

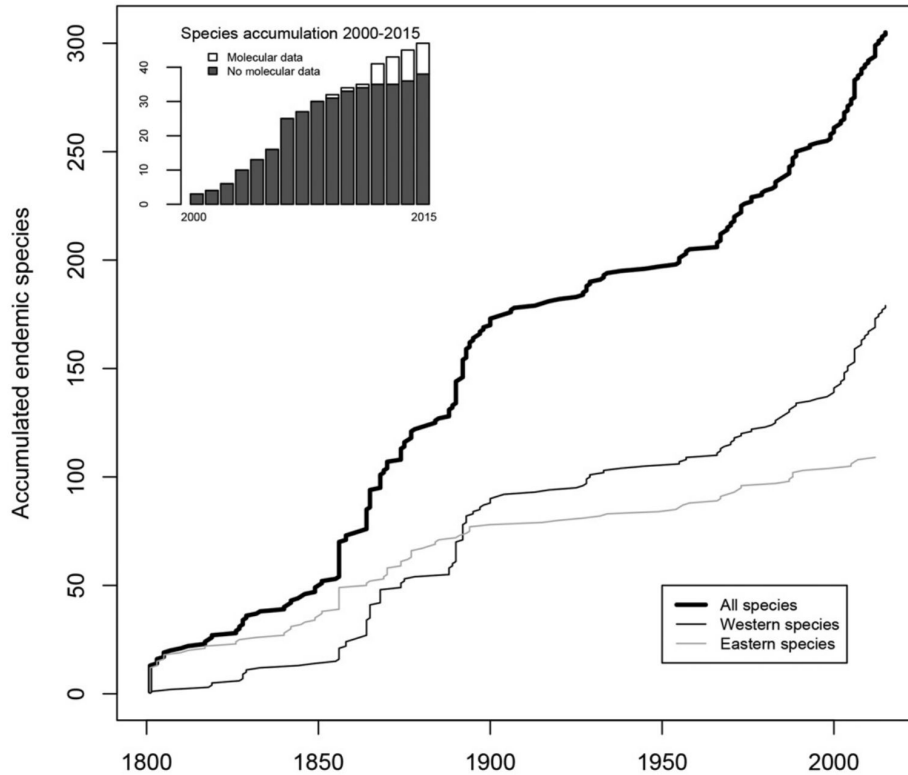
# The Bryophyte Flora of Henry W. Coe State Park

John McLaughlin<sup>1</sup>



# Bryology in California

Documentation of North American endemic species through time



Carter et al.  
2016

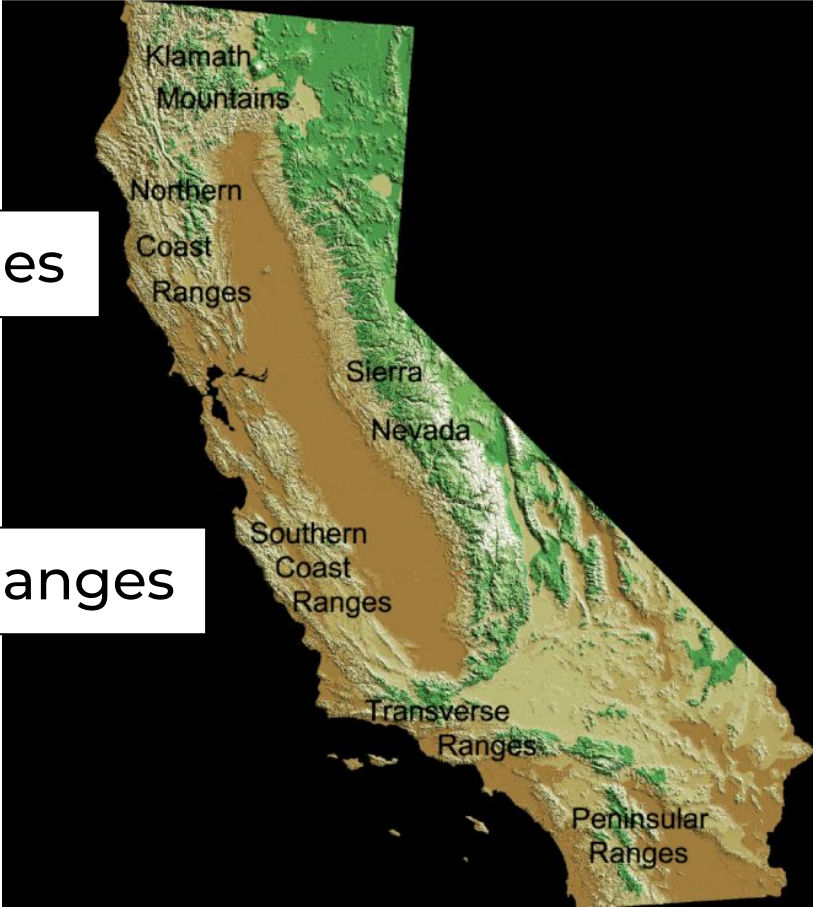


[https://ucjeps.berkeley.edu/people/norris\\_obit.html](https://ucjeps.berkeley.edu/people/norris_obit.html)

