TESTING THE "ALLOPATRY-TO-SYMPATRY" HYPOTHESIS IN *ESCALLONIA*

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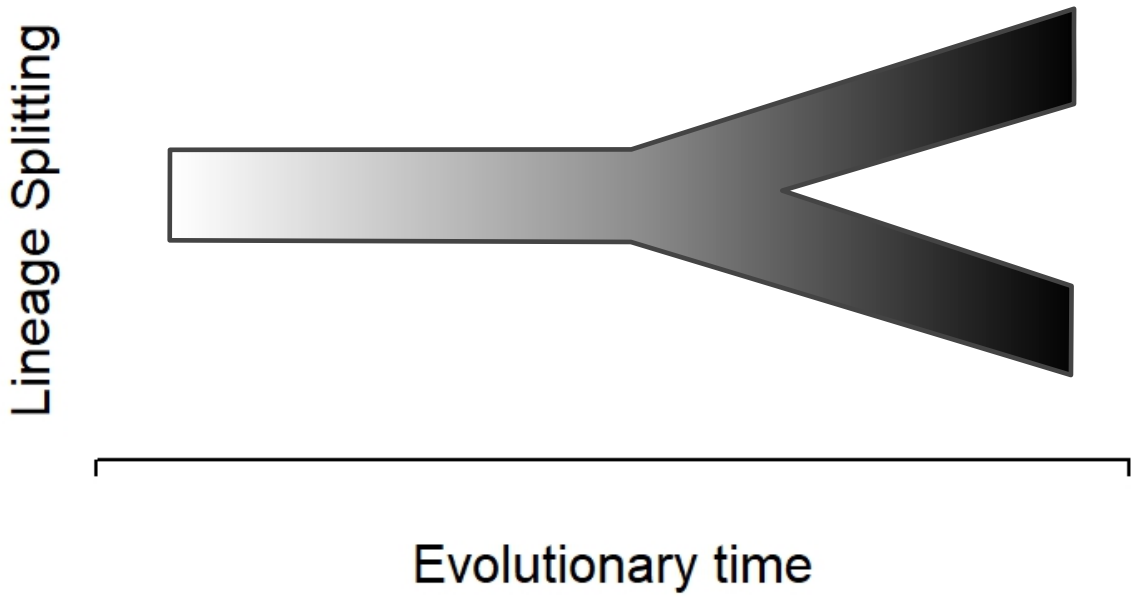
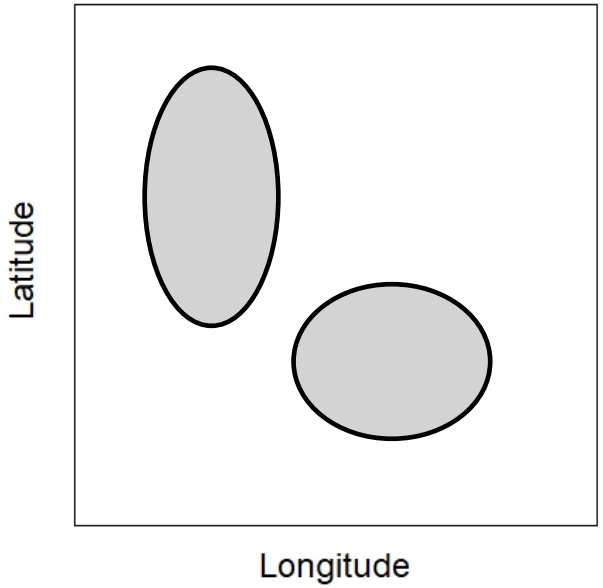
SPECIATION

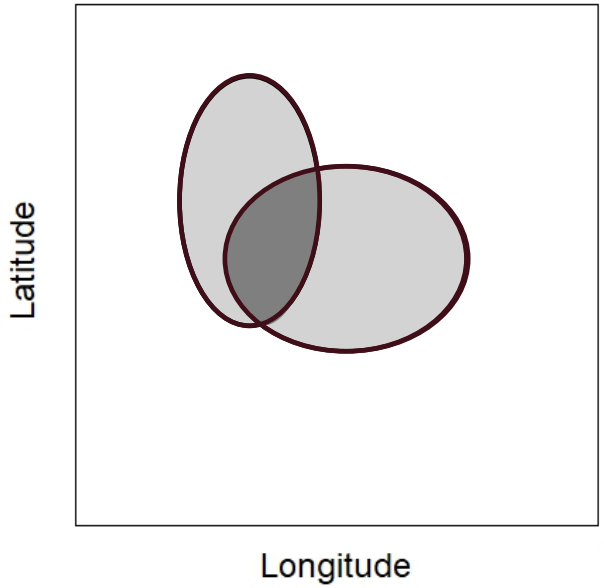
- Species: a segment of a metapopulation-level lineage (de Queiroz 1998)
- Speciation is the process by which one species splits into two
  - A continuous process



