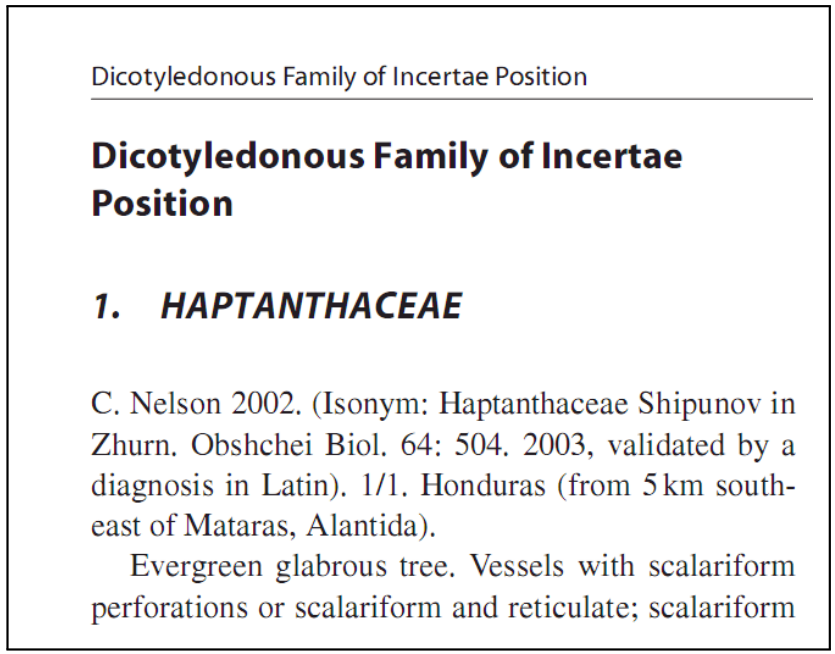
Melville diagrams



Incertae sedis (placement unknown)?!

- Basal eudicots? (perhaps, Buxaceae)— Doust & Stevens, 2005
- Salicaceae—Euphorbiaceae? (Malpighiales)— Goldberg & Alden, 2005



Dicotyledonous Family of Incertae Position

Dicotyledonous Family of Incertae Position

1. HAPTANTHACEAE

C. Nelson 2002. (Isonym: Haptanthaceae Shipunov in Zhurn. Obshchei Biol. 64: 504. 2003, validated by a diagnosis in Latin). 1/1. Honduras (from 5 km south-east of Mataras, Alantida).

Evergreen glabrous tree. Vessels with scalariform perforations or scalariform and reticulate; scalariform

- Armen Takhtajan (2009) regarded *Haptanthus* as an only unplaced, *incertae sedis* family among angiosperms.

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Only two herbarium samples

- One herbarium sheet is kept in Missouri Botanical Garden, the second—in Lancetilla Botanical Garden (Tela, Honduras)
- All attempts to extract DNA (and even proteins) failed