# Coast Ranges of California

Northern Coast Ranges

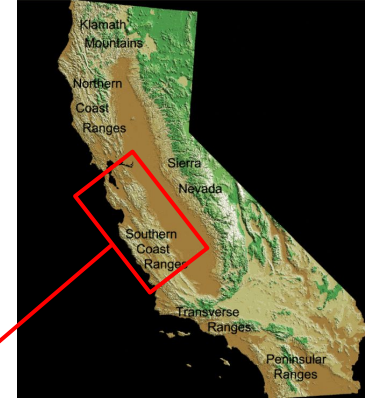
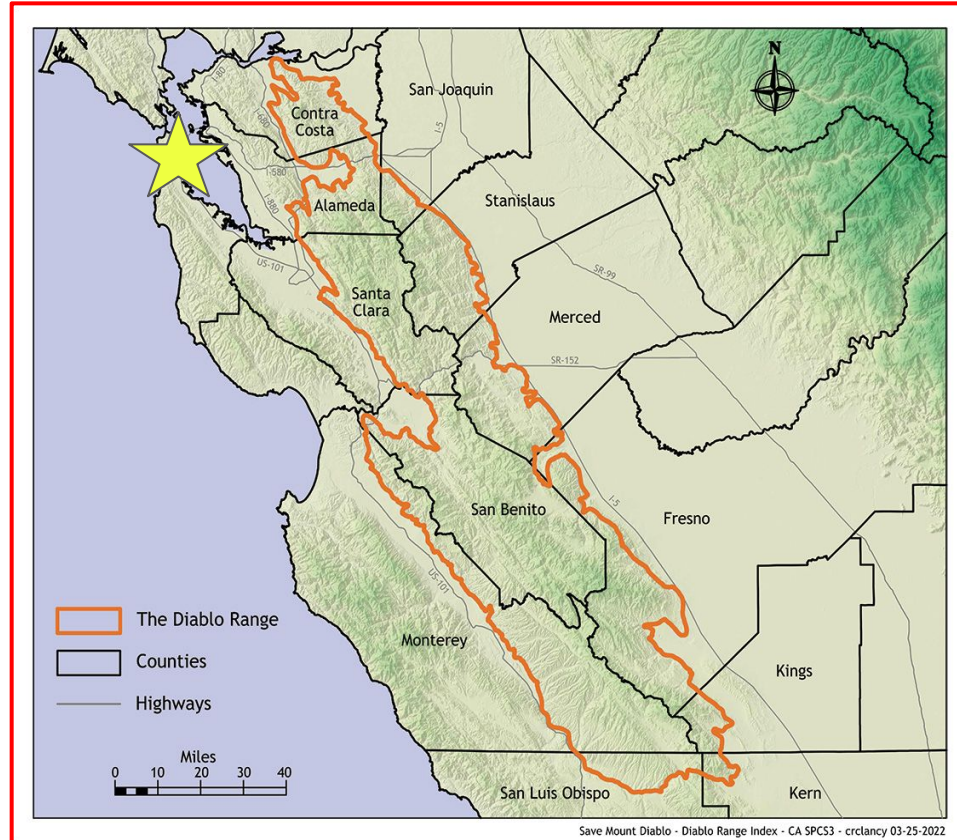
Southern Coast Ranges





# The Diablo Range

- Mt. Diablo State Park Bryophyte Inventory (Hutton et al., 2021).

