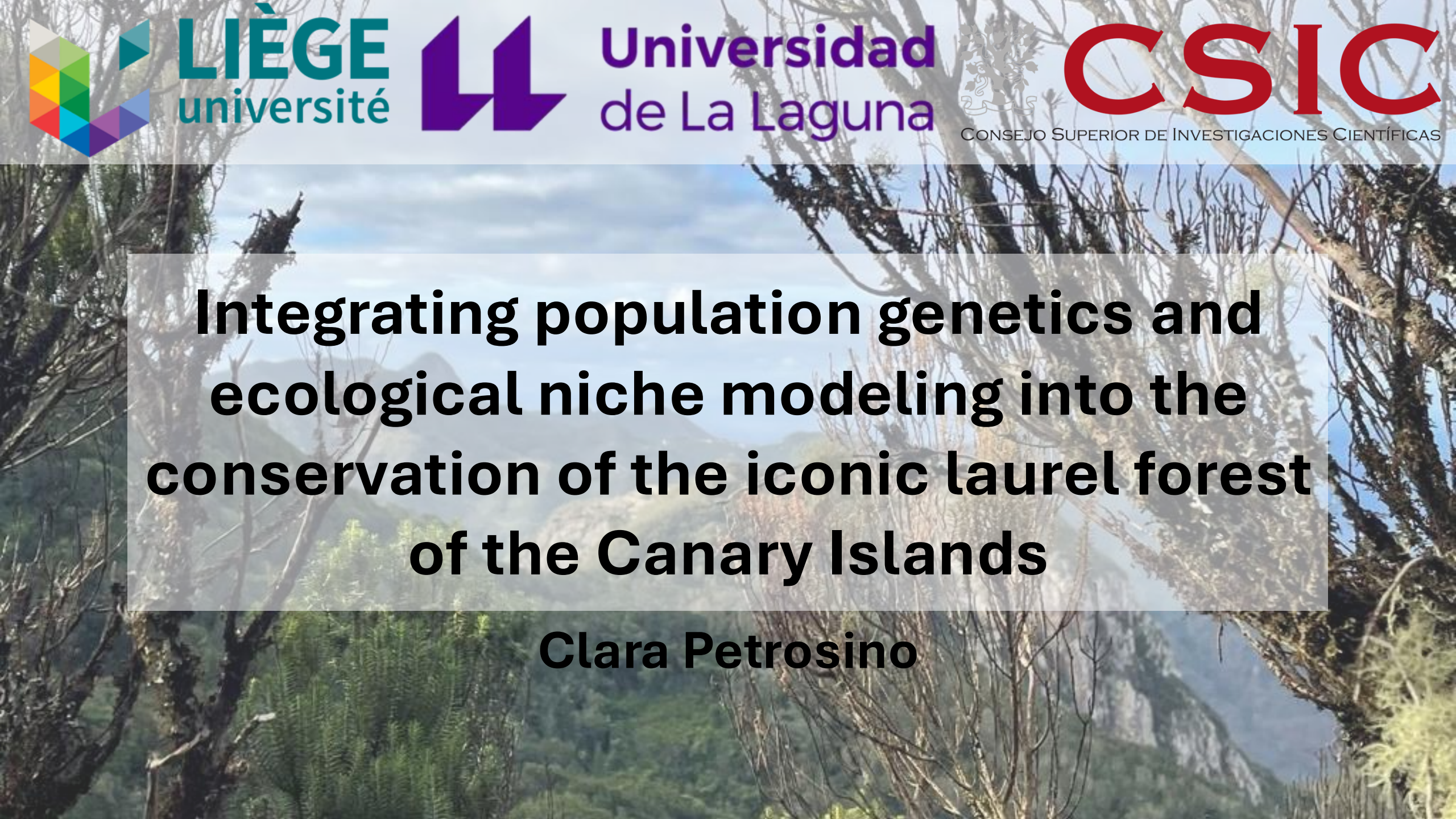


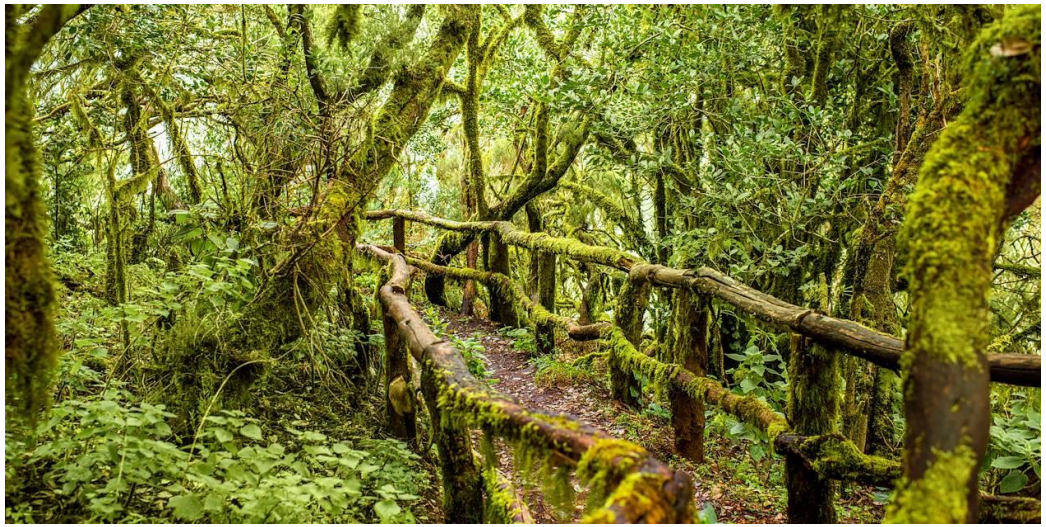
Integrating population genetics and ecological niche modeling into the conservation of the iconic laurel forest of the Canary Islands