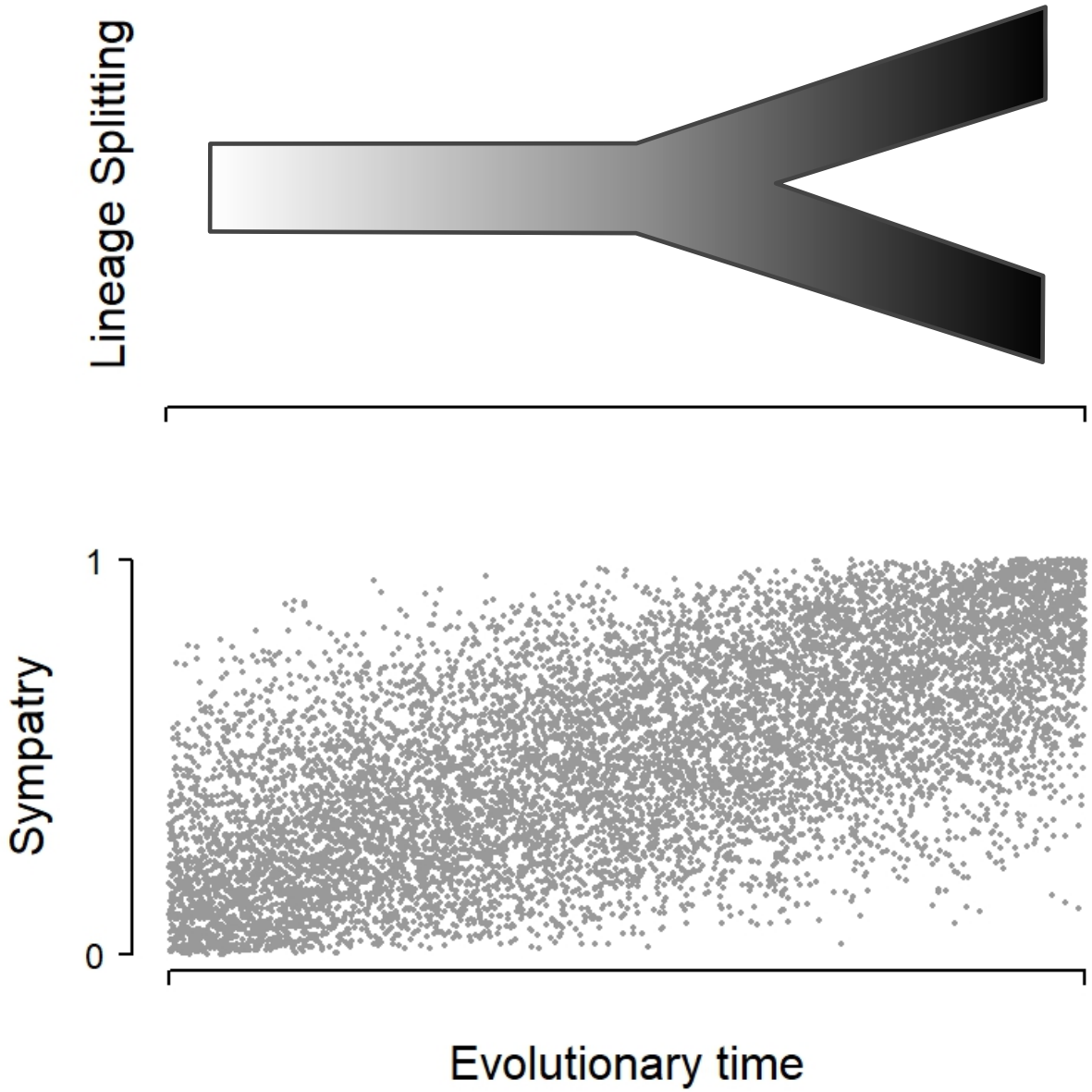
GEOGRAPHY OF SPECIATION

- Allopatry: geographically non-overlapping





- Sympatry: geographically overlapping



"ALLOPATRY-TO-SYMPATRY" HYPOTHESIS