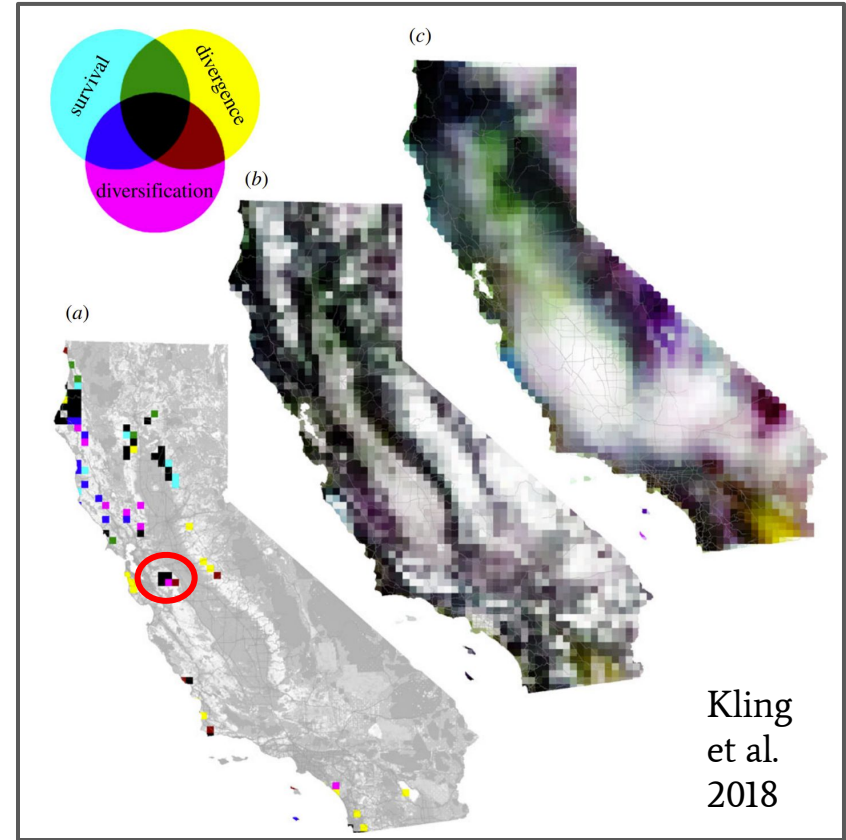




# Mt. Hamilton Range

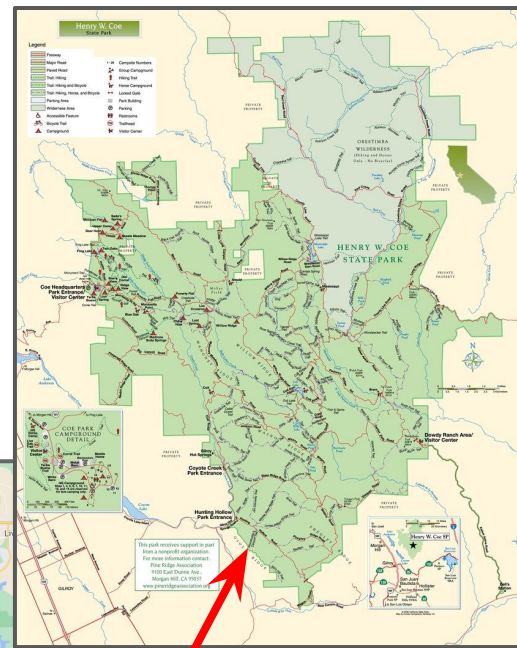
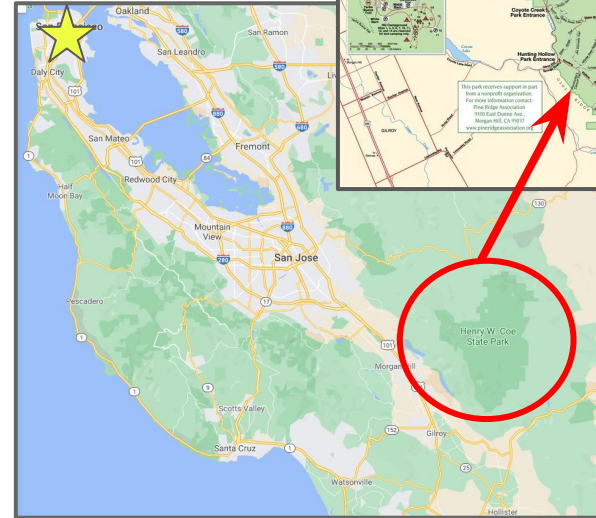
Helen Sharsmith (1945)

Conservation Priority



# Henry W. Coe State Park

- ~87,000 Acres
- 2nd largest state park in CA
- Santa Clara & Stanislaus Co.



# History and Land Use



"May these quiet hills bring peace to the souls of those who are seeking." Sada Coe Robinson, daughter of Henry Willard Coe.



# Vascular Plant Communities

## Foothill Woodlands



## Riparian Woodlands

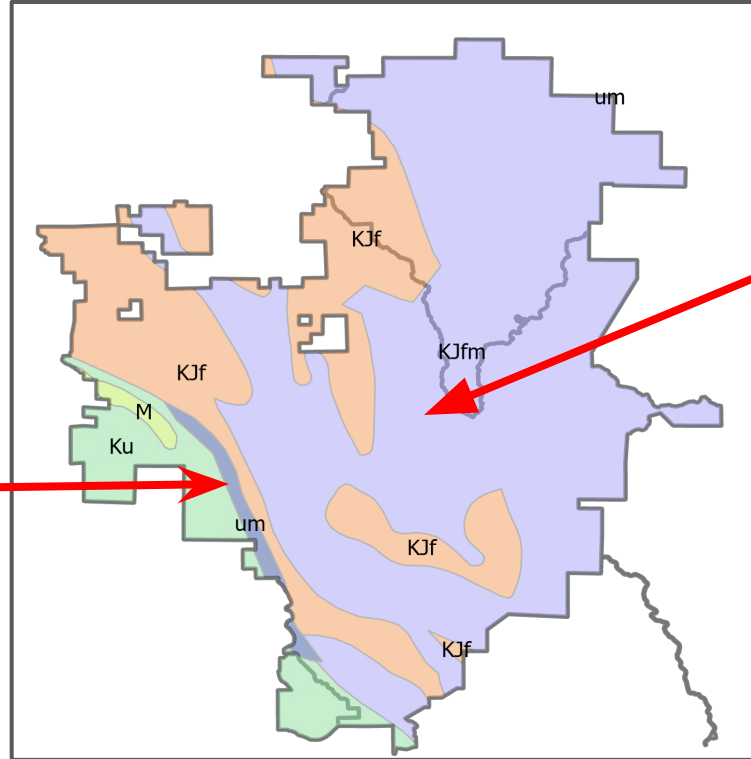
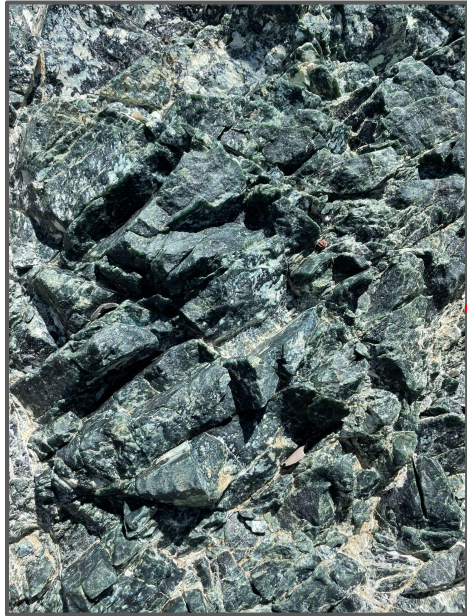