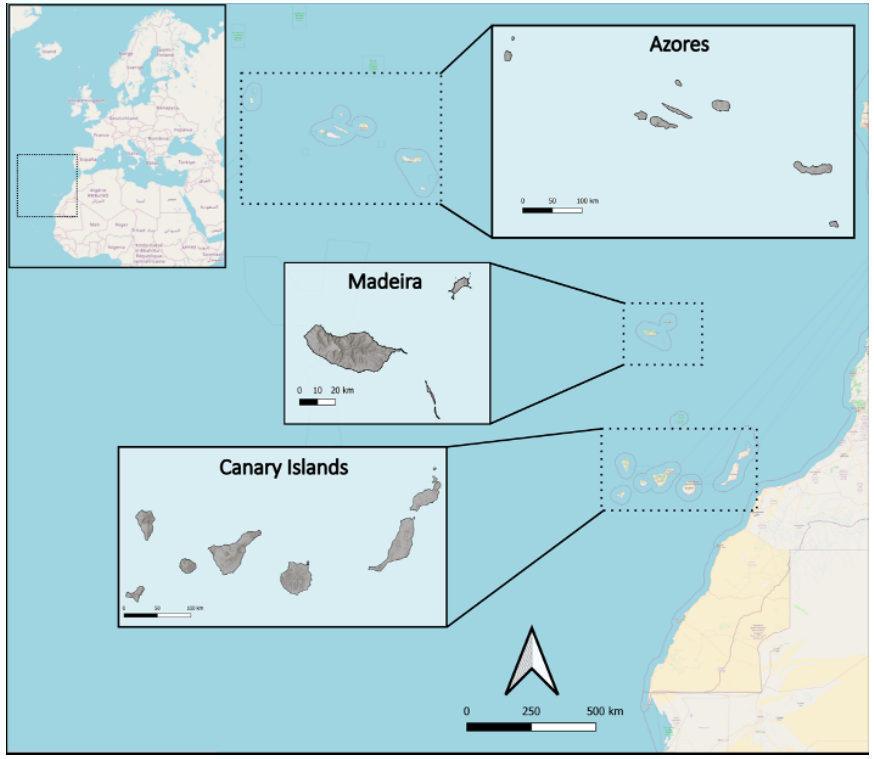
Clara Petrosino

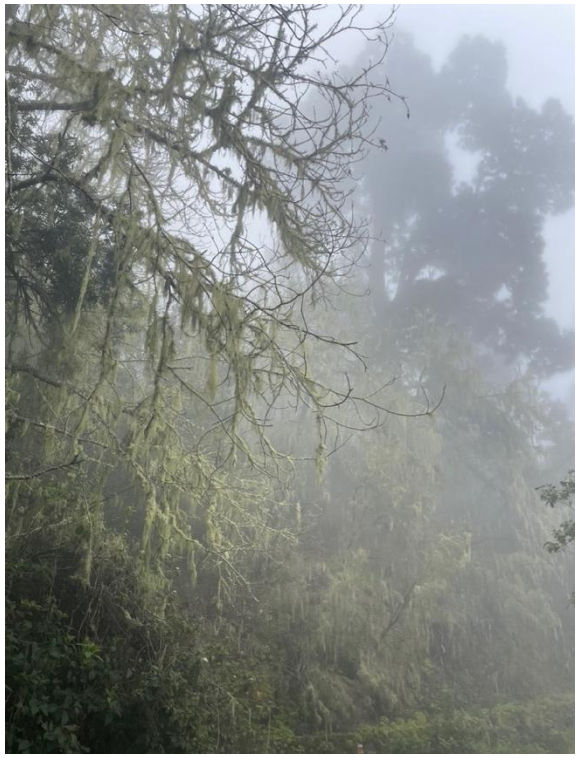

Biodiversity and extinction hotspots
Highly vulnerable to environmental changes
Google Earth
Landsat / Copernicus, Data SIO, NOAA

Laurel forest

- Relict ecosystem of evergreen forests in Europe and North Africa during the Tertiary
- Associated with cloud formation







Threats

Threats

Implementation of conservation projects

Implementation of conservation projects

Implementation of conservation projects

Translocations and reintroductions

Aim

Inform conservation programs in the canarian laurel forest in order to **optimize their success**

What to replant?

Where to replant?

Biological material


Luzula canariensis


Canarina canariensis


© Michael 2020
Persea indica

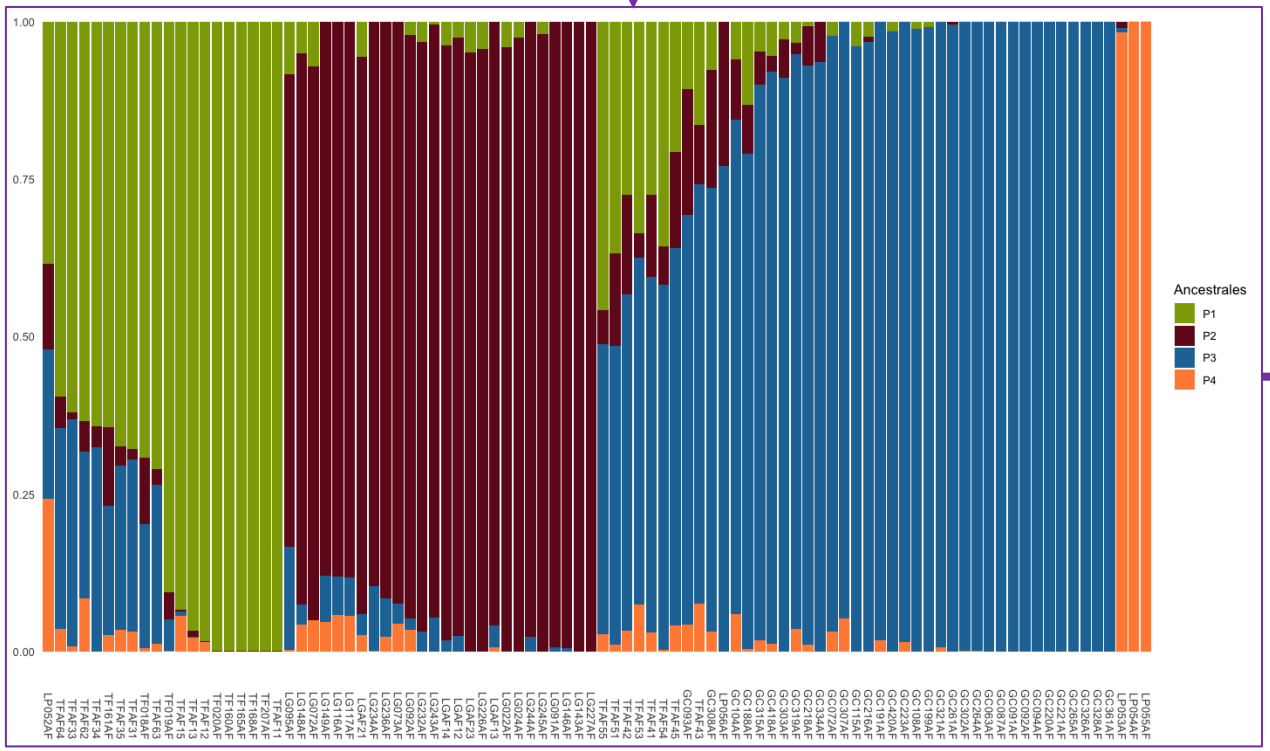

Apollonias barbujana

What?