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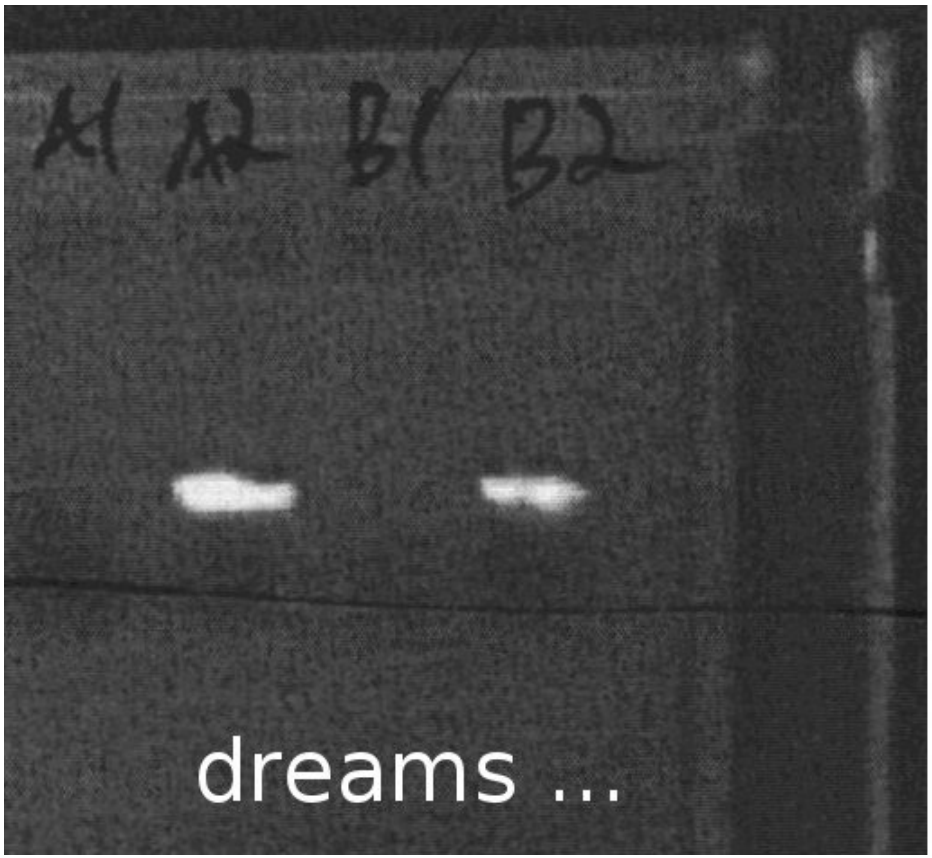
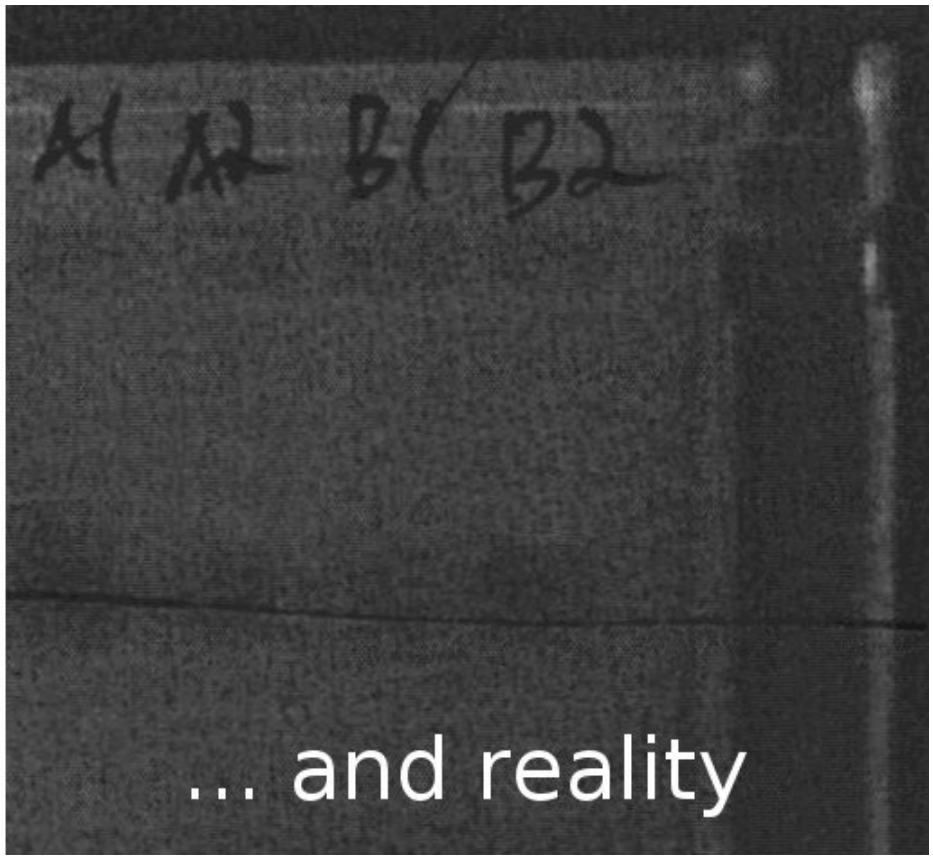
Herbarium