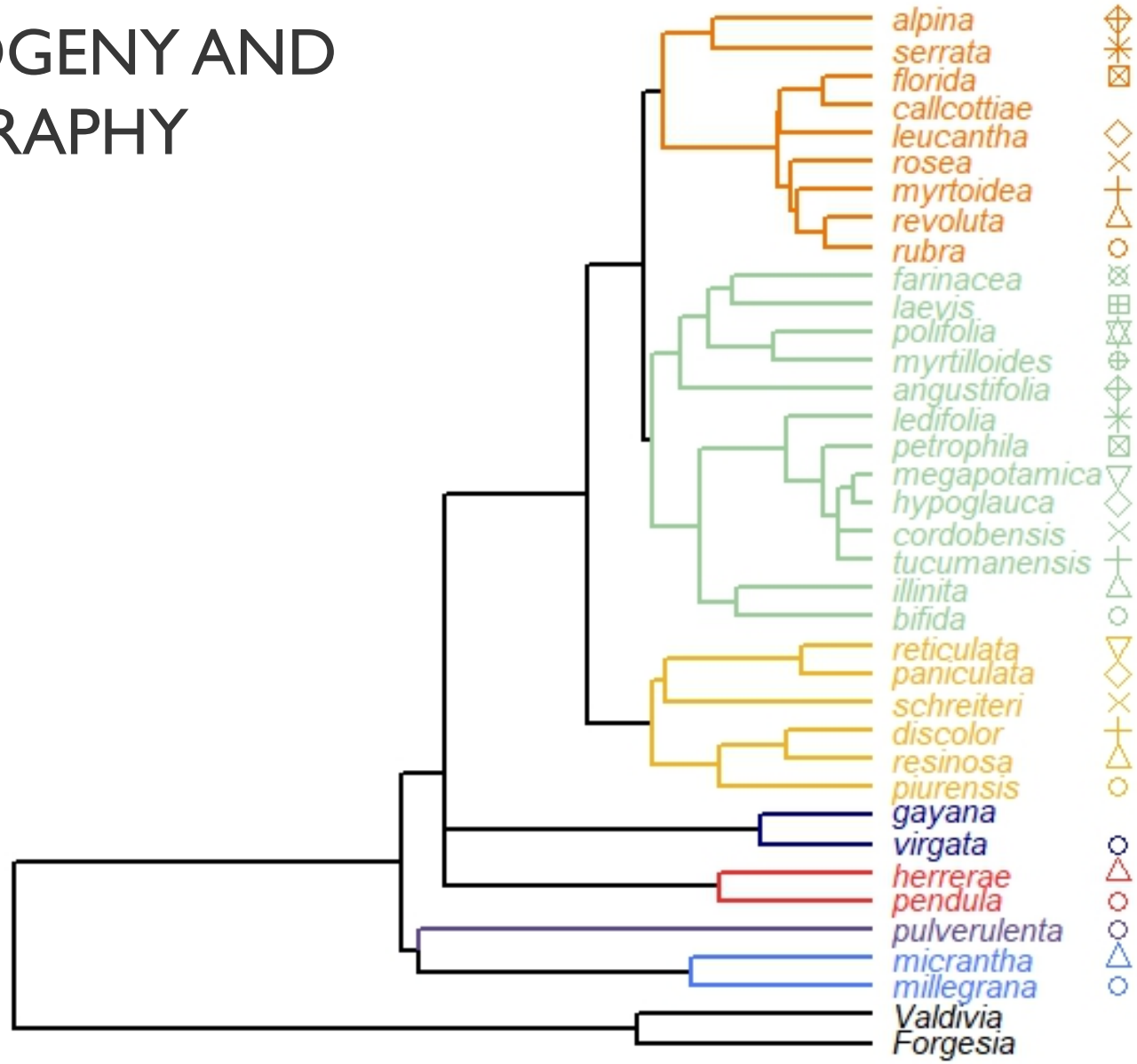
Mayr 1942

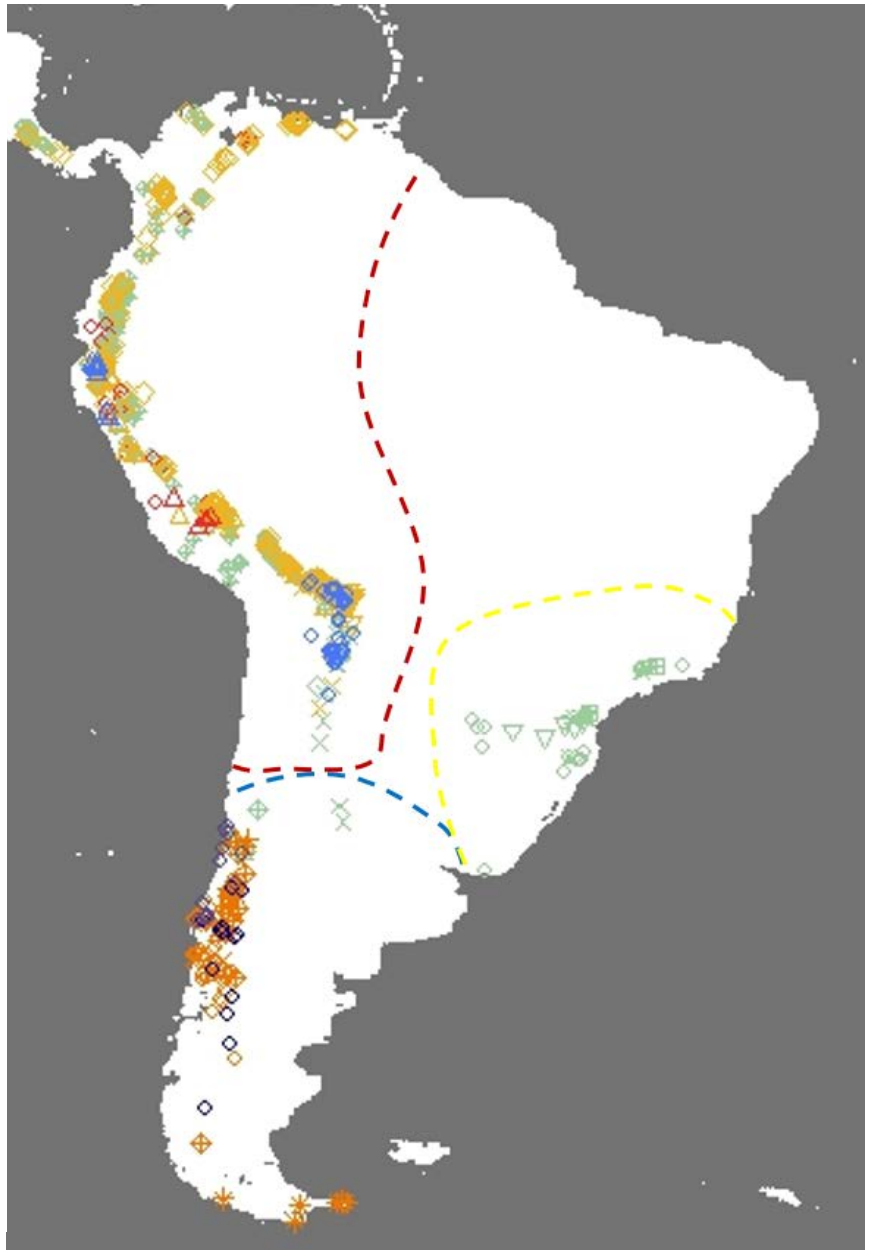
Prediction

The closer related the species, generally less sympatry,
The more diverged the species, generally more sympatry