Population genetics

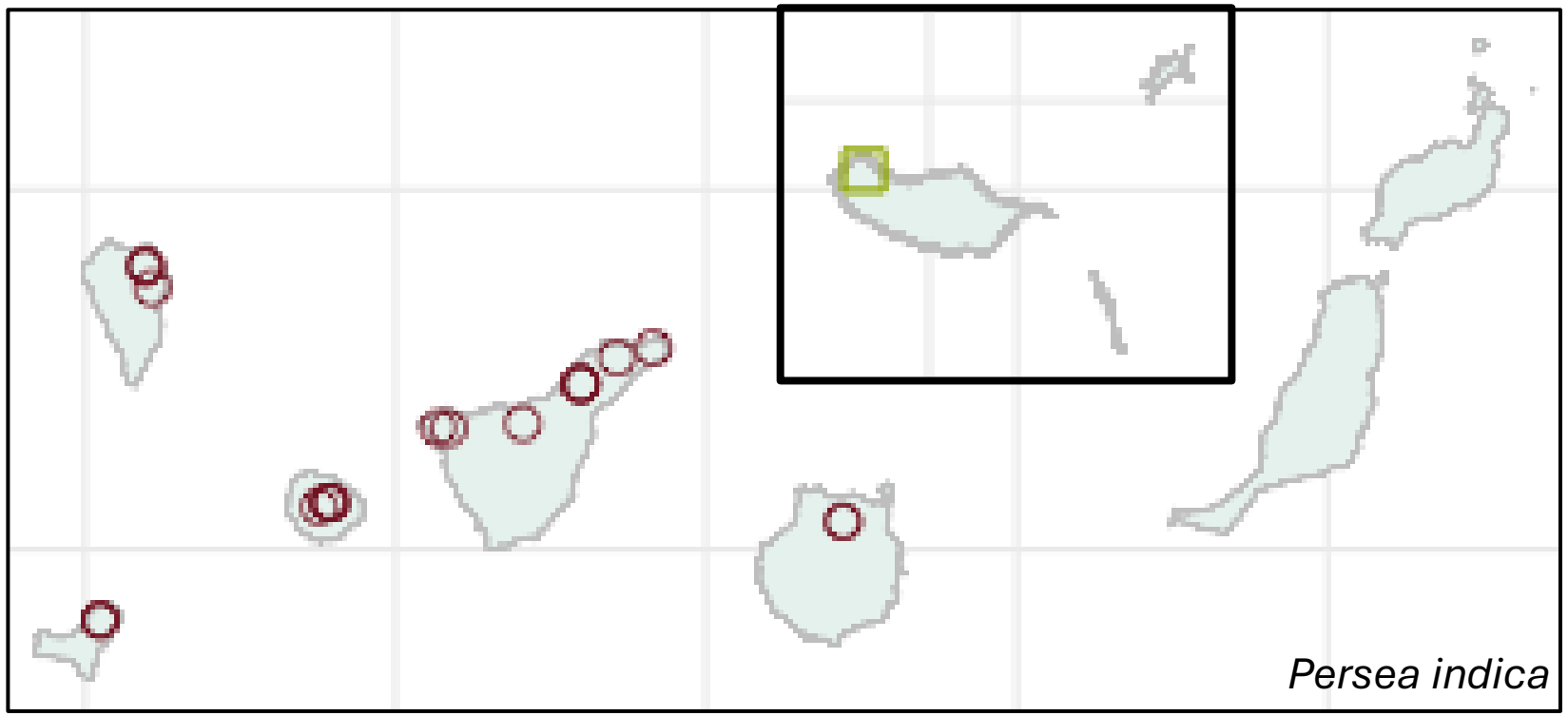
SNP matrix

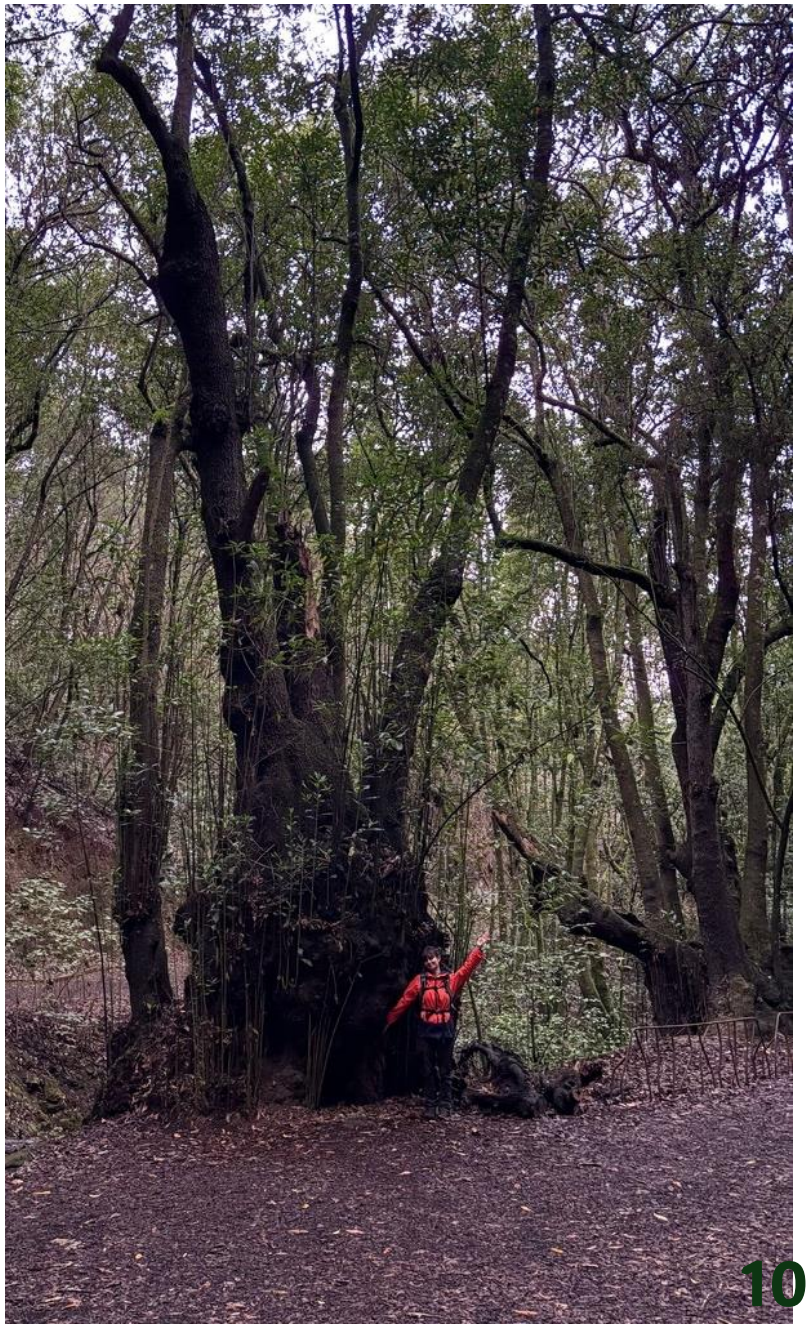
Admixture



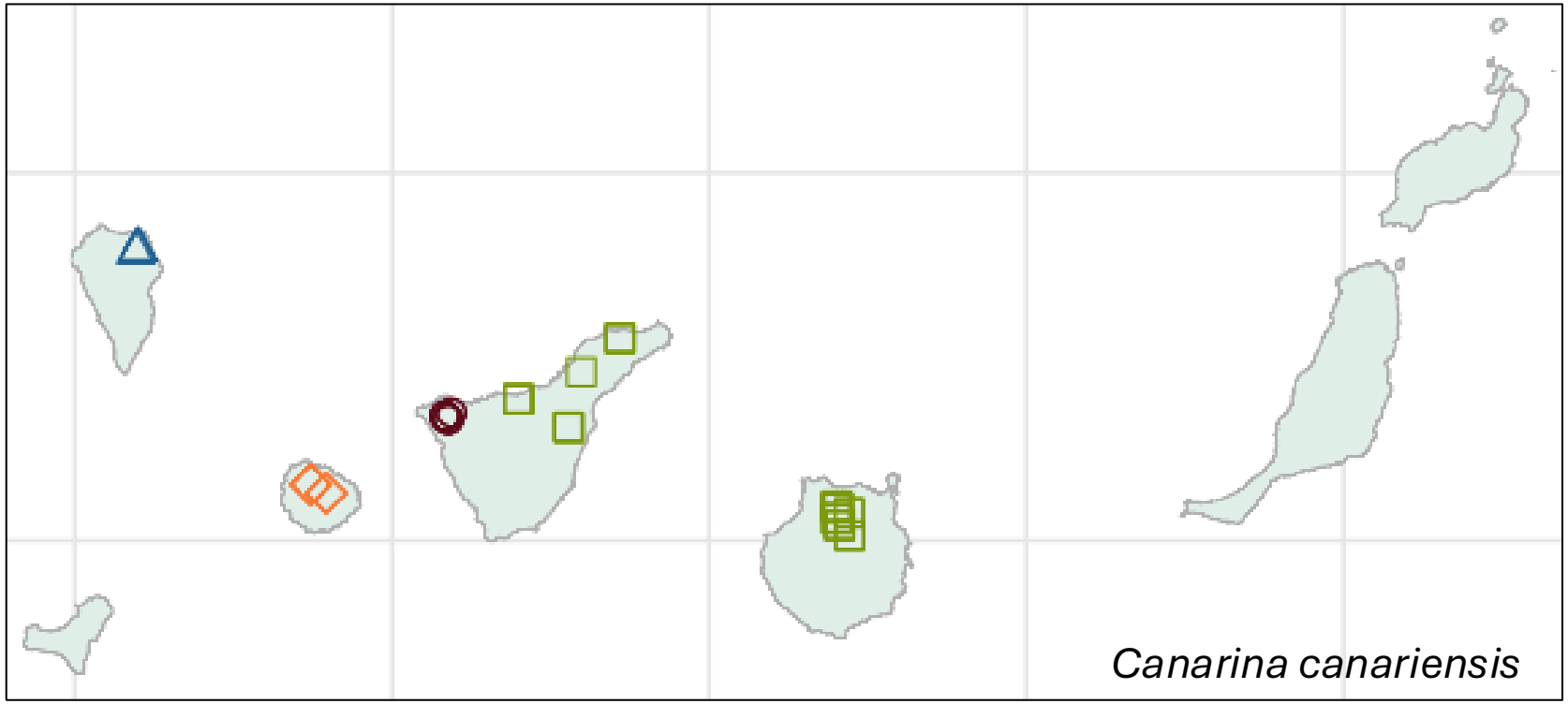
Spatial structuring