DNA detection failed





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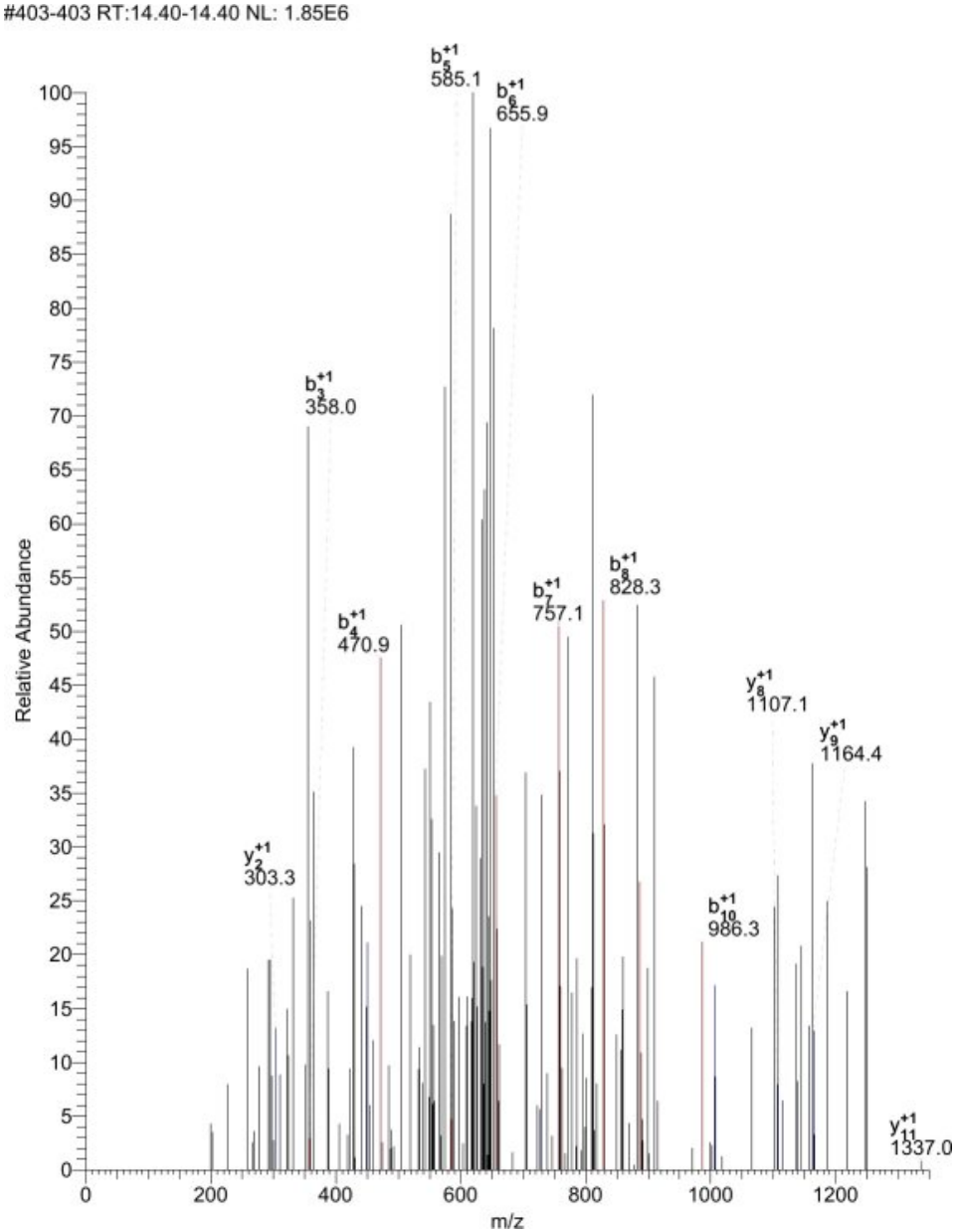
Proteins detection failed

