

# Using Morphology to study the *Lonicera caerulea* Species Complex

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## Purpose of Study

A species complex is a group of closely related species for which the boundaries between species can be unclear.

This work focuses on *L. caerulea* and relatives that occur only in North America including *L. villosa* and *L. caerulea* var. *cauriana*.

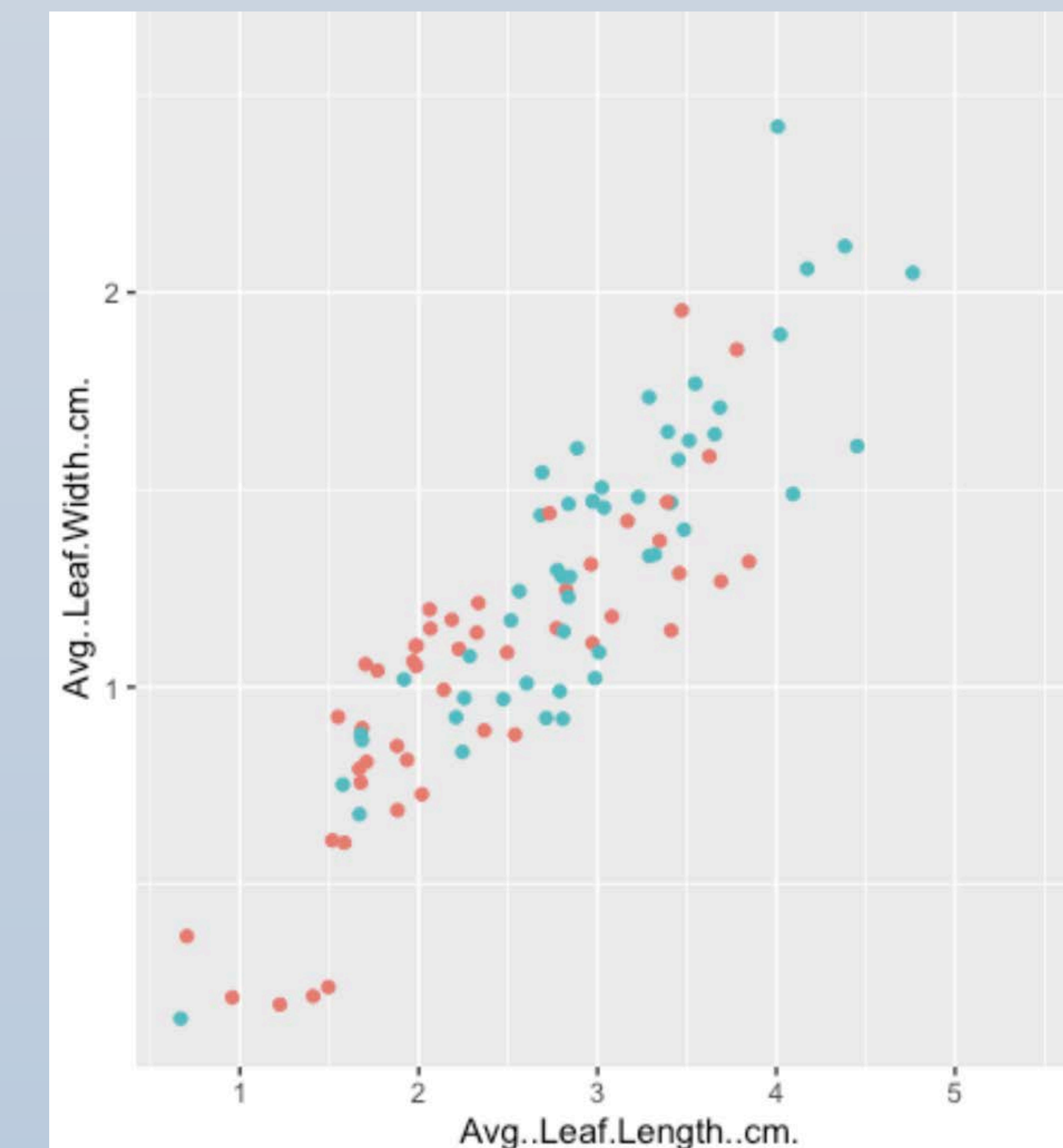
Our study used digitized museum specimens from the Harvard Herbaria and GBIF to measure leaf traits of interest in a first step to delineating species in this species complex.

Haskap is highly variable and there has been difficulty to differentiate recognized subspecies and varieties.