Differentiation of clusters between archipelagos



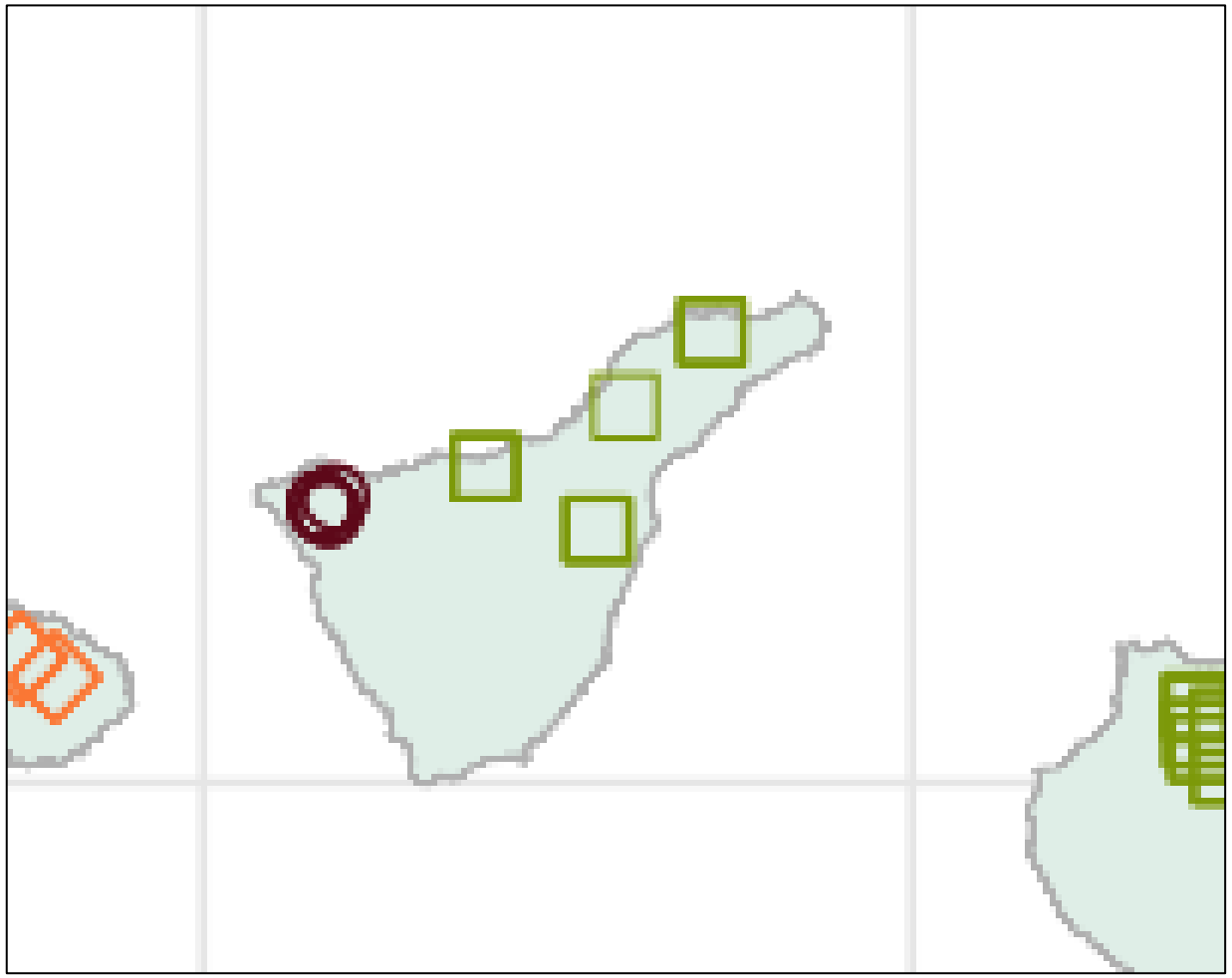


Differentiation of clusters between islands



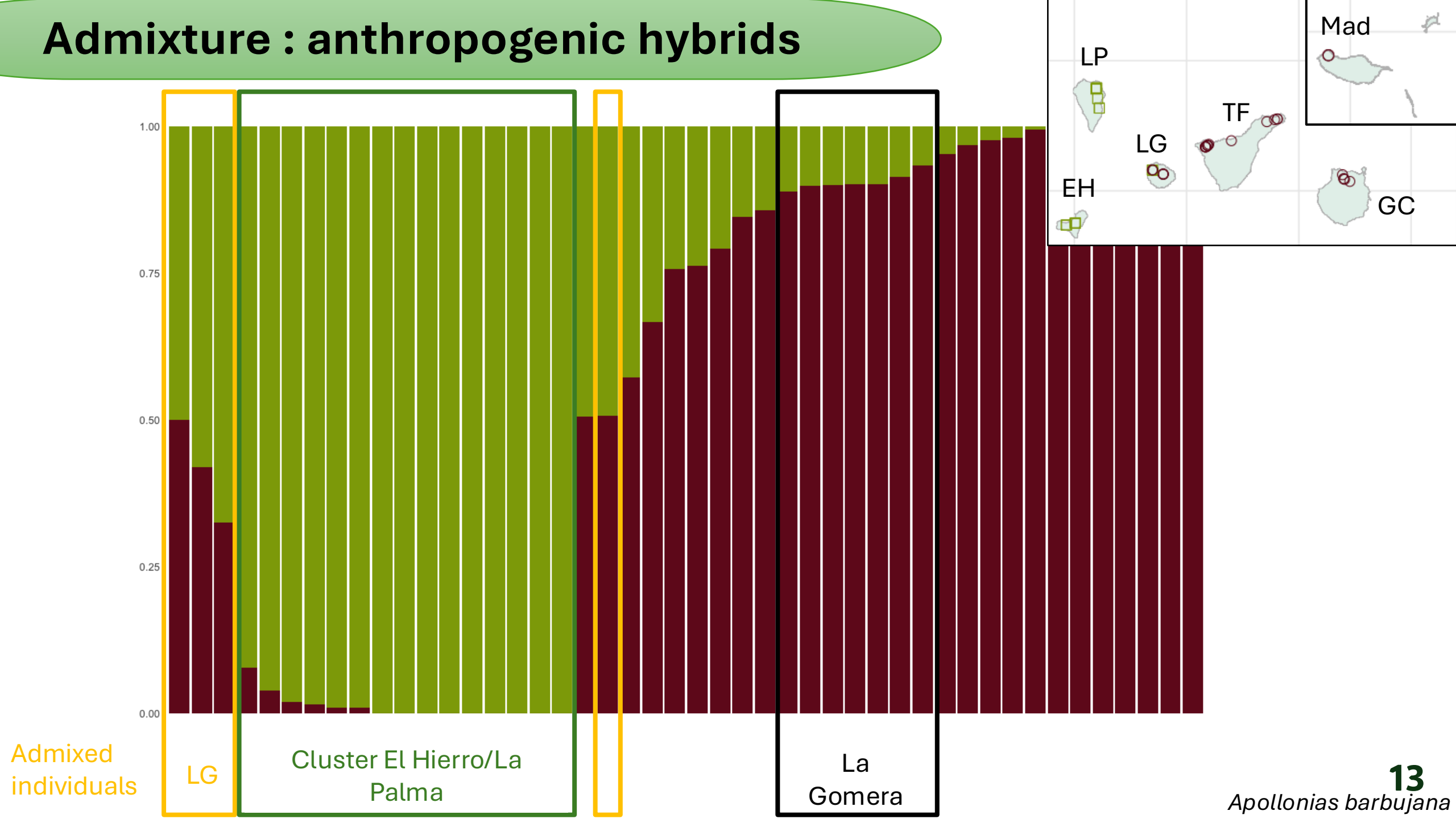
Canarina canariensis