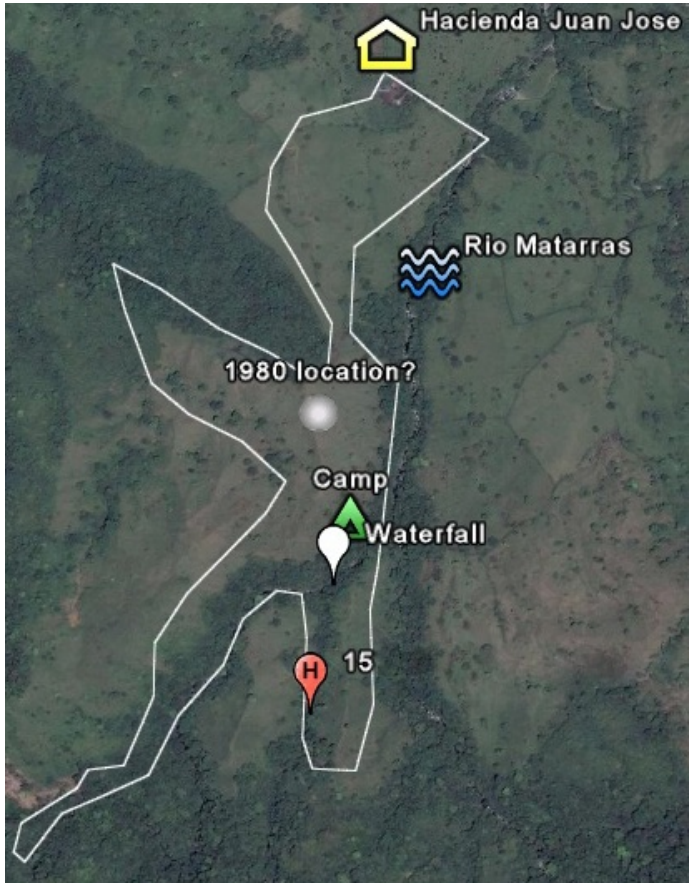


Atlantida province, Honduras

http://msubiology.info/shipunov/ph/20100418_honduras/index.htm

No forest anymore...

Search strategy



The main strategy was to search along borders of tree cuts/pastures/plantations. Most of flowering small trees are concentrated there

Finding

Finally, from the top of the hill ($\approx$ 400 m altitude) we saw with binoculars unusual small tree, and that was *Haptanthus*!

Haptanthus is alive!

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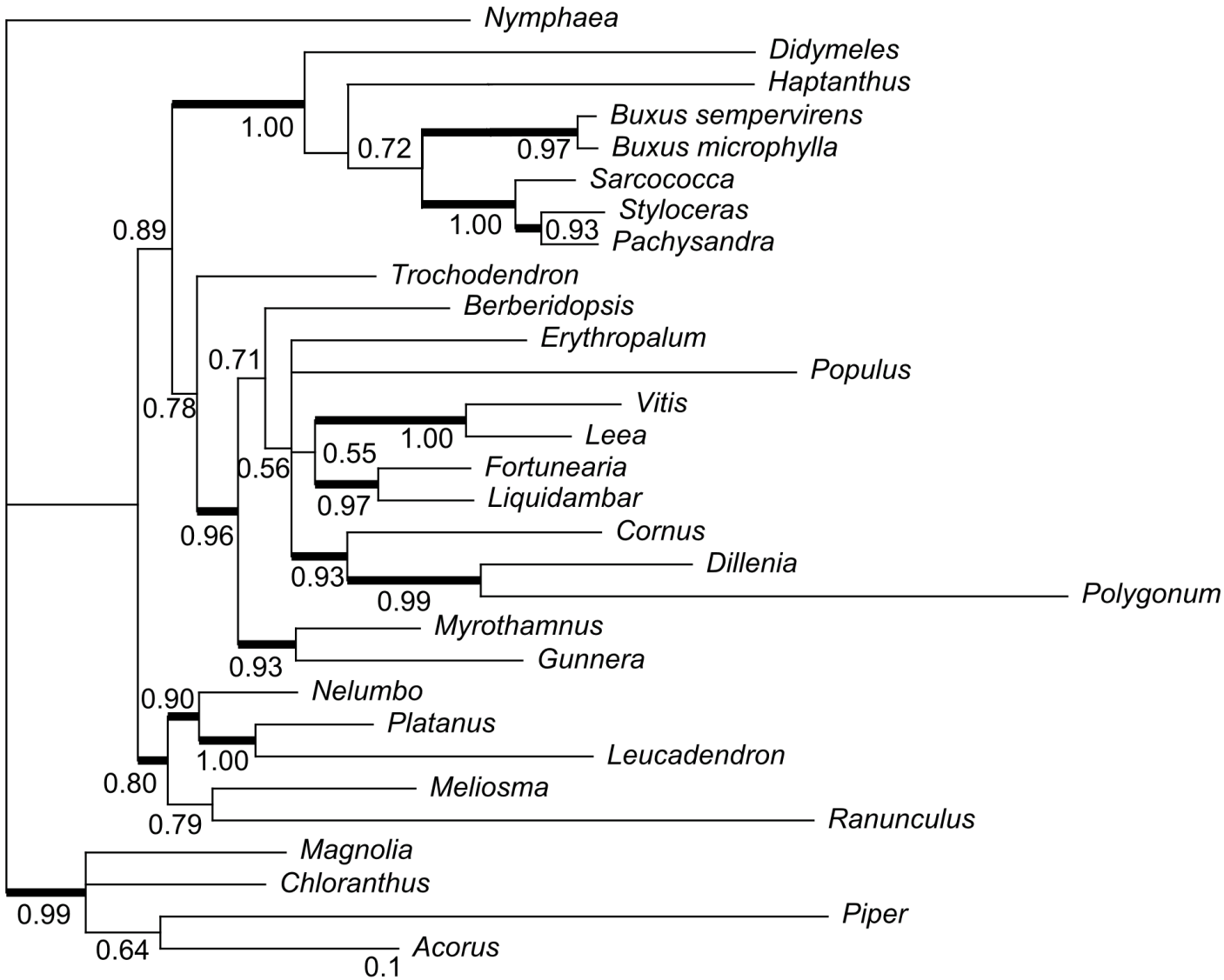
DNA