## Chaparral

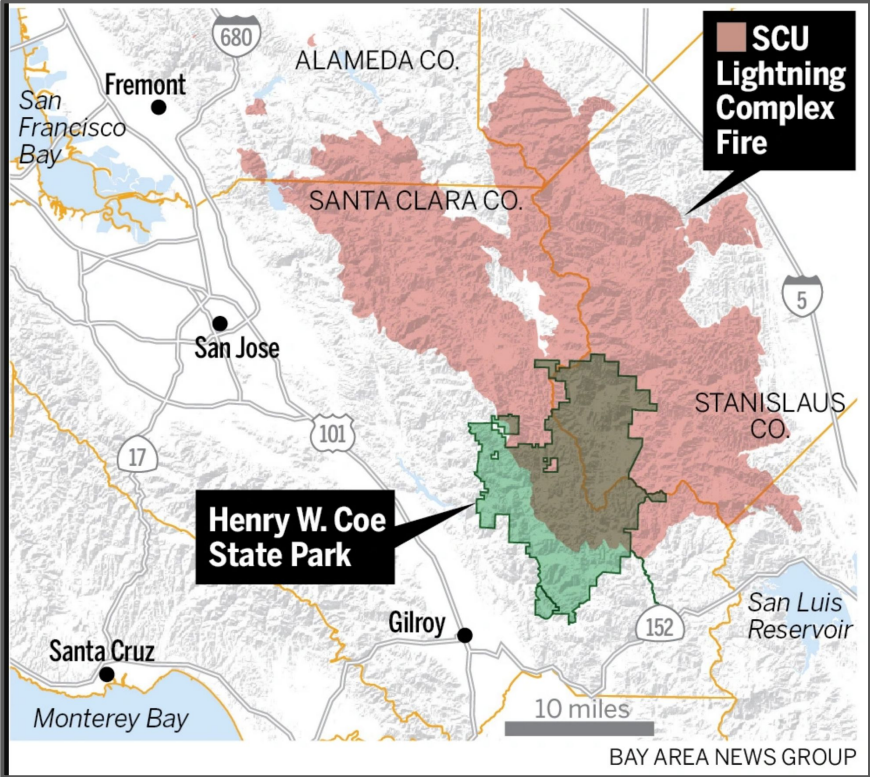




# Geology



# Burn History





# Collection History

- Alan Whittmore from 1993
- Various others
- Total: **186 vouchers; 90 spp.**



# Objective

- **Comprehensively inventory the bryophytes of HWCSP**
  - Diversity
  - Distribution
  - Conservation implications

# Field Methods

- **32** Field Trips over **3** years



# Herbarium Methods

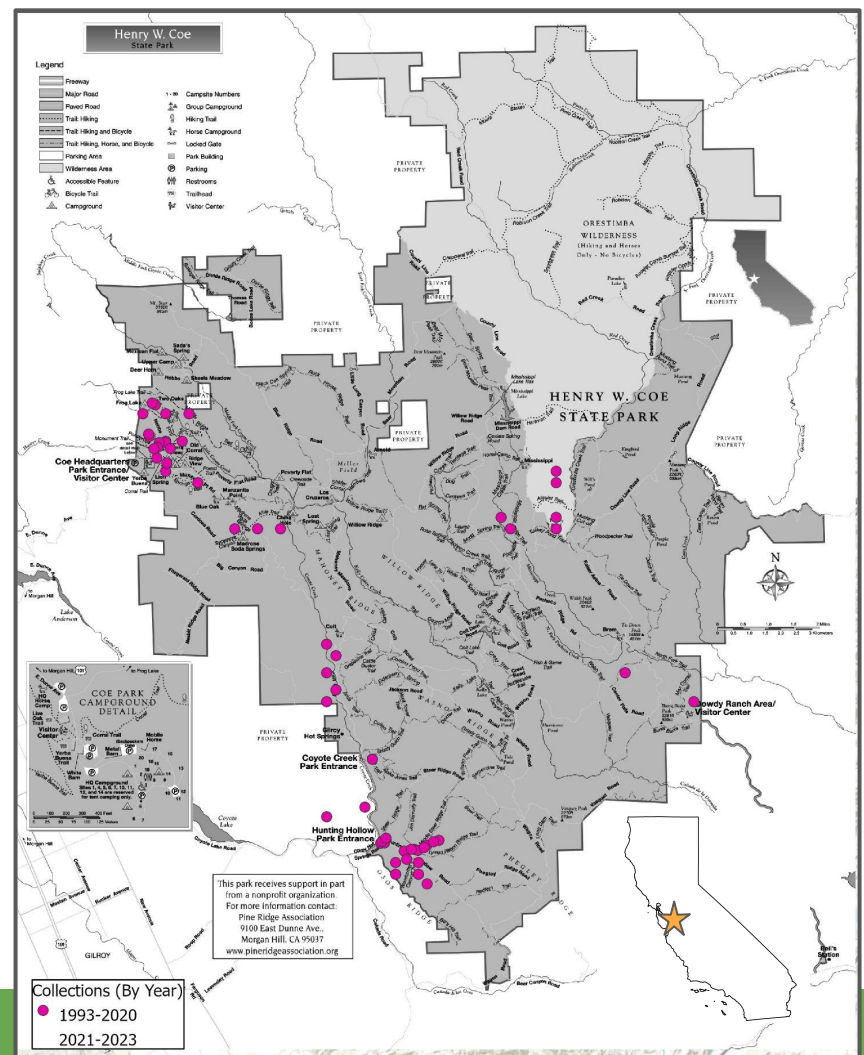
- Storage
  - California Academy of Sciences
- Bryophyte Portal
- Duplicates @UC Davis