Differentiation of clusters within an island



Canarina canariensis

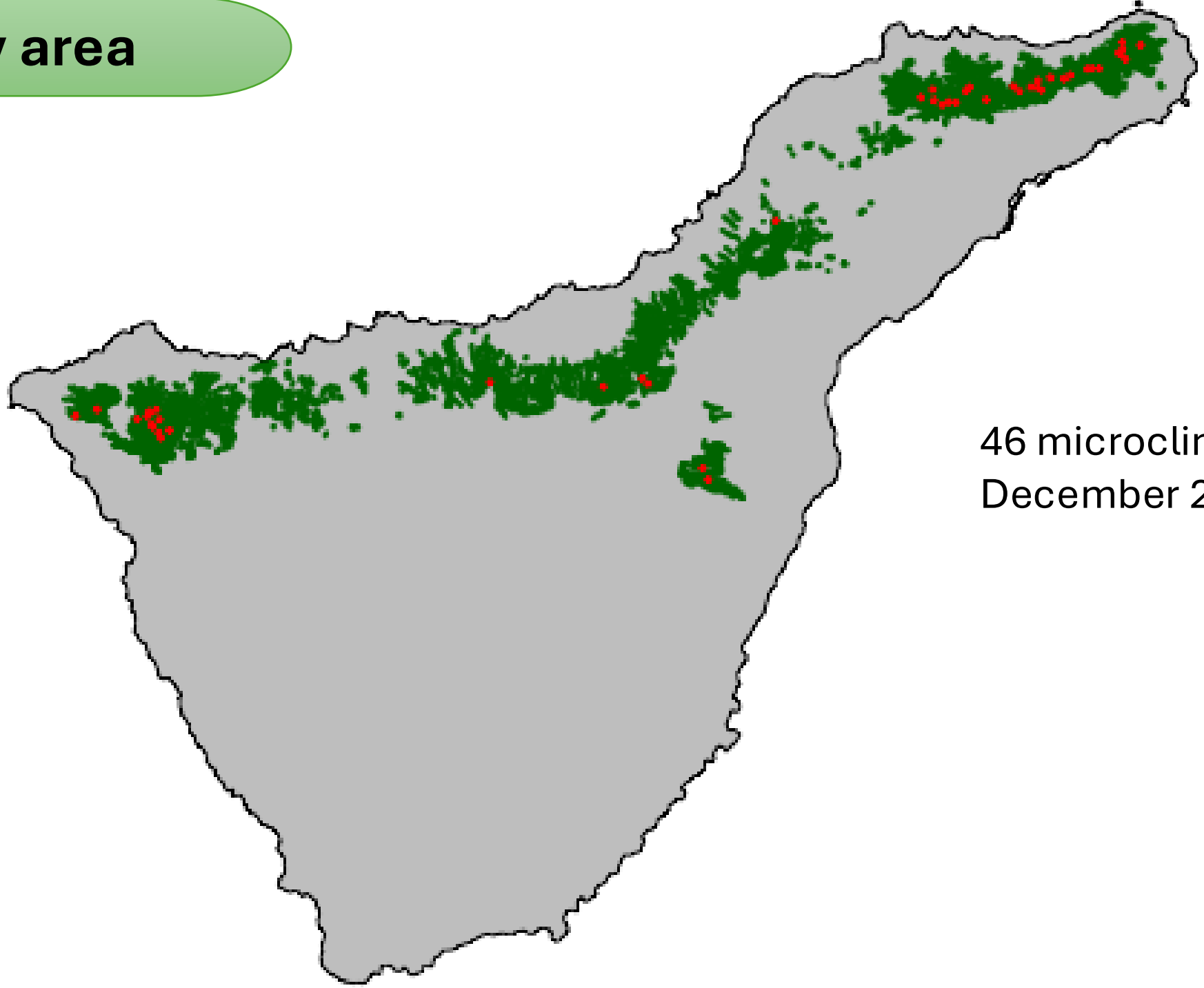
Admixture : anthropogenic hybrids



Apollonias barbujana

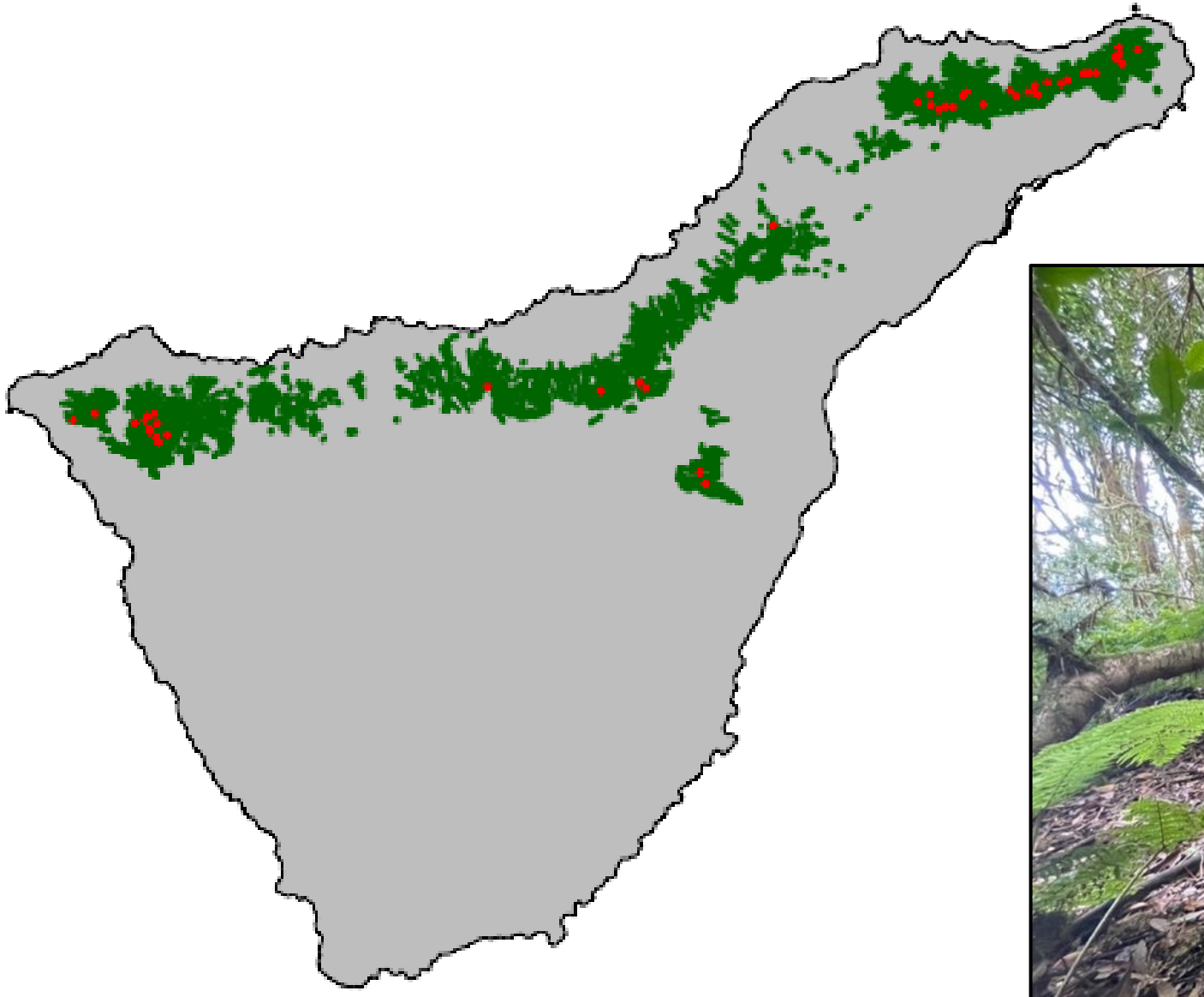
Where?