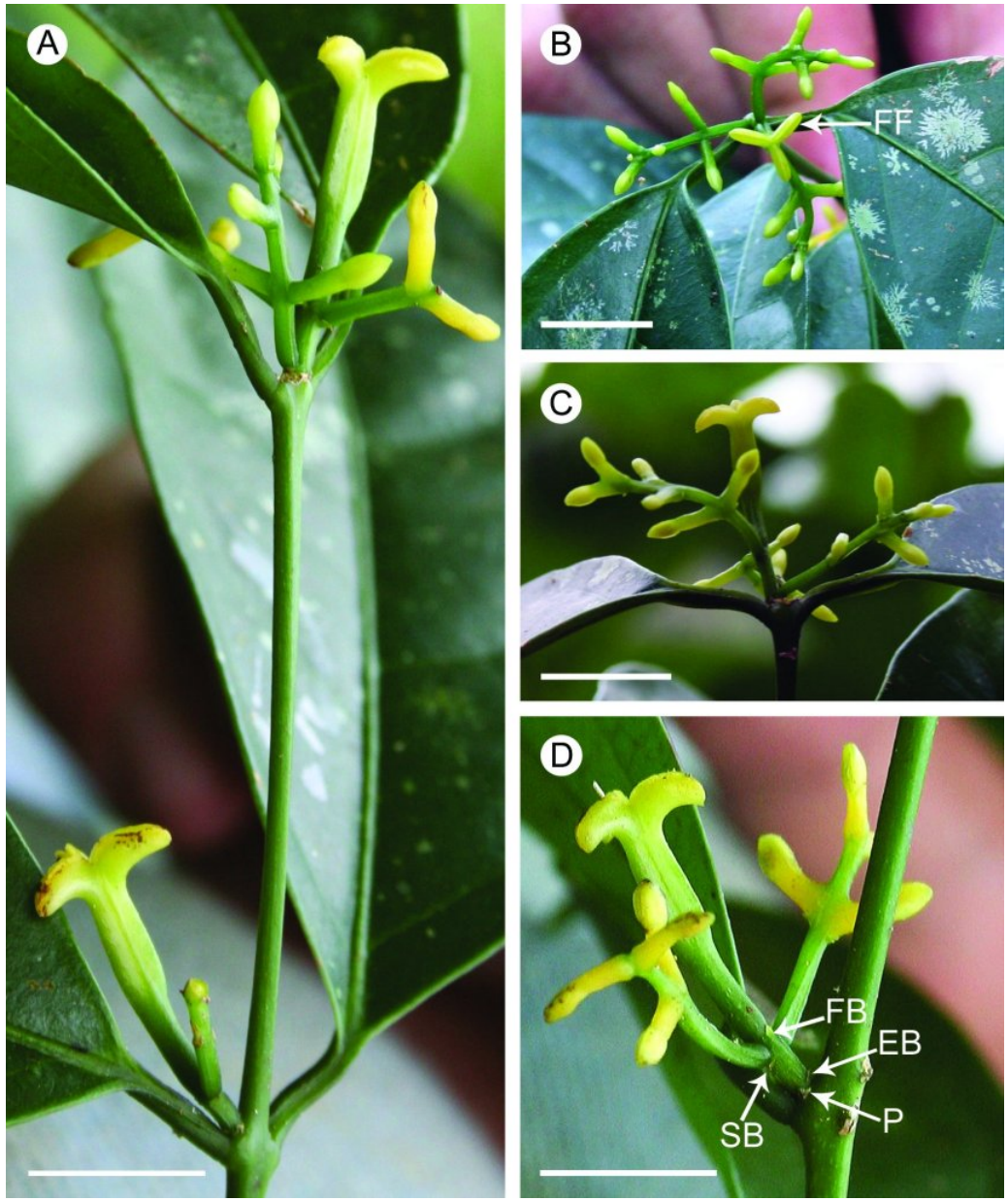
Molecular phylogeny: 100% Buxaceae, boxwood family