STUDY SYSTEM- *ESCALLONIA*

PHYLOGENY AND GEOGRAPHY

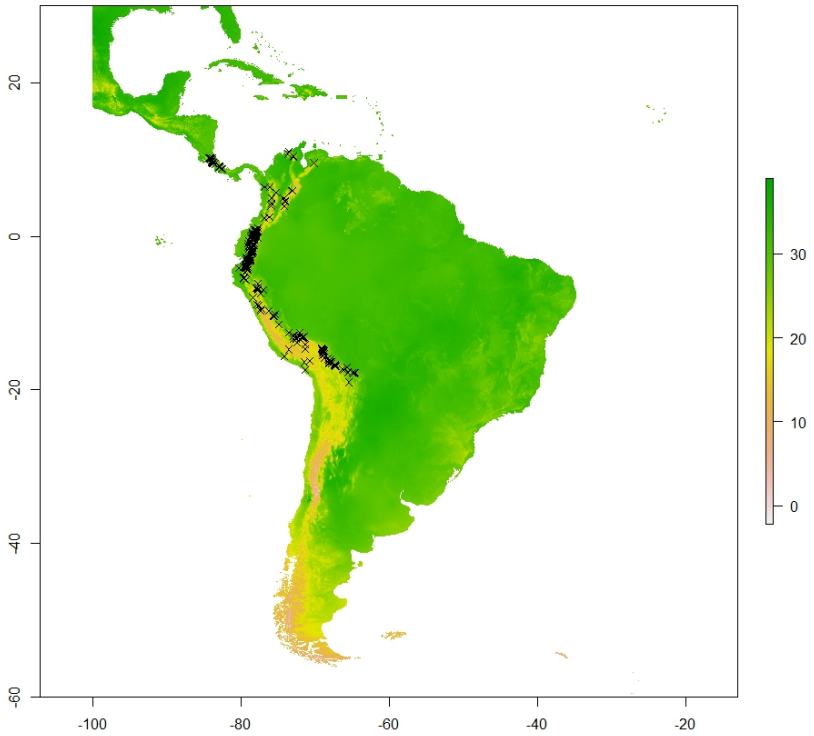


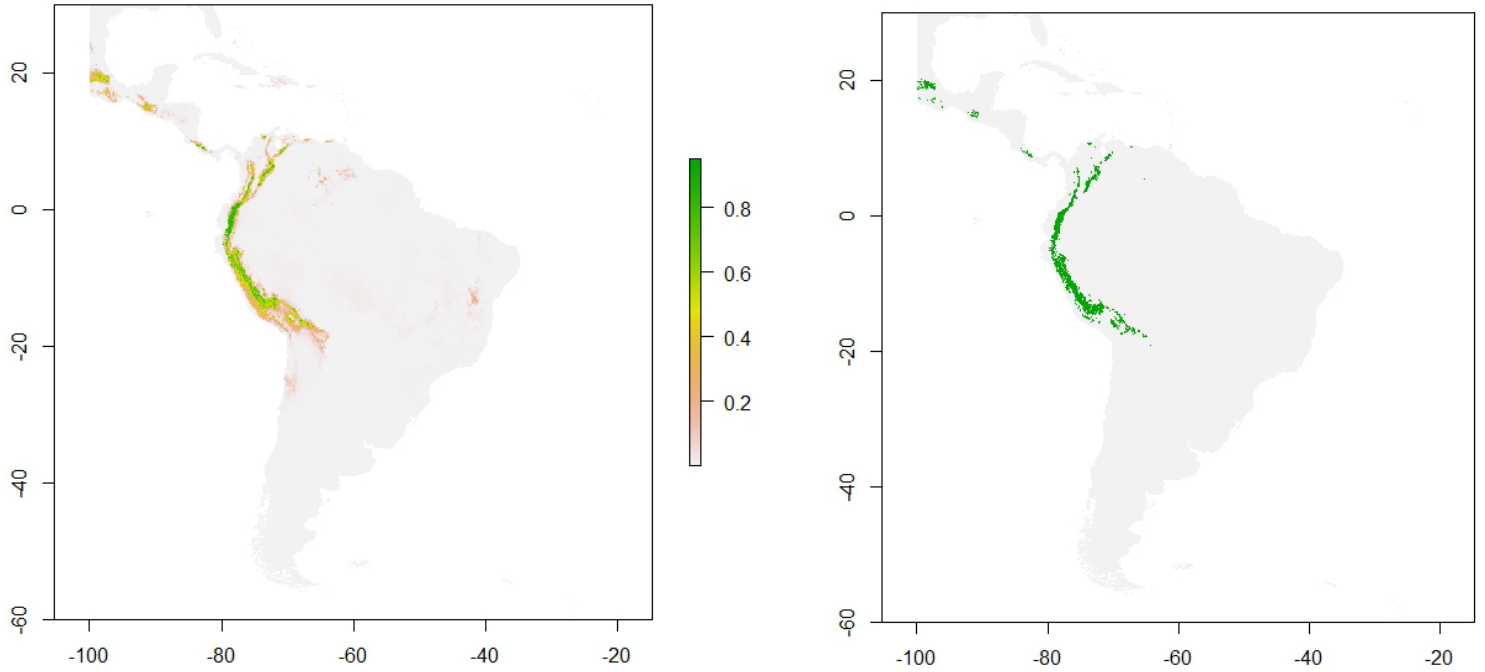


Zapata 2013

SPECIES DISTRIBUTION MODELING

BioClim5 With *E. myrtilloides* presence