Study area



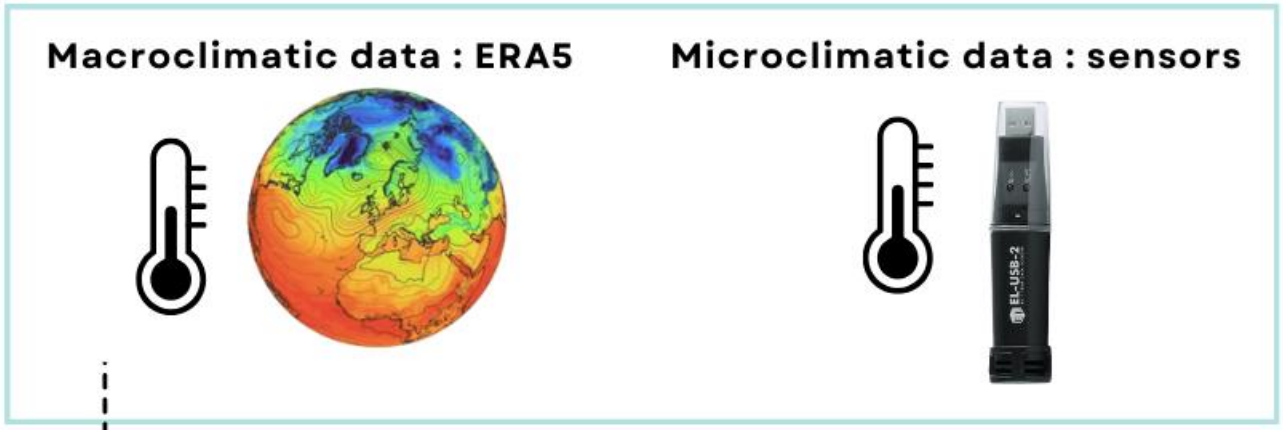
46 microclimatic sensors
December 2024 – May 2025