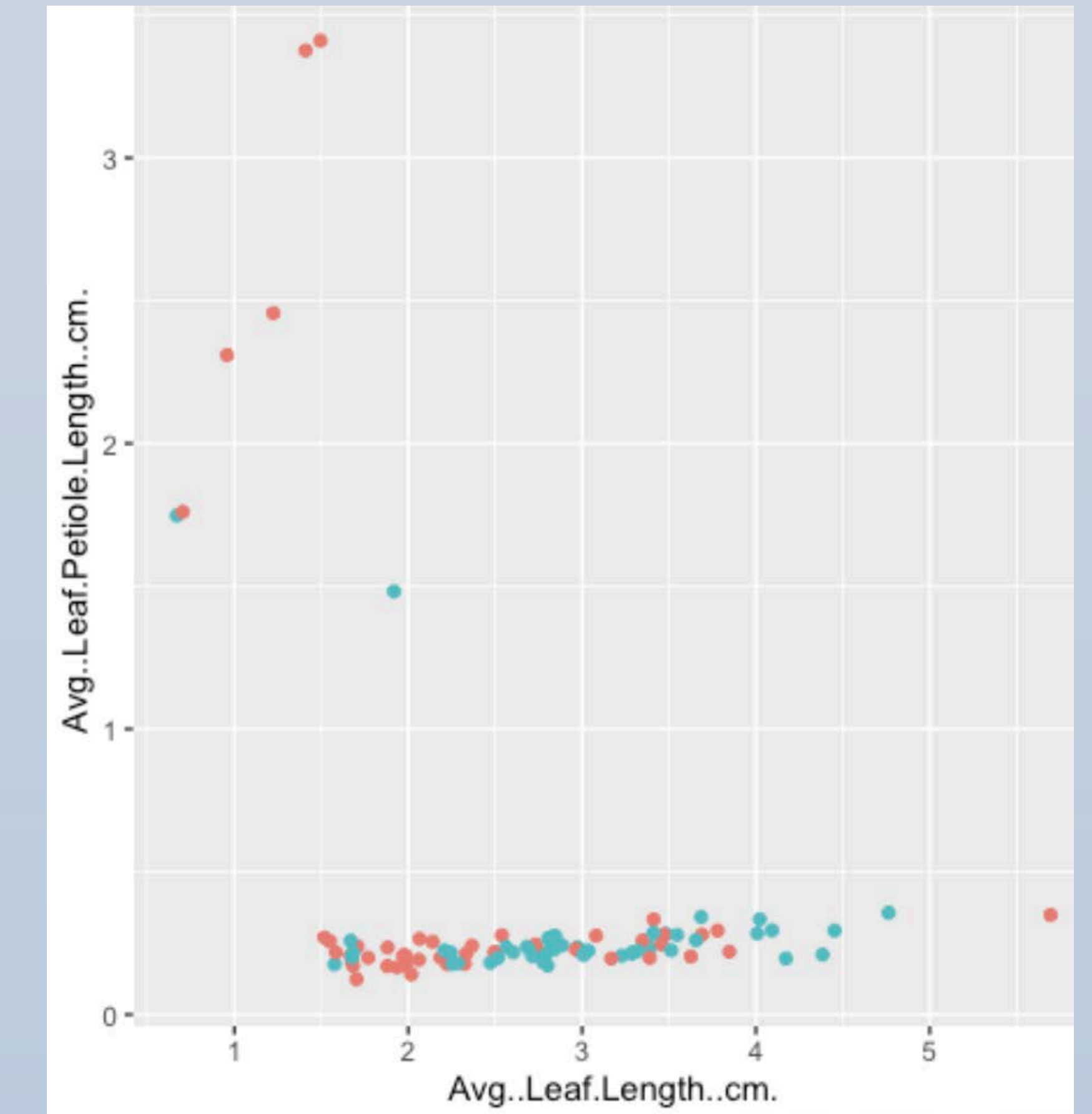
Haskap is unusual because the fruit is an accessory fruit in which a leaf-like structure becomes the fleshy fruit rather than the ovary.

*L. caerulea* is often cultivated for its edible, blue fleshy fruit known to be high in antioxidants.