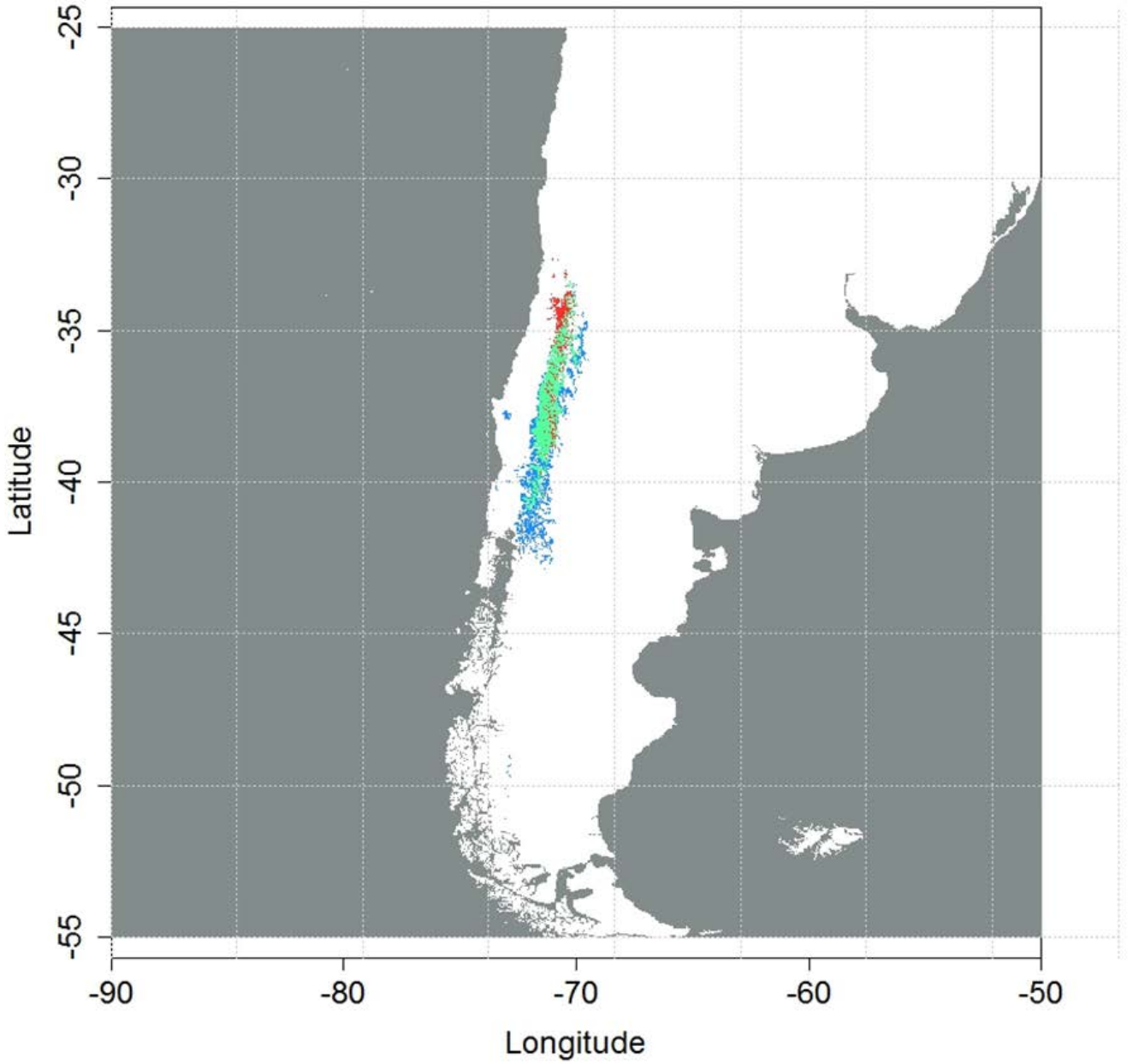
E. myrtilloides Probability and Range

http://worldclim.org/

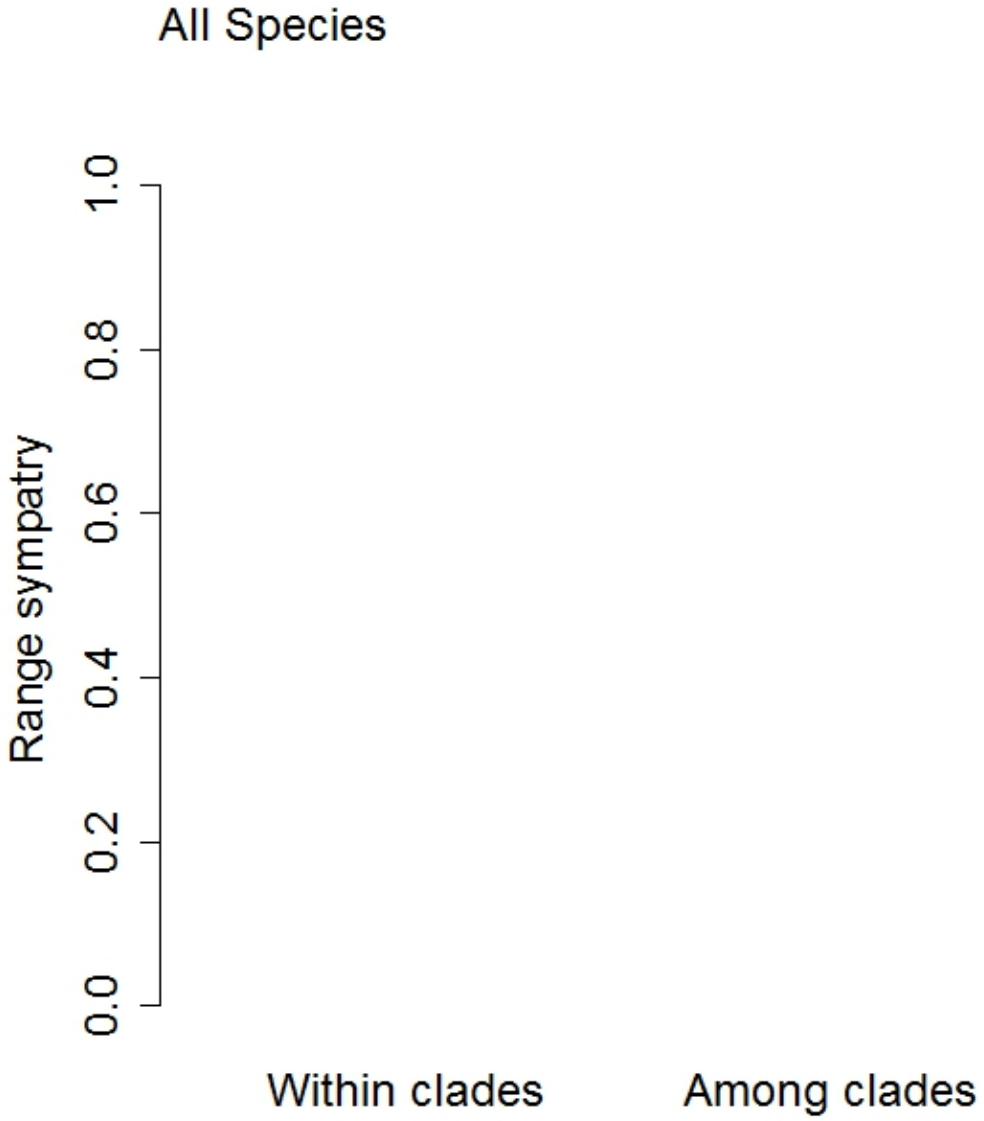
- Degree of Sympatry=

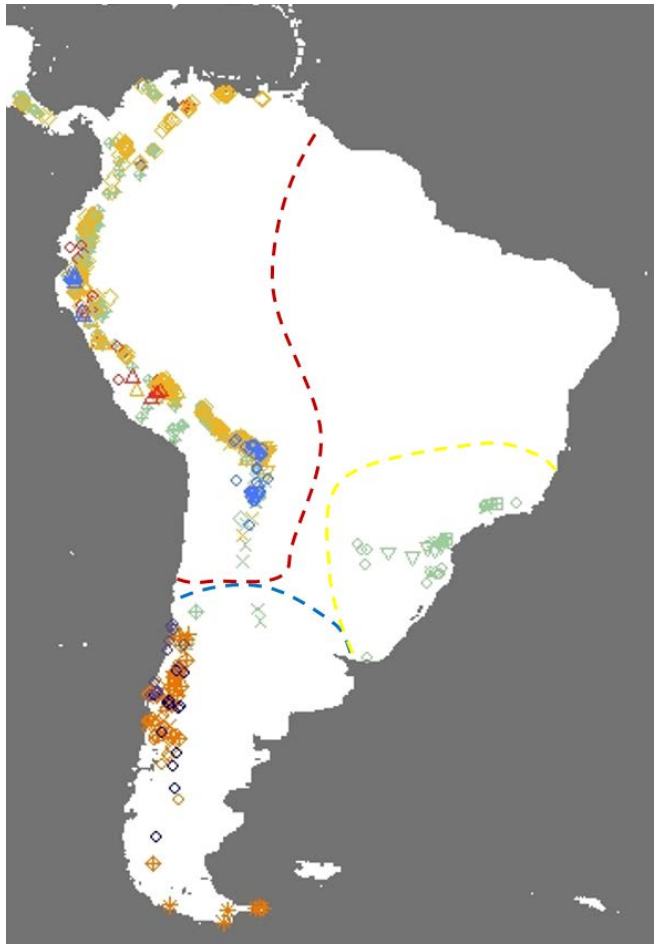
Area of geographic range overlap /