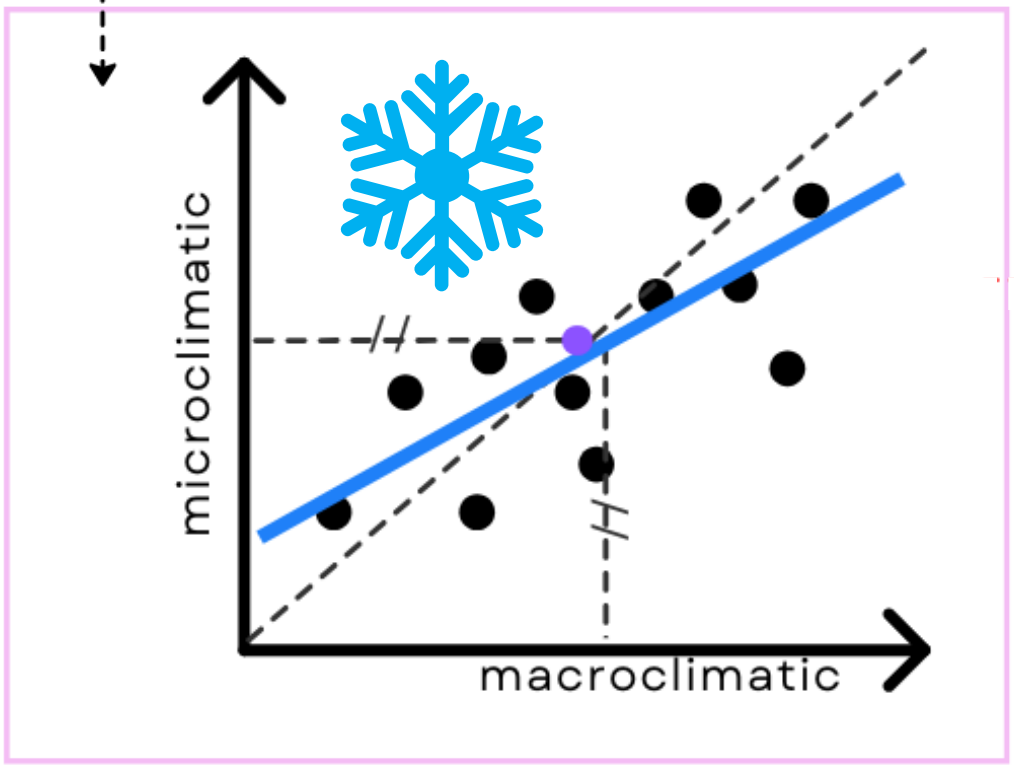
Study area

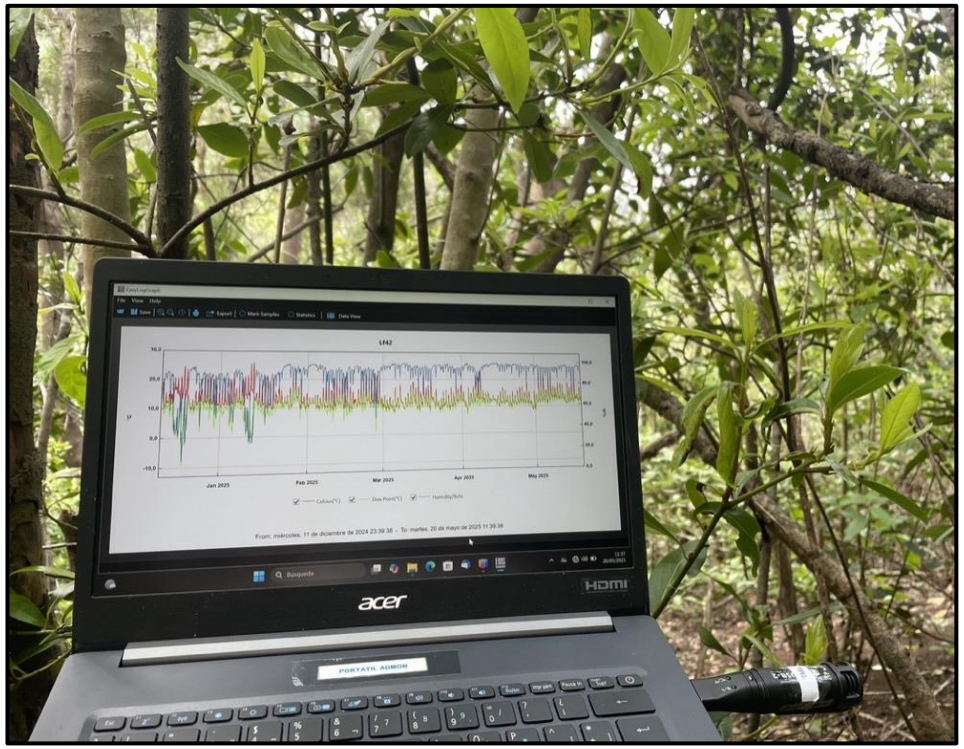


46 microclimatic sensors
December 2024 – May 2025

Microclimatic modelling

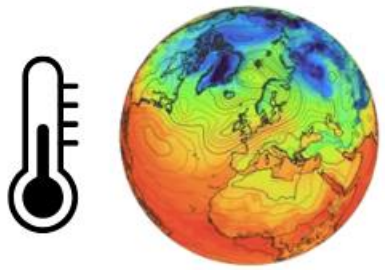






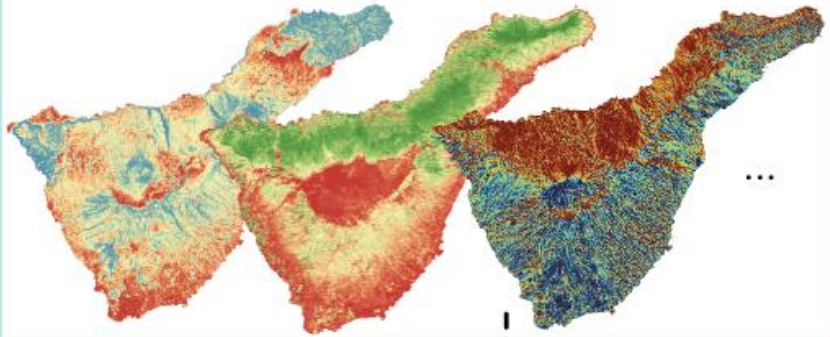
Microclimatic modelling

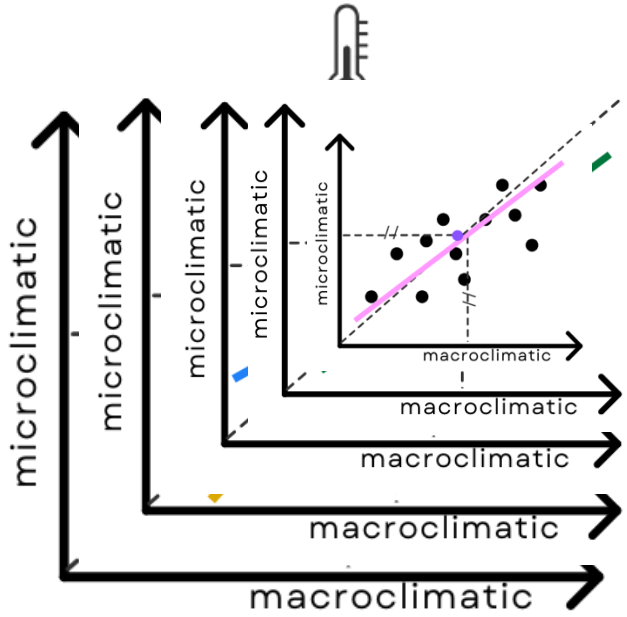
Macroclimatic data : ERA5



Microclimatic data : sensors

Environmental data





Selection of environmental variables

slope

Sensor 1	1.16
Sensor 2	1.16
Sensor 3	1.16
...	1.58
	1.58

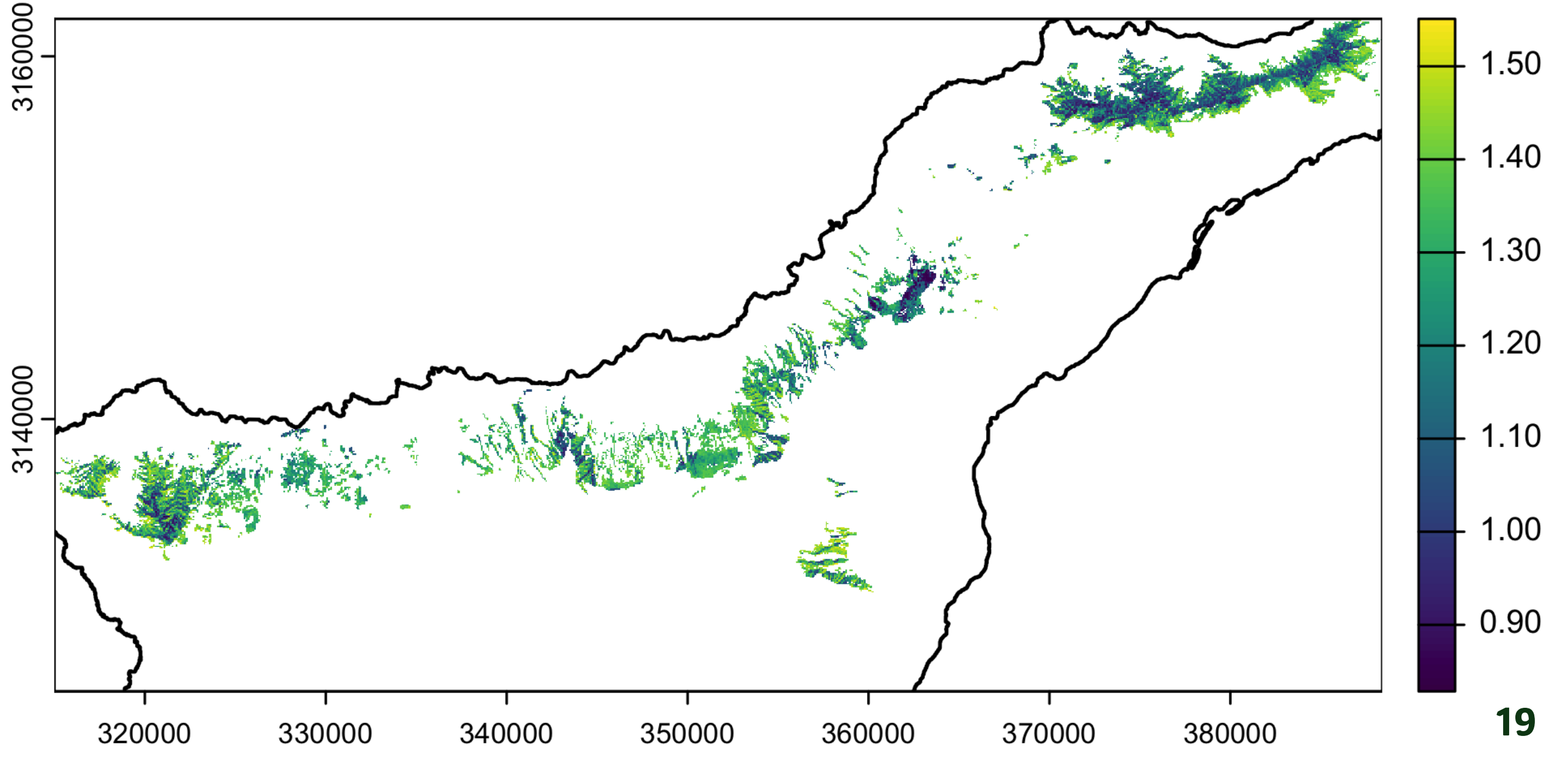
Predictors

32.9	2.4	36.1	0.9
28.9	1.8	48.7	-0.2
36.4	1.1	24.7	0.9
21.3	0.6	49.8	0.4
25.9	2.5	25.0	0.9