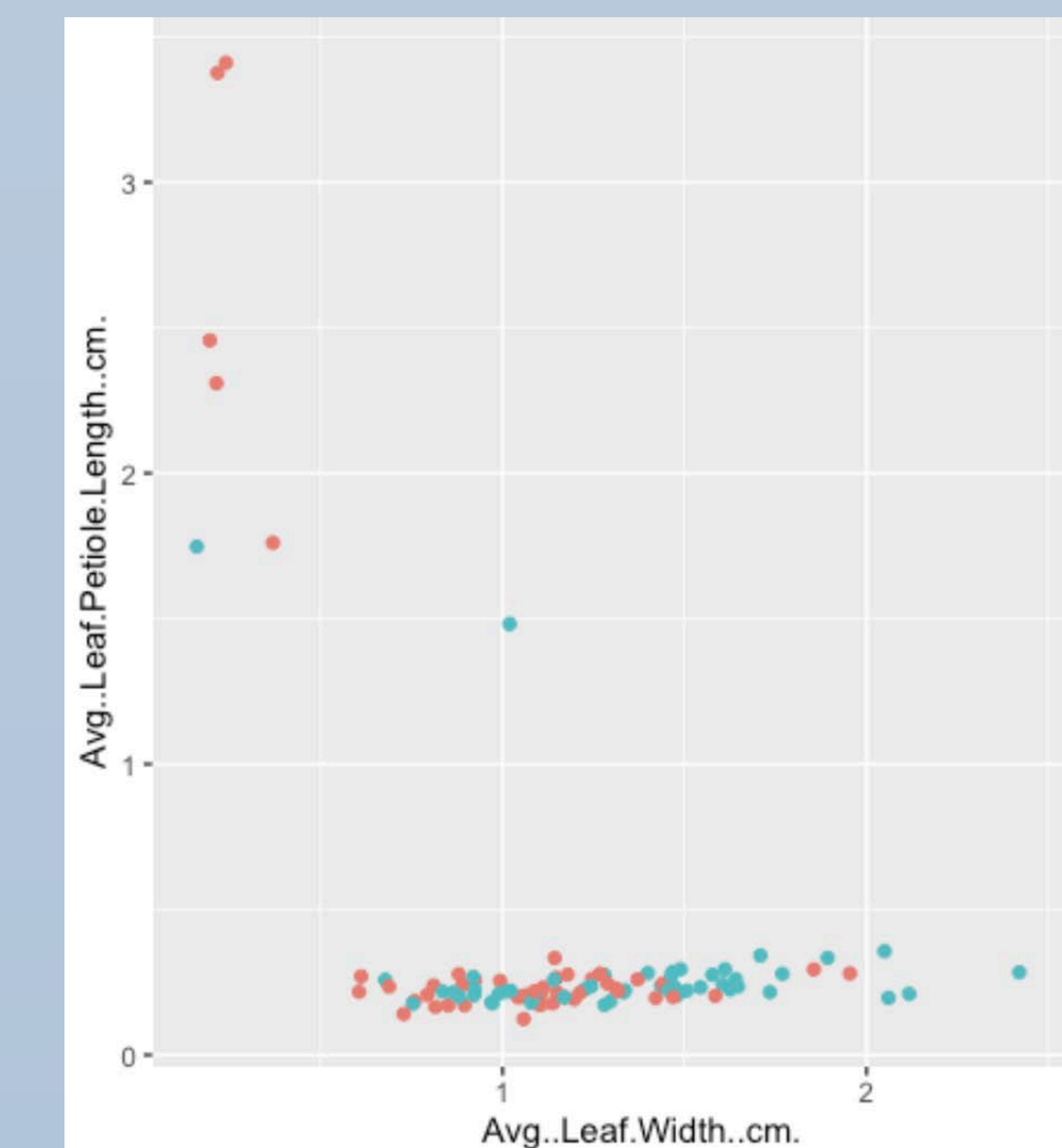
*Lonicera caerulea* is native to circumpolar regions in the North