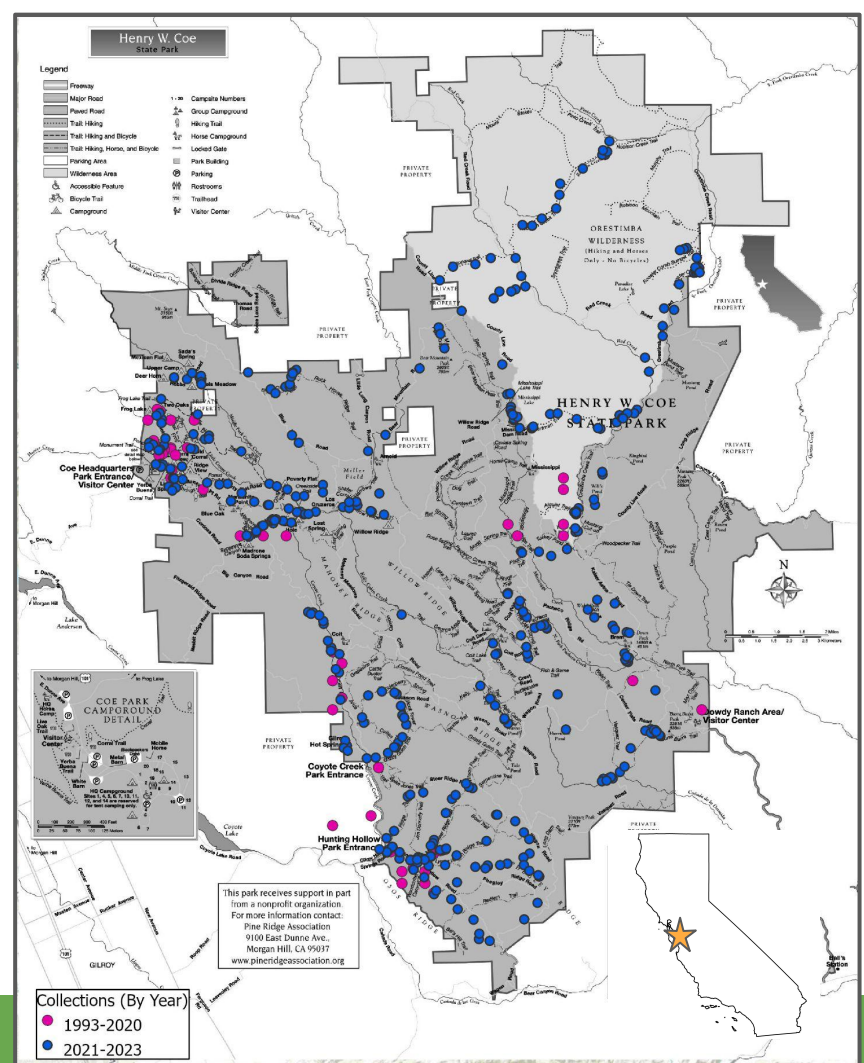
# Results

- Collections to date: **~1500**
- Species count: **177**
  - **22%** CA BryoFlora
- County Records: **91**
- **3** tentatively undescribed species



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# Mosses (153)

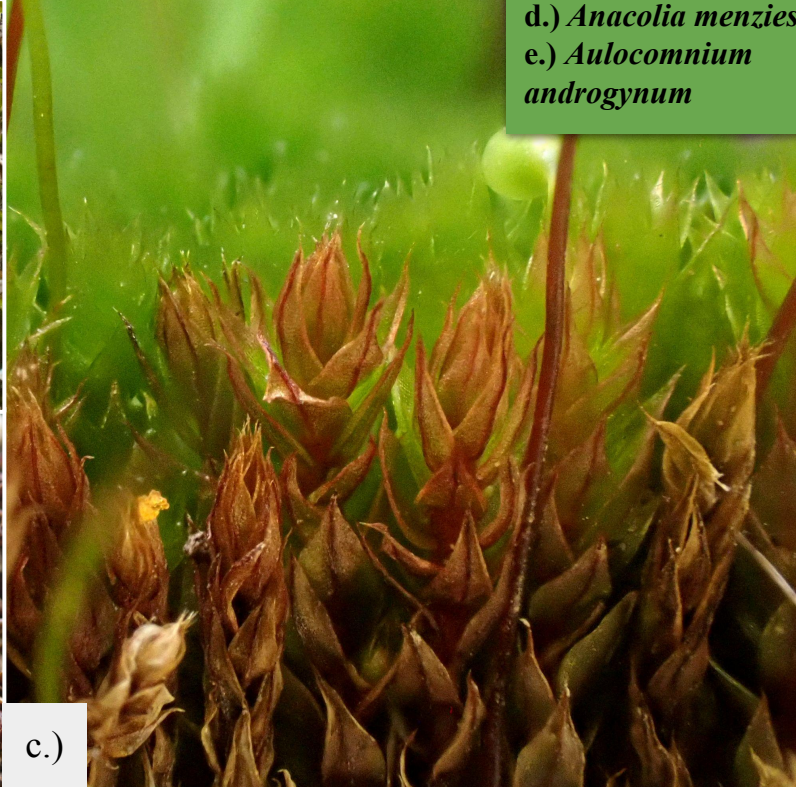
a. & b.) *Aloina aloides*  
var. *ambigua*  
c.) *Imbricbryum torenii*  
d.) *Anacolia menziesii*  
e.) *Aulacomnium*  
*androgynum*