Modelling

Microclimatic effect

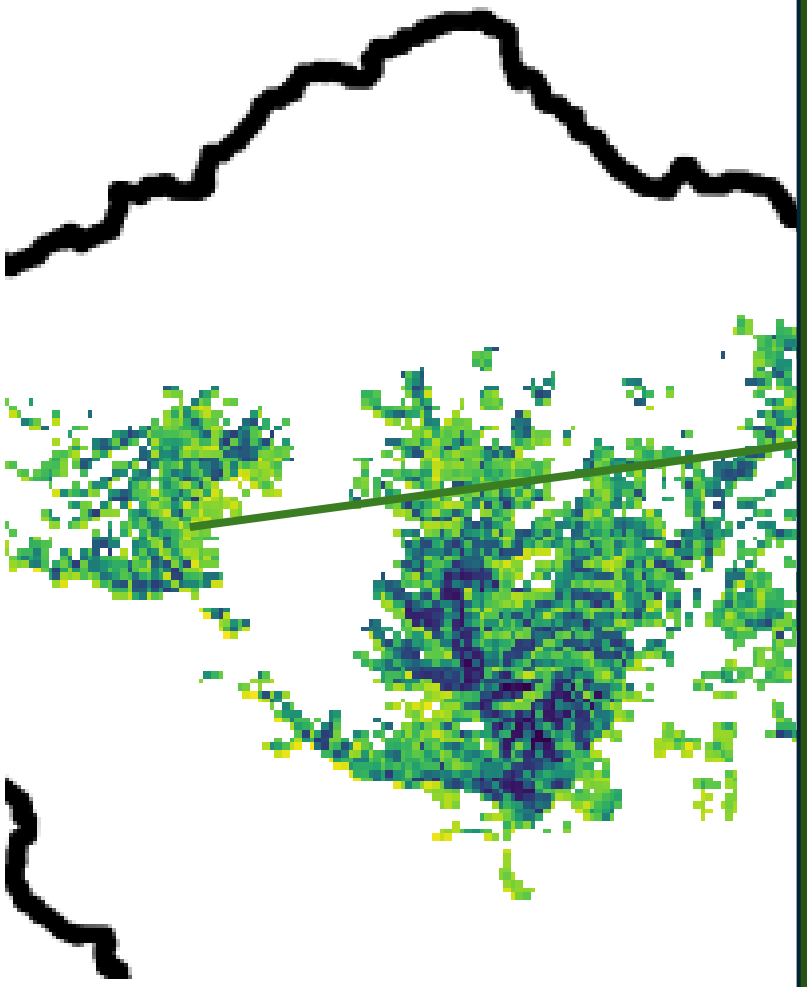
Macro-microclimate relationship



Microclimatic effect : buffered

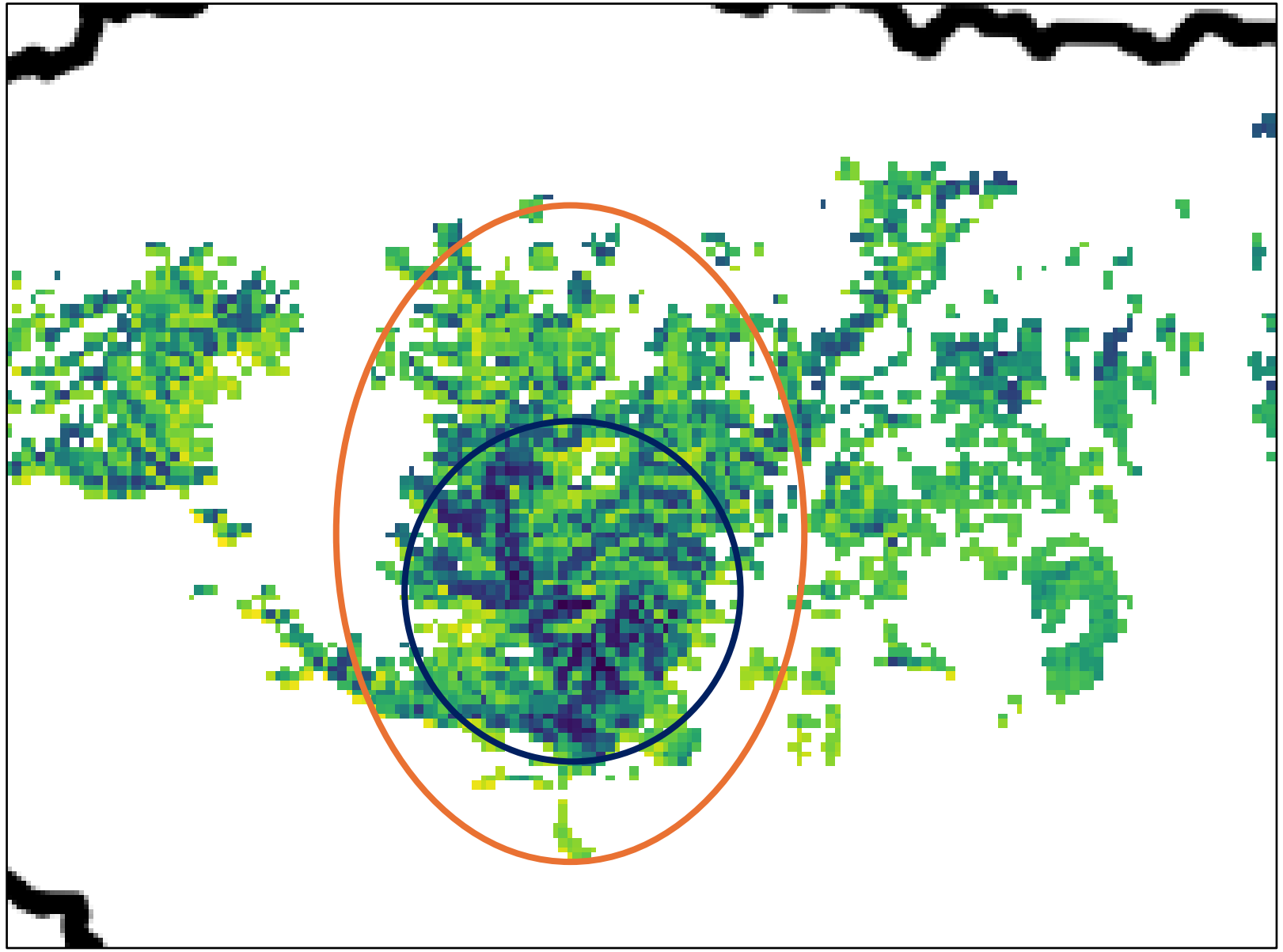
Humid laurel forest

Microclimatic effect: amplification



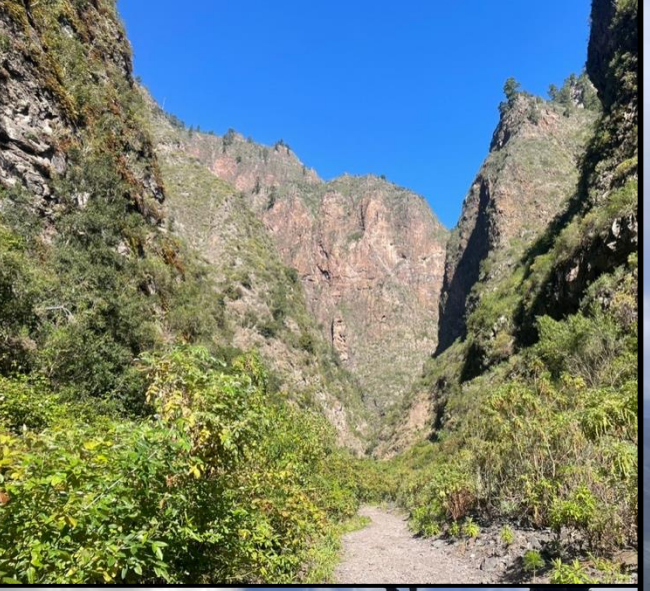
Degraded laurel forest

Buffered area in the core area



Core area of patches : buffered microclimate

Edge/border area : less buffered microclimate



Conclusion

Ecological restoration advice

What to replant : genetic structure

Where to replant : microclimatic modelling

To be continued...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Thank you for listening !