Area of geographic range of species with smaller range

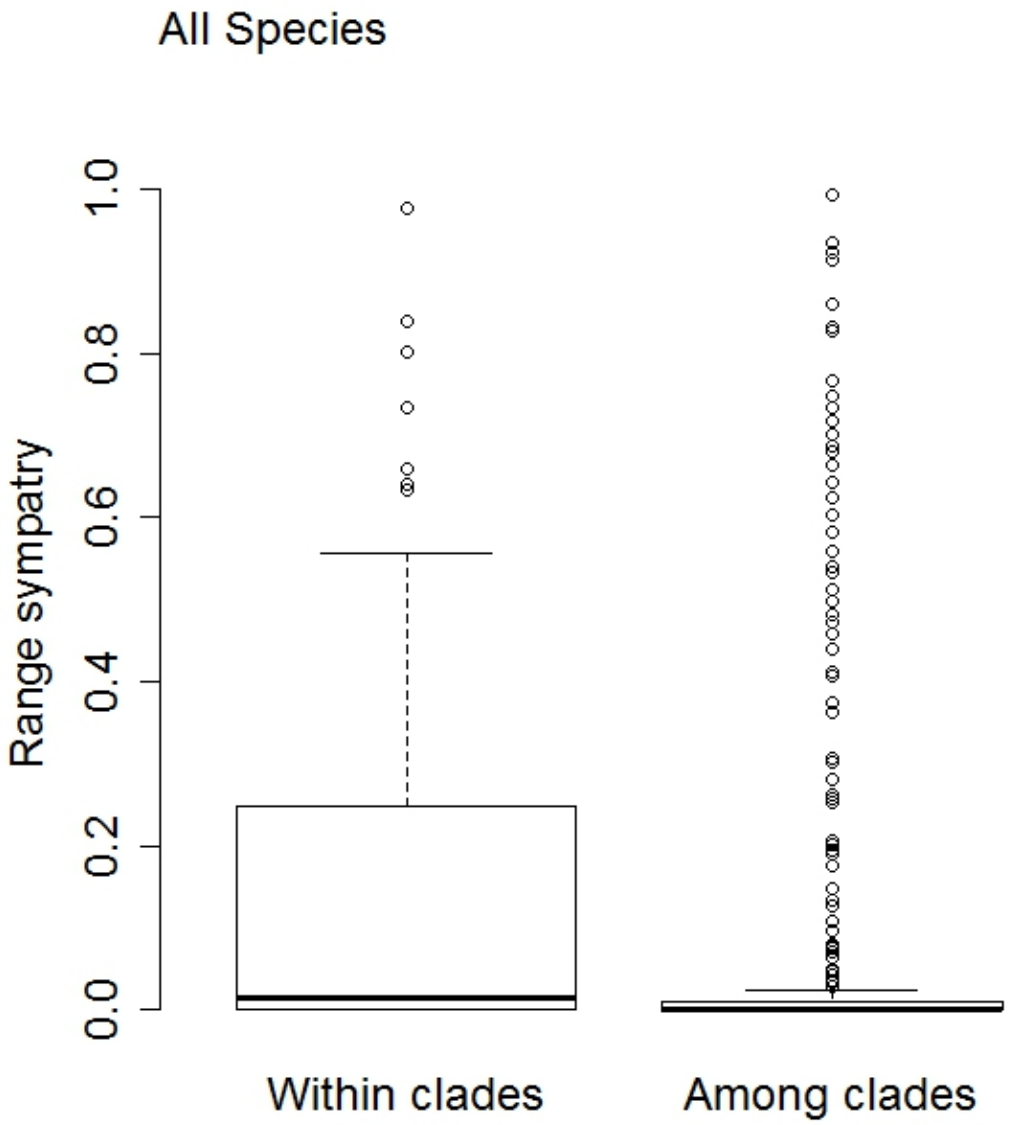


- *E. alpina*
- *E. virgata*
- Overlap


All Species
Range sympatry
0.0
0.2
0.4
0.6
0.8
1.0
Within clades
Among clades



RESULTS


All Species