A. Positive correlation between leaf width and leaf length.

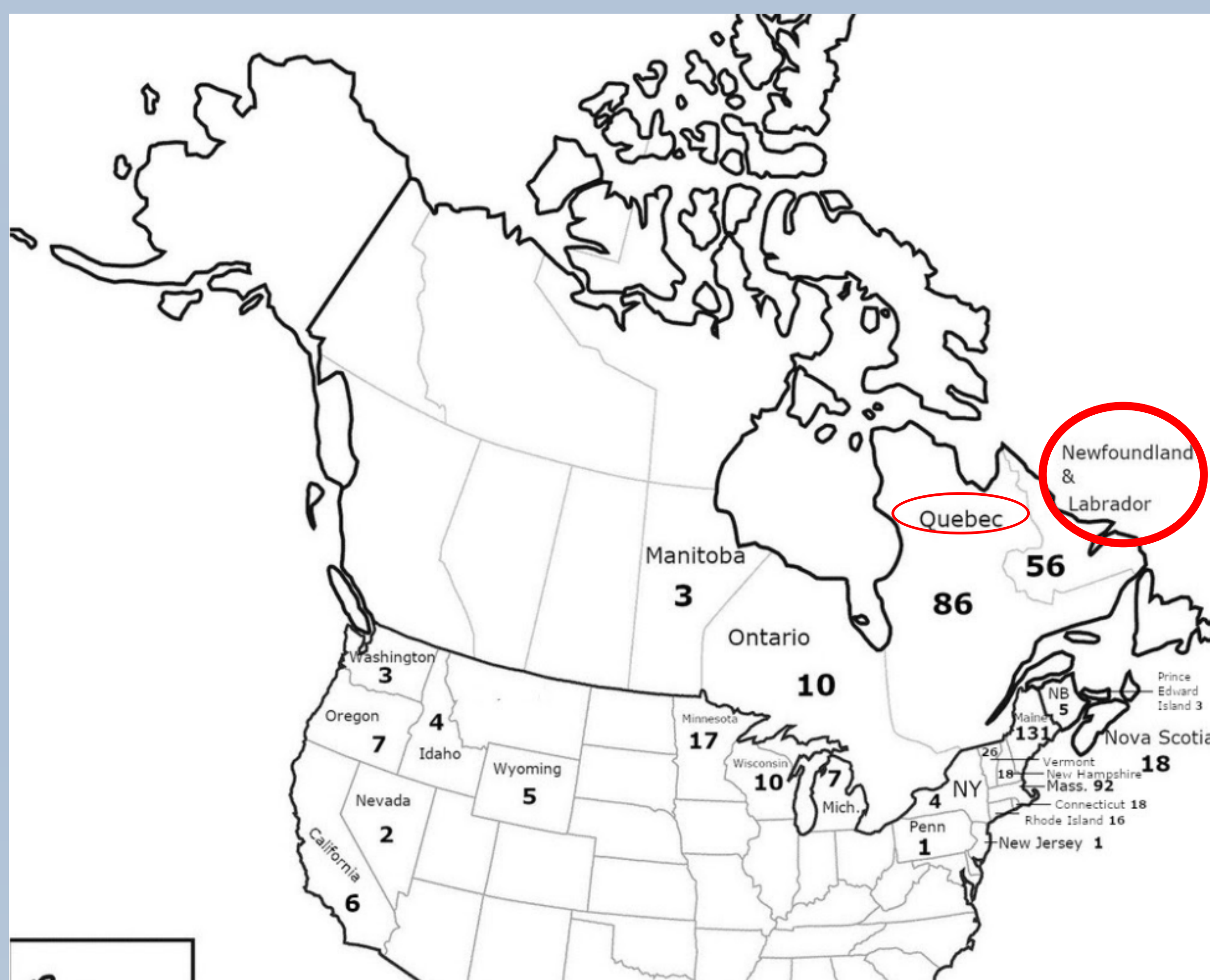


B. No correlation detected between petiole and leaf length.



C. No correlation detected between petiole and leaf width.

**Fig 3 A-C.** Scatterplots examining relationships between leaf length, leaf width, and petiole length. N=100. Red dots indicate specimens from **Newfoundland and Labrador** and blue dots are specimens collected from **Quebec**.



**Fig 1.** Number of available museum specimen per state/province in North America. In this study, 50 specimen each from Newfoundland and Labrador and Quebec were sampled.

**Fig 2.** Digitized herbarium specimen of *L. villosa* obtained from Harvard University Herbaria. Five leaves were sampled from each specimen and leaf length, leaf width and petiole length were measured from each.



## Conclusions

- Lonicera caerulea* is native to 25 states/provinces in North America.
- Our current sample only includes *L. villosa* from the Canadian provinces of Quebec and Newfoundland and Labrador. However, we detected variation in leaf traits suggesting this may be a useful feature for evaluating species boundaries.

## Future Directions

Obtain and measure at least 20 specimens from each remaining state/province in distribution map (Fig. 1).

Use Elliptical Fourier analysis to analyze total leaf shape in addition to leaf measurements of width and length.

Generate species distribution maps that show the distribution of *Lonicera caerulea* based on localities obtained from museum specimen. Will assess whether different putative species have varying climate requirements.

## Acknowledgements

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