

Denver Botanic Gardens Rare Plant Symposium Updates

September 22, 2023

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Demographic monitoring



Population genomic analysis
of the rare, narrow endemic,
Astragalus microcymbus

Masters Thesis: Emily Orr





Phacelia submutica



Penstemon penlandii
Transplant study

2023 Seed Scouting & Collection

Phacelia submutica
Astragalus rafaelsis
Astragalus anisus
Physaria rollinsii

Saussurea weberi
Physaria alpina
Eriogonum coloradense





Physaria alpina Demographic Project

- Horseshoe Mountain
- Long-term study to understand response to change over time
- Measurements on survival, size, reproduction, and community composition





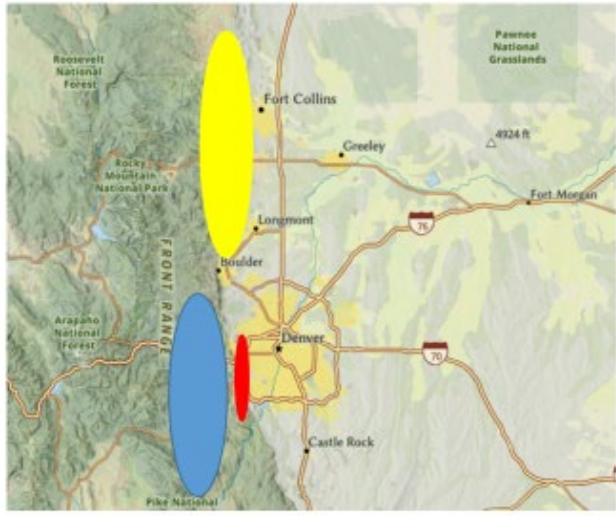
Physaria X1



Physaria Project Partners

- Colorado Natural Heritage Program
- Denver Botanic Gardens
- University of Northern Colorado
- Colorado Native Plant Society
- Ken Caryl Ranch
- Jefferson County Open Space
- City of Boulder Open Space
- City of Fort Collins Natural Areas Department