[From Shipunov & Shipunova, 2011]

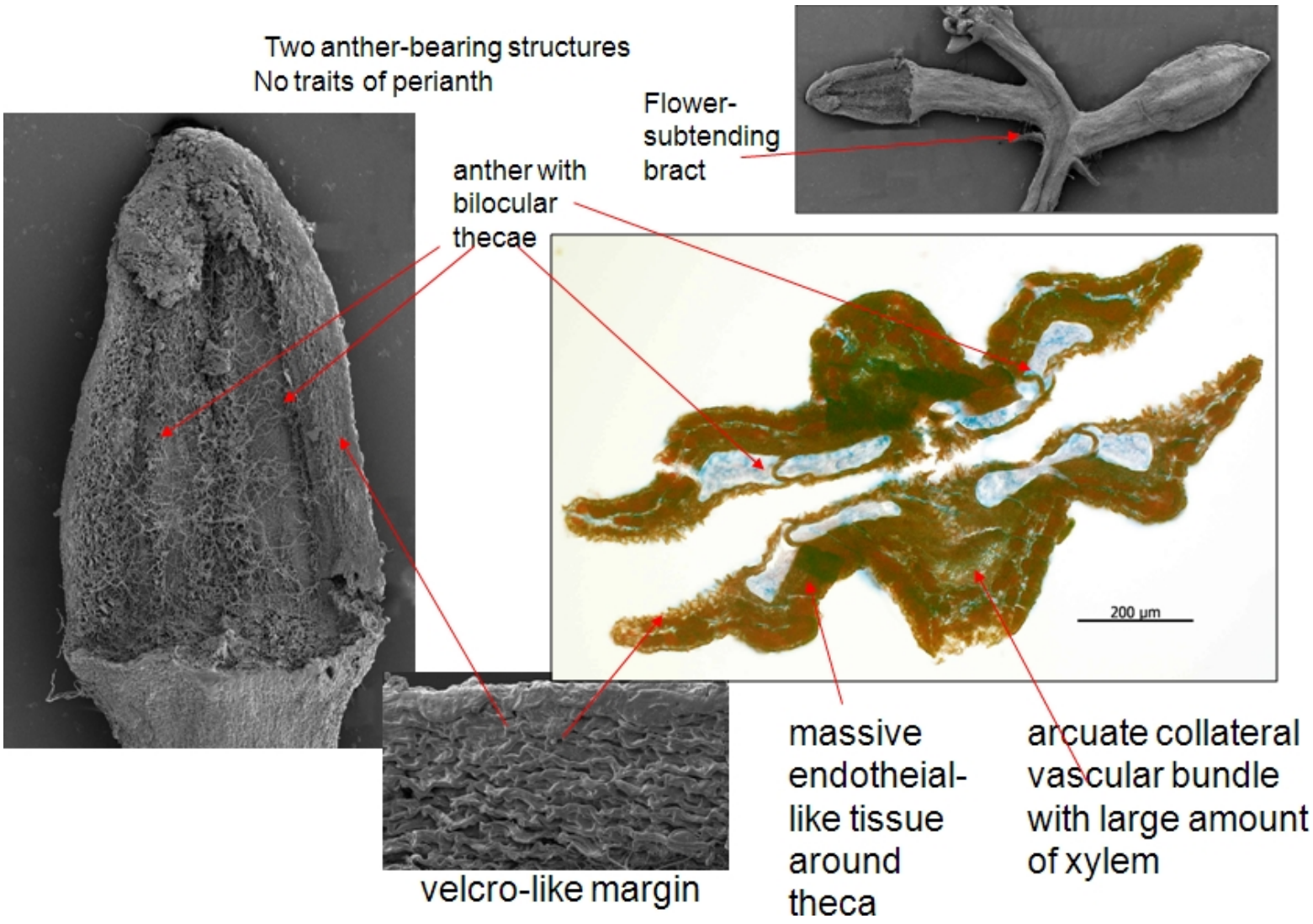
Boxwood, *Buxus*

Inflorescences of *Buxus*

Morphology



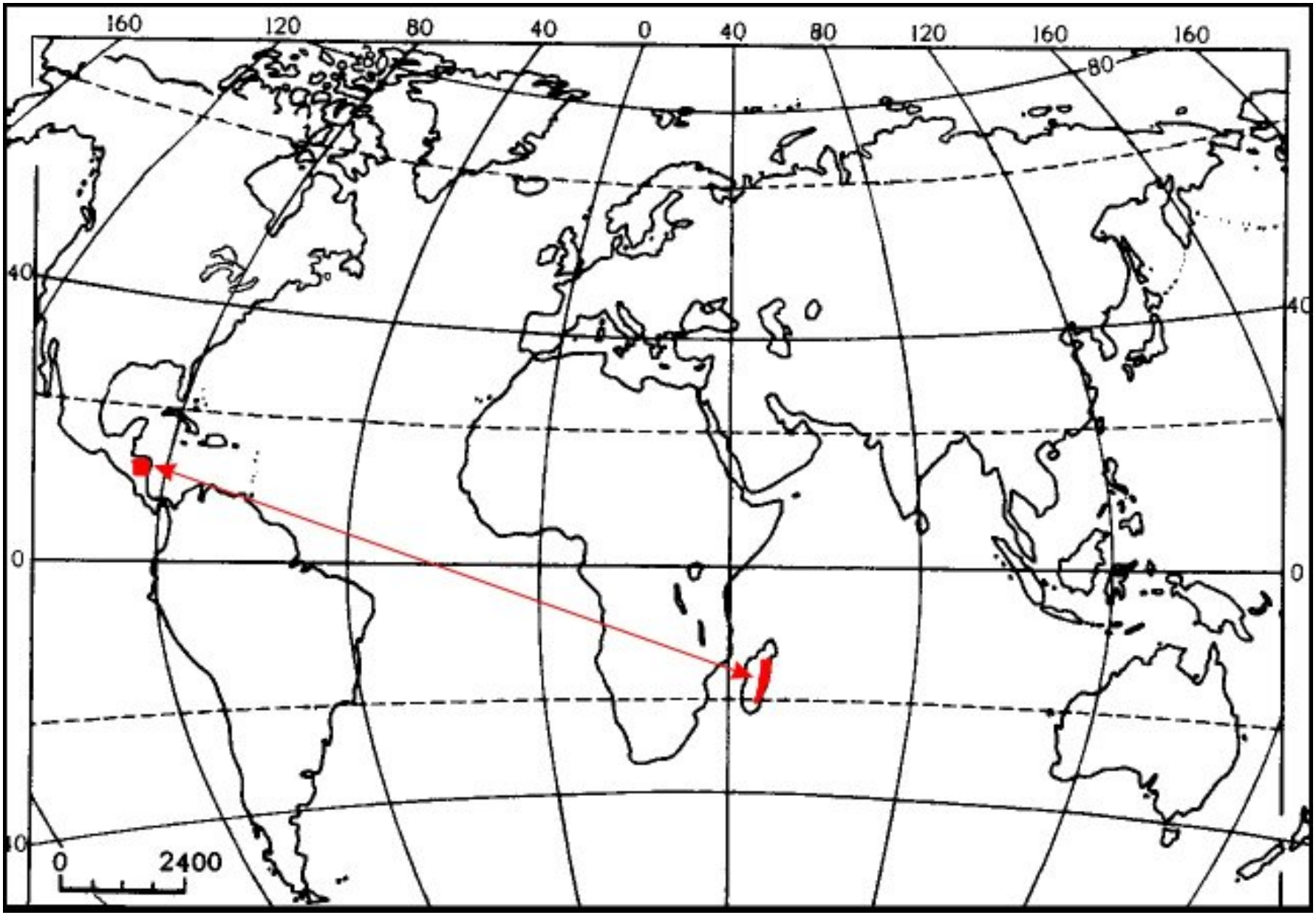
The most weird part



"Stamens" are not stamens!

However, look on Madagascan *Didymeles*

How come?



Conservation

We found only one tree, but mared the point with GPS so two months later almost twenty trees have been found, and the one branch has been rooted and planted in Lancetilla Botanical Garden

Fruit

In 2014, they finally discovered the fruit of *Haptanthus*. We are running a small project now to investigate fruits and seeds.

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Acknowledgements

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