a.)



b.)



c.)



d.)



e.)



# Liverworts & Hornworts (20, 4)



a.)



b.)



c.)

- a.) *Asterella californica*
- b.) *Sphaerocarpos texanus*
- c.) *Porella bolanderi*
- d.) *Lunularia cruciata*,  
invasive.
- e.) *Anthoceros* sp.
- f.) *Riccia sorocarpa*
- g.) *Ricciocarpos natans*,  
aquatic.
- h.) *Riccia nigrella*



d.)



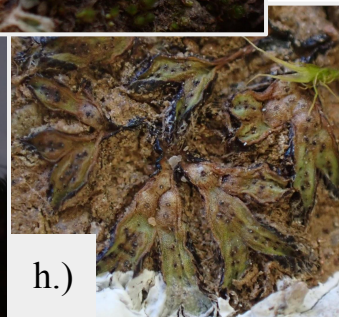
e.)



f.)



g.)



h.)

# Species Richness by Family

- Pottiaceae (45)
- Bryaceae (28)
- Brachytheciaceae (16)

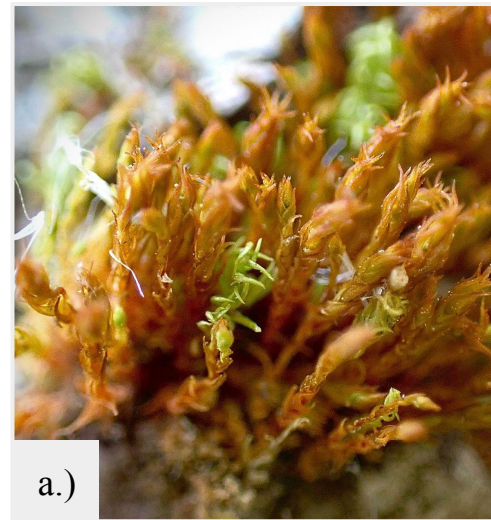


*Crumia latifolia* (Pottiaceae)

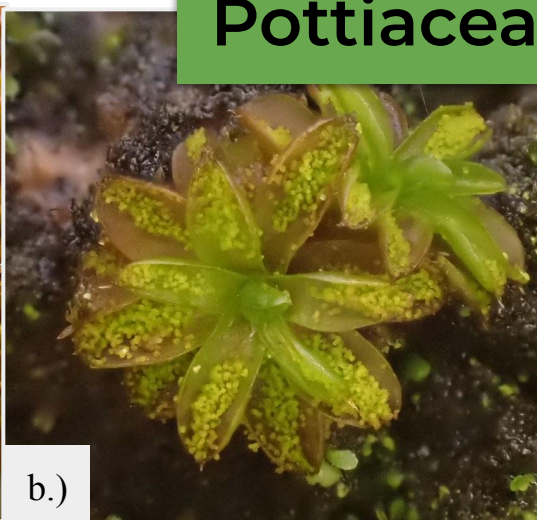


# Pottiaceae (45)

a.) *Didymodon norrisii* b.) *Syntrichia papillosa*  
c.) *Didymodon eckeliae* d.) *Tortula brevipes*  
e.) Cross section of *Syntrichia papillosissima*,  
showing pedicillate papillae and no hydroid.  
f.) *Gymnostomum calcareum* g.) *Hennediella stanfordensis*.



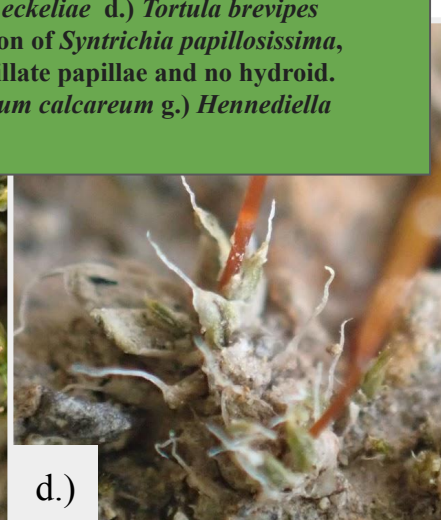
a.)