Physaria bellii

Physaria vitulifera

Physaria x1



Physaria X1



Physaria bellii



Physaria vitulifera

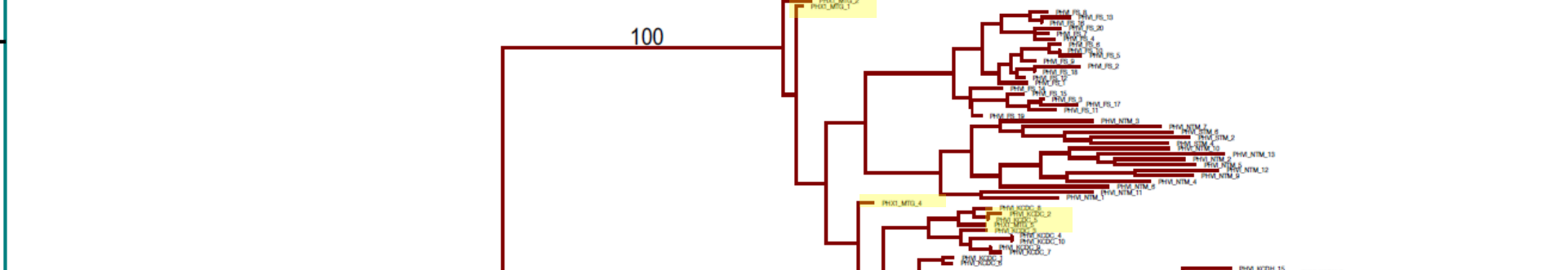


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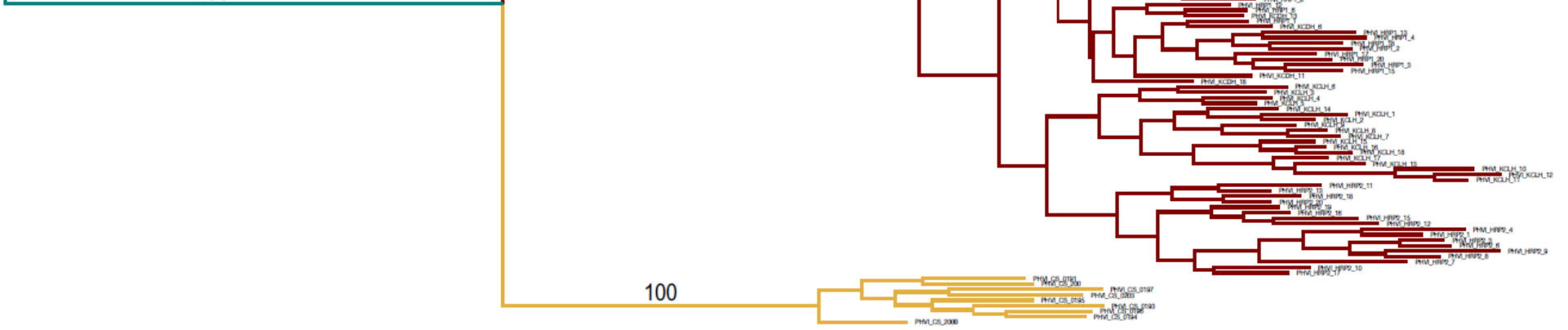
Physaria bellii

100



Physaria vitulifera

100



What the heck did Pam collect?