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0.0
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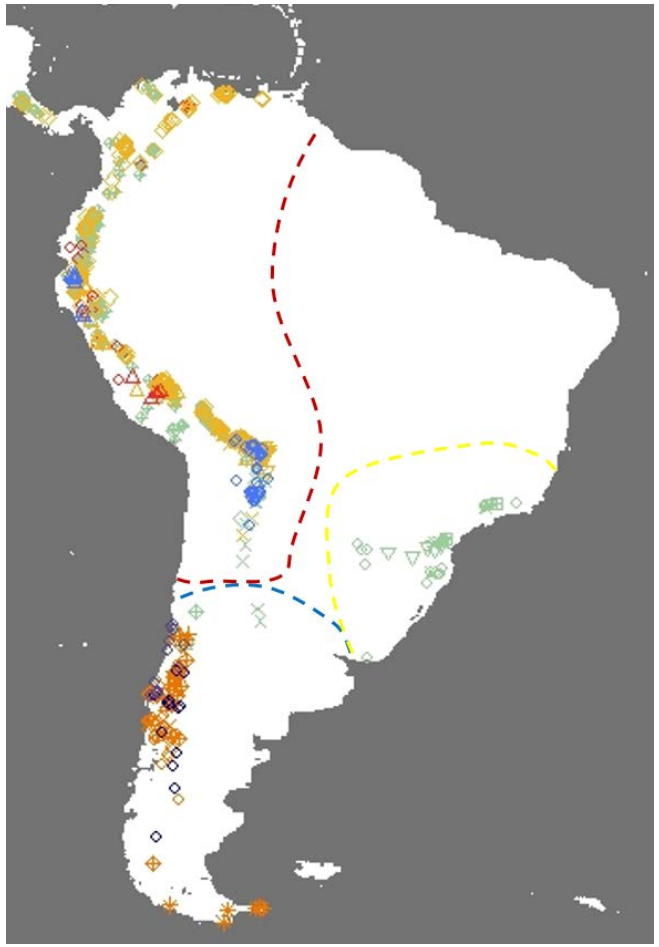
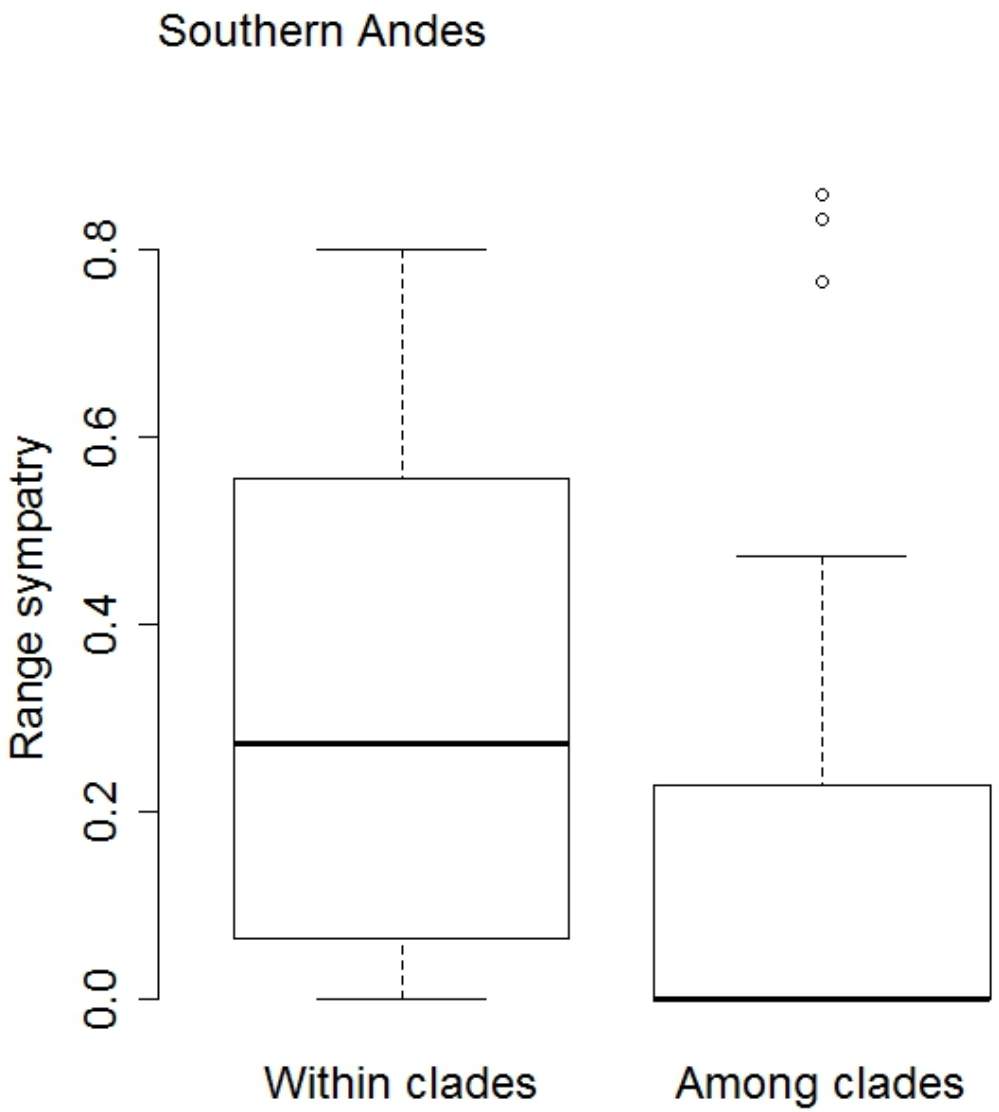
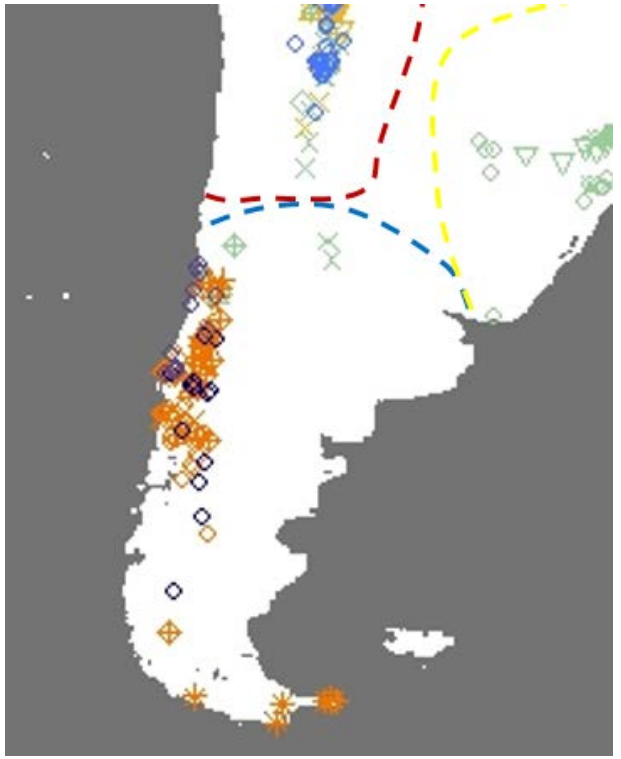
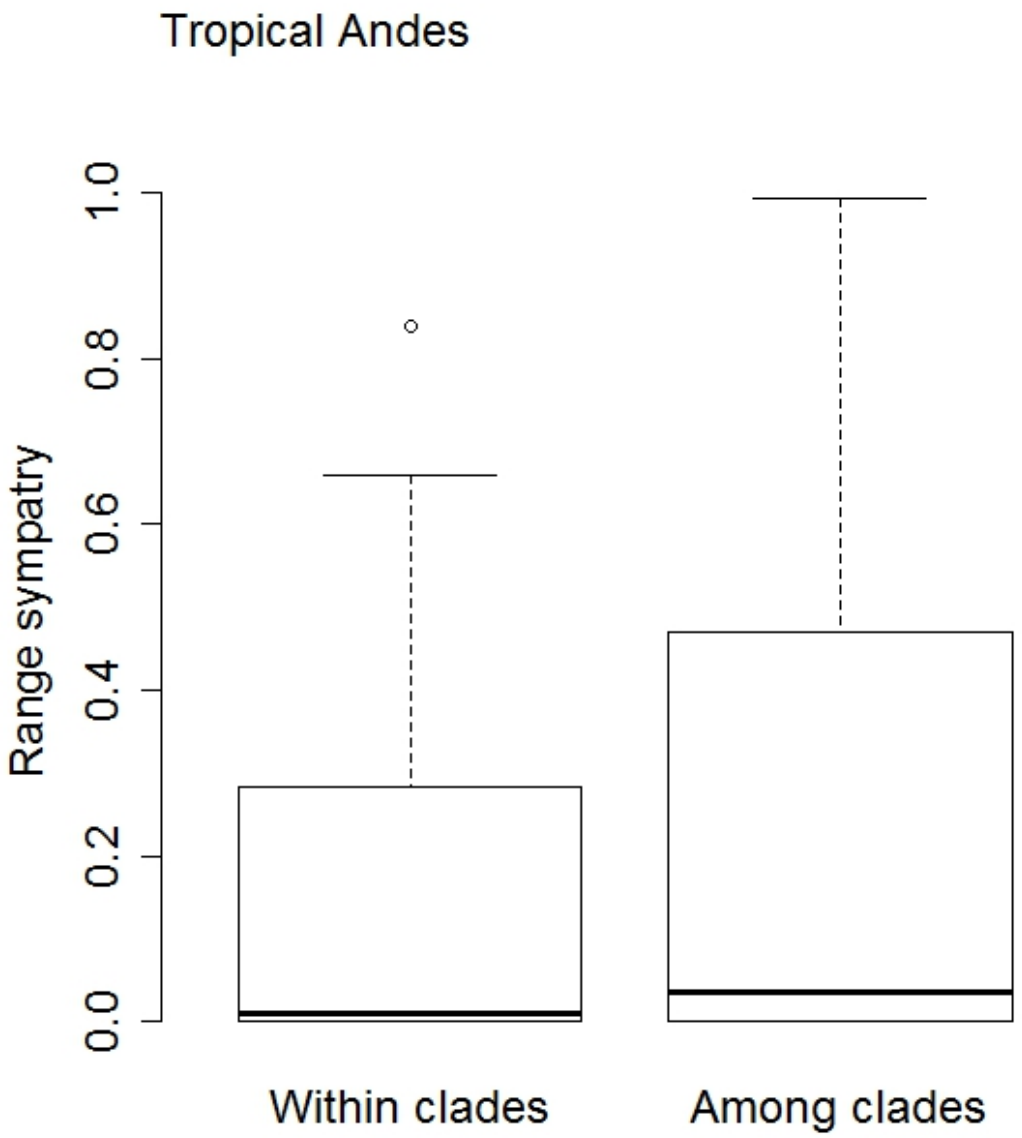