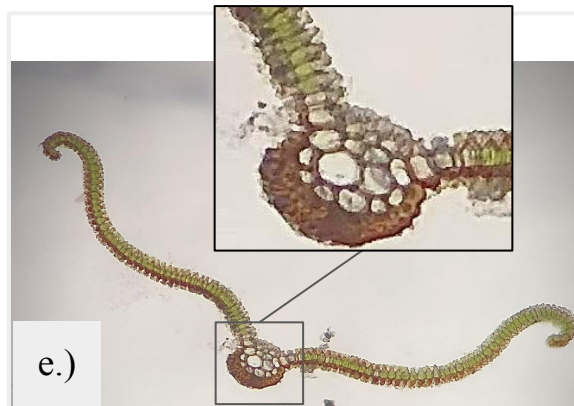
b.)



c.)



d.)



e.)



f.)



g.)



# Bryaceae (28)

- a.) *Rosulabryum canariense*
- b.) *Gemmabryum demaretianum*, introduced in CA
- c.) Axillary bulbils of *G. gemmilucens*
- d.) *Ptychostomum pallescens*
- e.) *Plagiobryoides* sp., undescribed taxa.
- f.) *Gemmabryum vinosum*.



a.)



b.)



c.)



d.)



e.)



f.)



# Brachytheciaceae (16)

- (a) *Brachythecium frigidum*
- (b) *Homalothecium* sp.
- (c) *Scleropodium tourettii*
- (d) *Brachytheciastrum velutinum*
- (e) *Scleropodium occidentale*
- (f) *Scleropodium californicum*



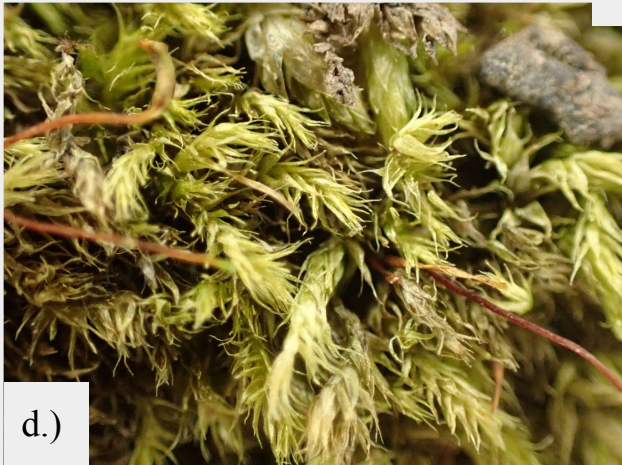
a.)



b.)



c.)



d.)