Physaria
vitulifera from
Pike NF



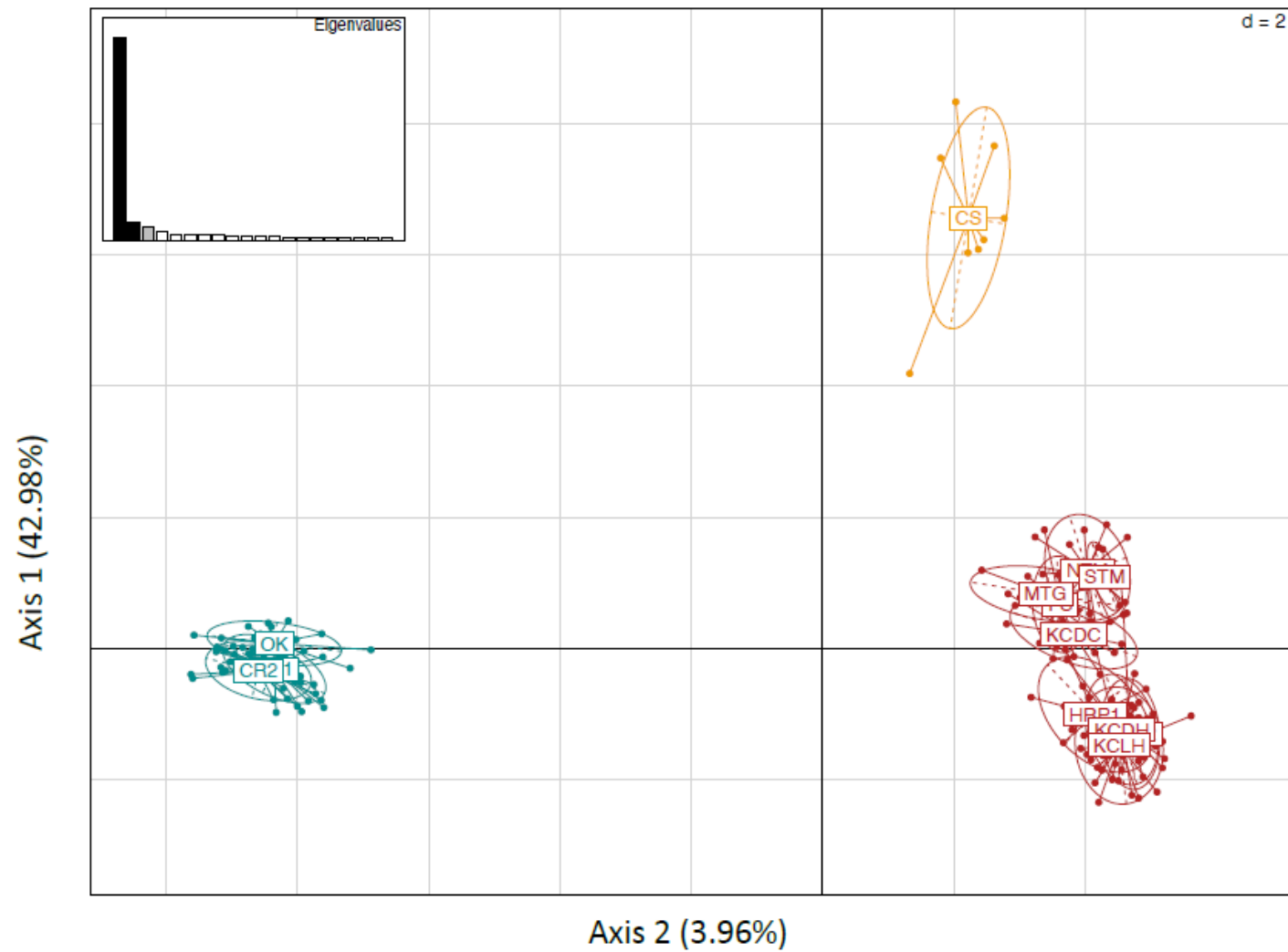


Figure 3. Principal Component Analysis plot of Axis 1 (42.98%) and Axis 2 (3.96%). The inset bar graph in the upper left corner shows eigen values for each axis. 95% confidence intervals for each group are included. Three unique clusters are formed, clearly distinguishing individuals identified as *P. bellii* (blue) from individuals identified as *P. vitulifera* or *P. X1* (red). Individuals identified as *P. vitulifera* and *P. X1* form a unique cluster together. Individuals collected from Cathedral Spires also form a unique cluster (yellow) away from either *P. bellii* or *P. vitulifera/X1*.





Conclusions

- *Physaria* X1 is not a hybrid between *P. vitulifera* and *P. bellii*.
- *Physaria* X1 is *Physaria vitulifera*, but with less lobing on the leaves.
- *Physaria* from Cathedral Spires and Pike NF may be a new species!
- Highlights the importance of collaboration and genetic work in rare plant conservation!