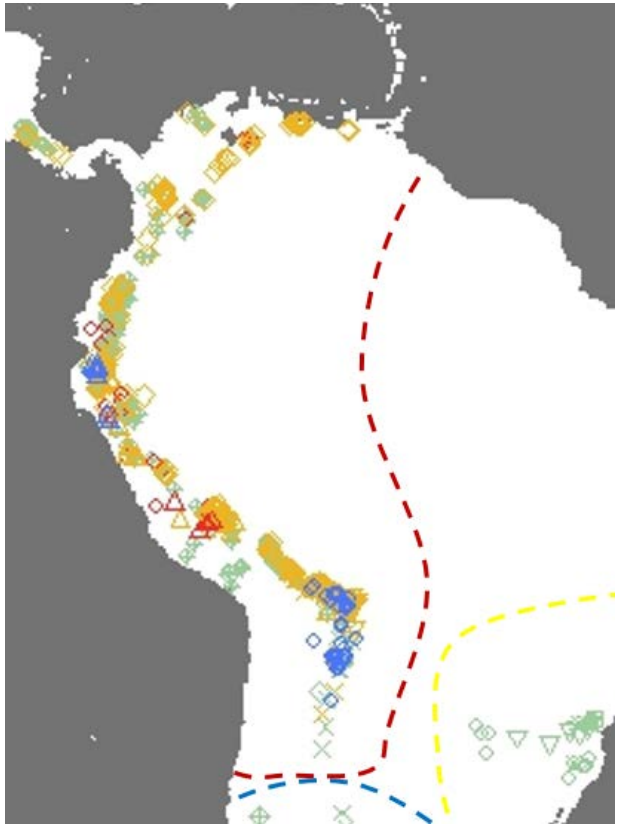
RESULTS


Southern Andes
Range sympatry
0.0
0.2
0.4
0.6
0.8
Within clades
Among clades



RESULTS

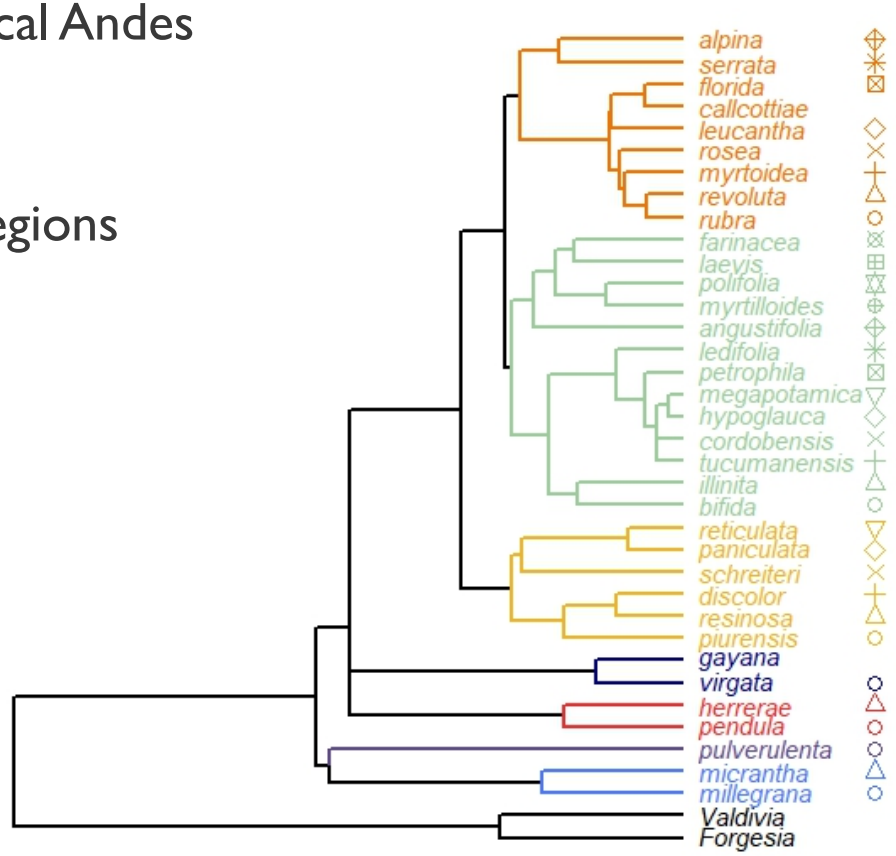

Tropical Andes
Range sympatry
0.0
0.2
0.4
0.6
0.8
1.0
Within clades
Among clades

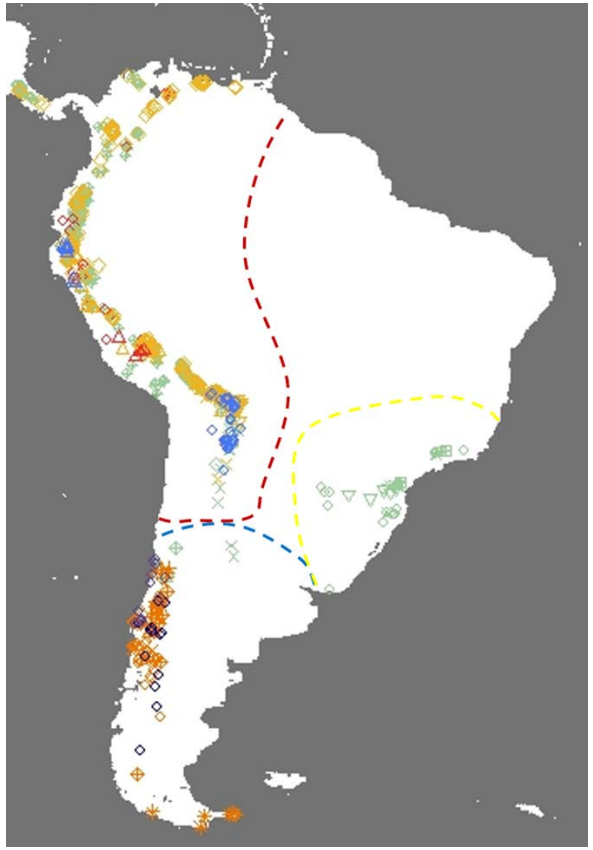


RESULTS

CONCLUSION

- Mixed support for the "Allopatry-to-Sympatry" hypothesis
  - Prediction only supported in Tropical Andes
- Dispersal ability of *Escallonia*?
  - Clades tend to correspond with regions
  - Not enough evolutionary time





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