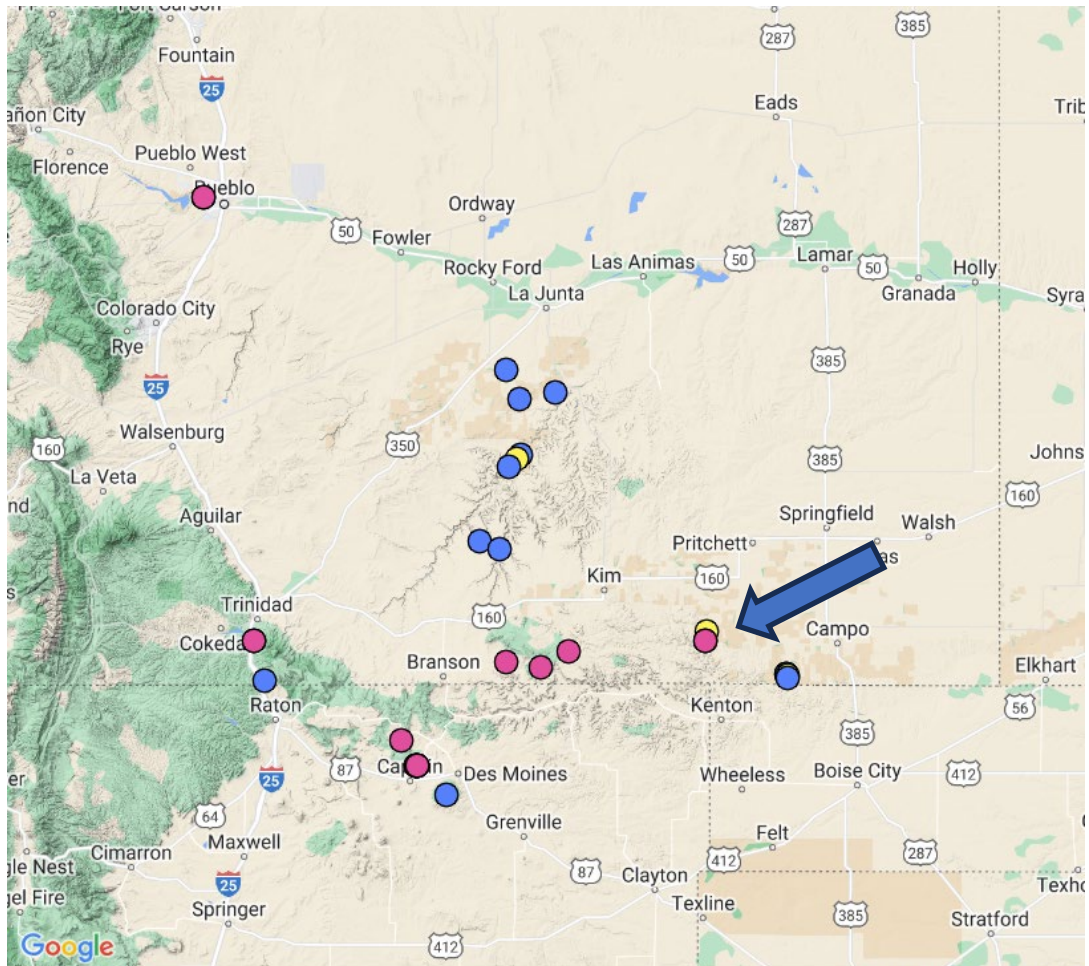


Solidago capulinensis on Comanche NG

Dina Clark (COLO)

Alissa Iverson (KHD)





Legend

- = *Solidago wrightii*
- = *Solidago wrightii* var. *adenophora* (*Solidago bigelovii*)
- = *Solidago wrightii* var. *wrightii*
- = *Solidago capulinensis*

Add Point of Reference
 Marker Name:
 Latitude decimal:
 Longitude decimal:
[Enter in D:M:S format](#)

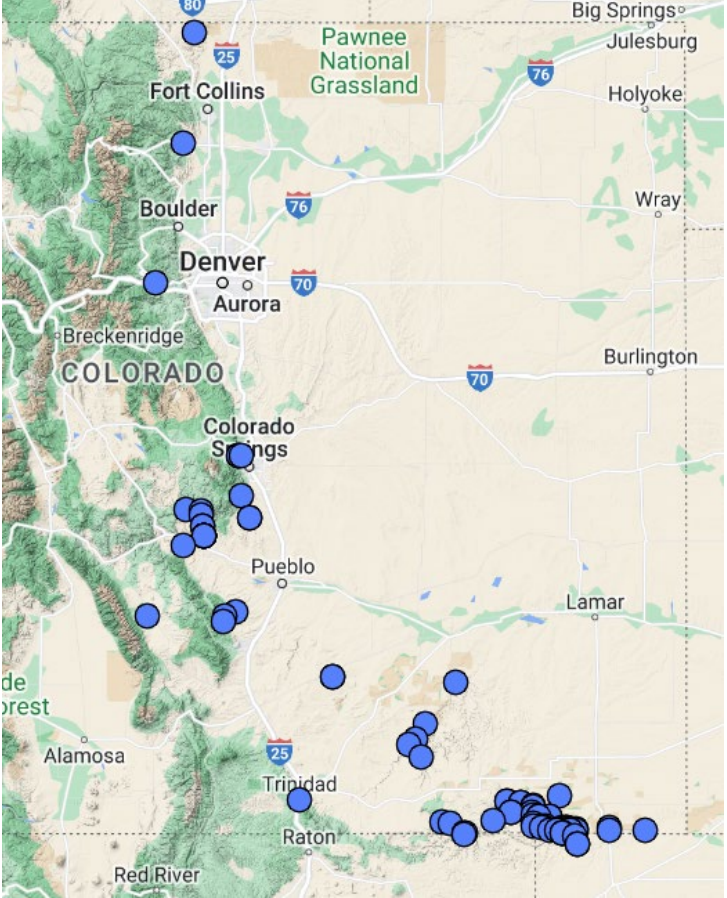






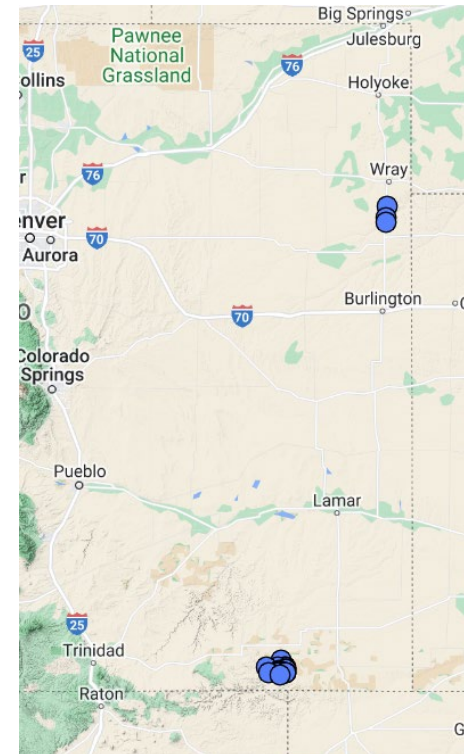


Myriopteris rufa (S3, vulnerable)



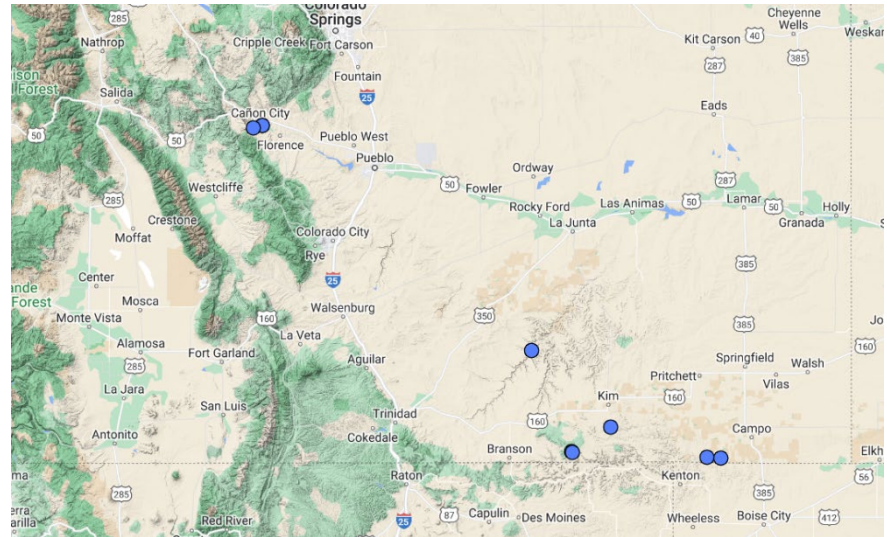


Cyclanthera naudiana
(*dissecta*)
(S2, imperiled)



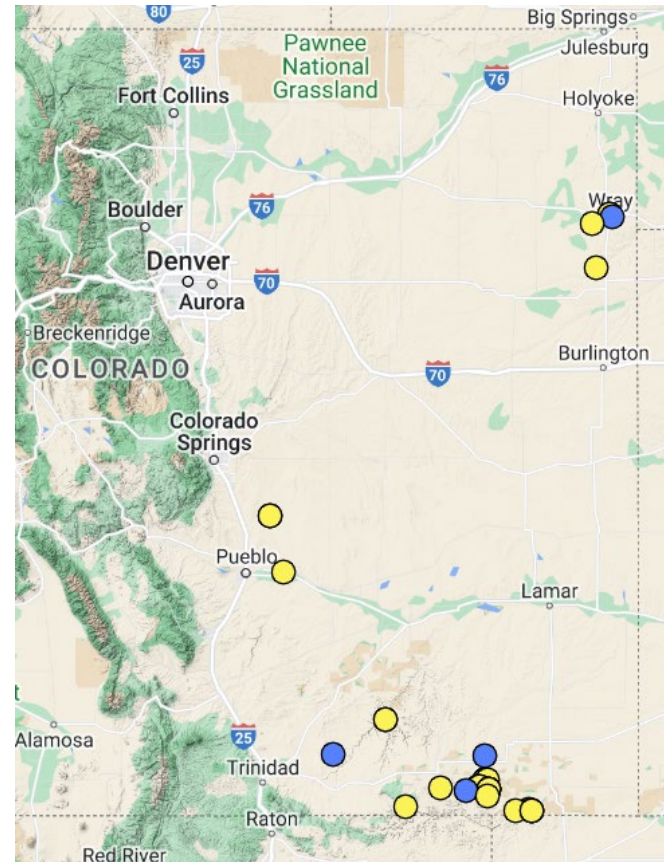


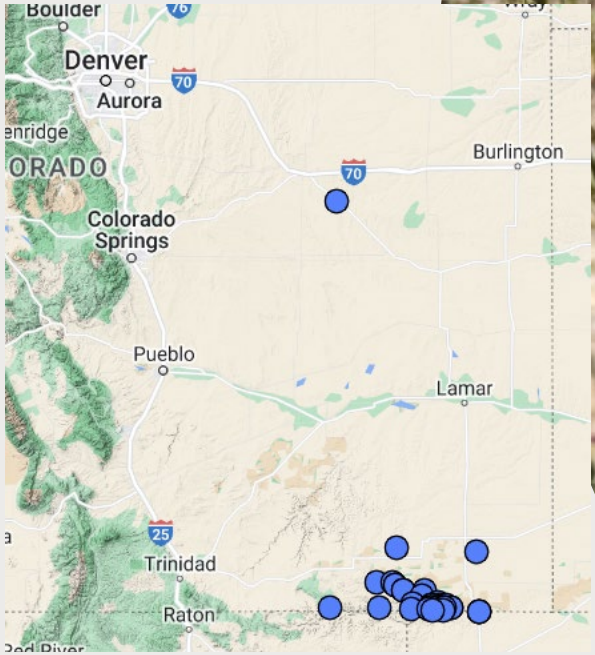
Digitaria californica
(S2, imperiled)





Lobelia cardinalis
(S2, imperiled)



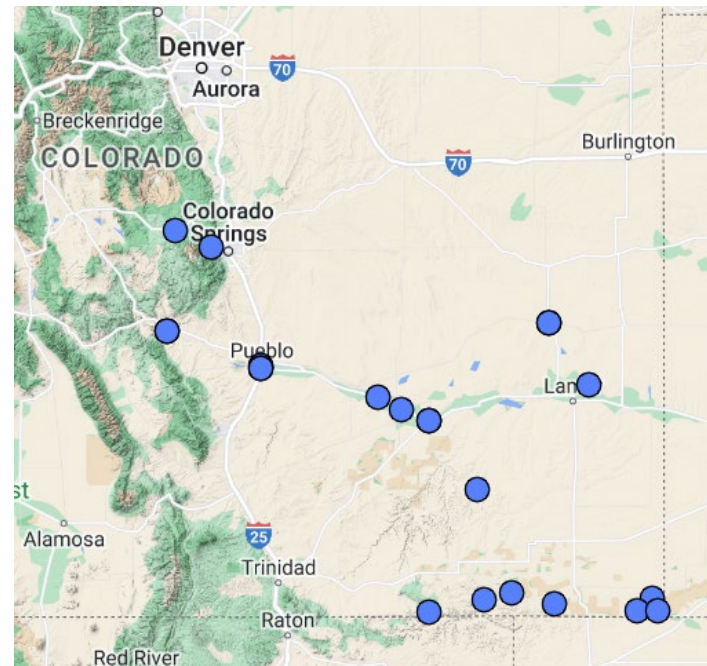


Mimosa borealis
(S2, imperiled)





*Kallstroemia
parviflora*
(Not ranked)



*Portulaca
pilosa*
(Not ranked)



Flora of Colorado: New for 2nd edition

- 123 new taxa
- Result of range extensions, taxonomic work, new species, previous oversight on checklist of Southern Rocky Mountains
- Of these, 6 are endemic