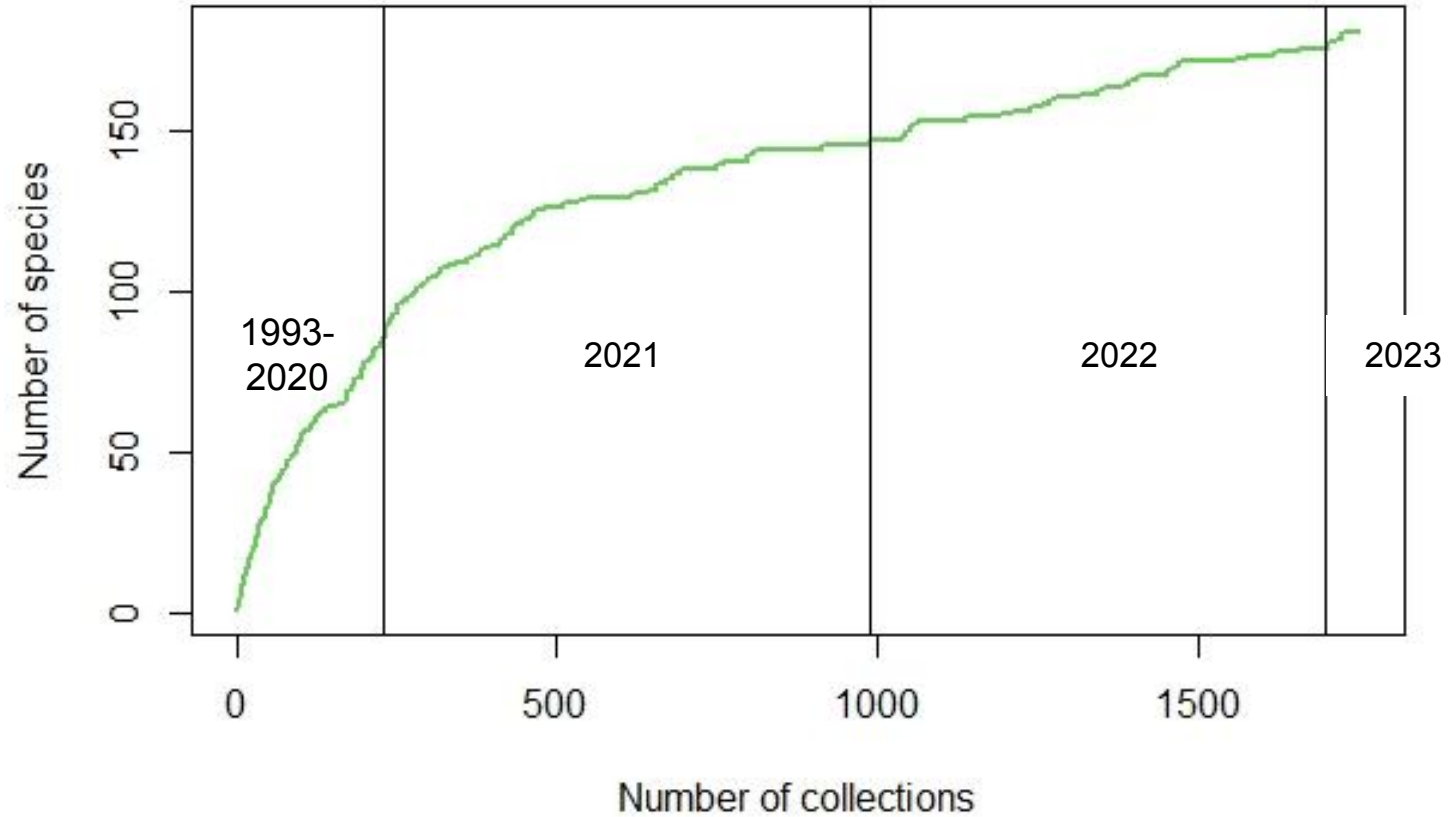


e.)



f.)

# Species Accumulation Curve





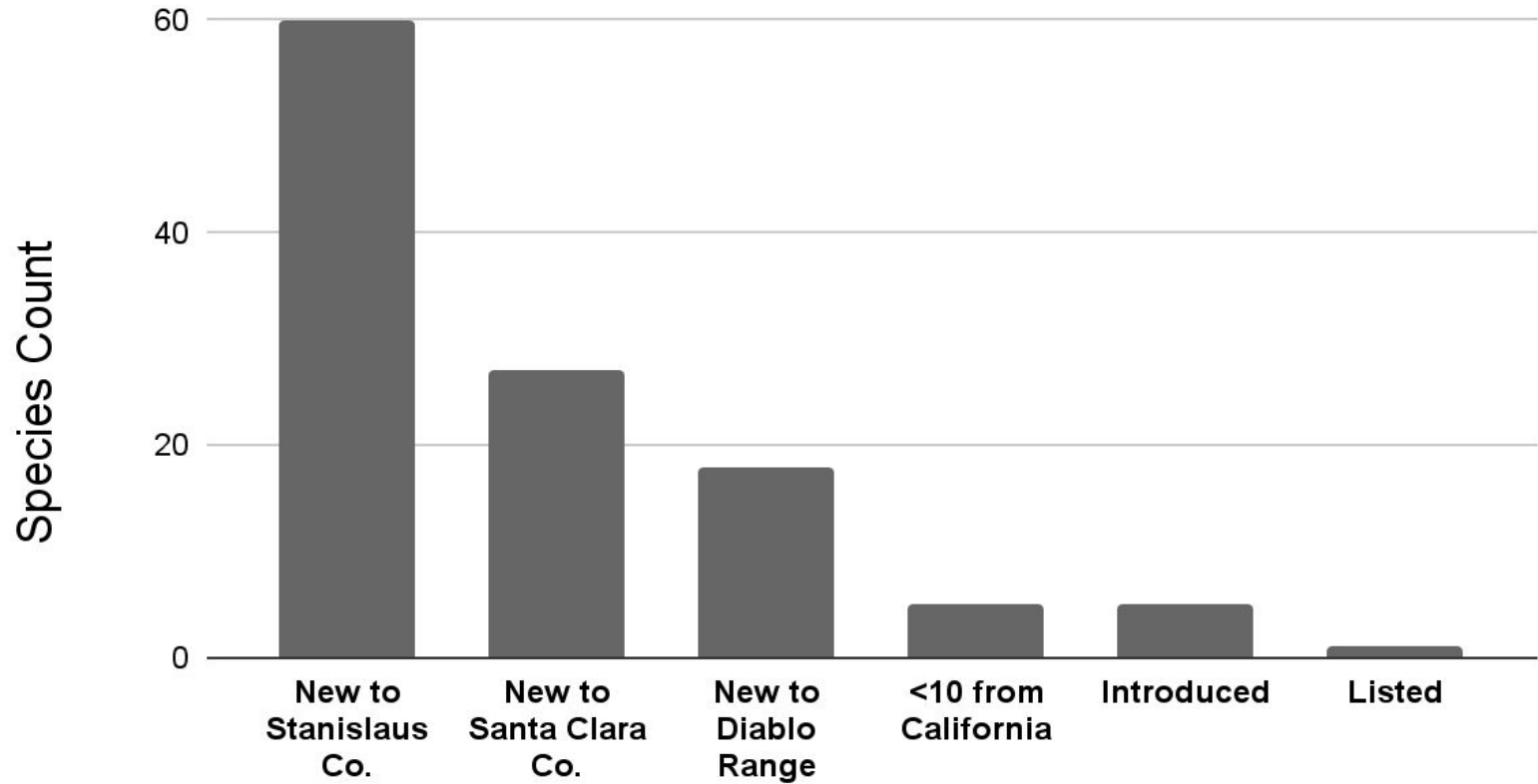
# Noteworthy Records

- *Plagiobryoides vinosula* (CNPS rank 4.2)
- *Aloina rigida* (New to California\*)
- Undescribed Species (Bryum family)
  - *Plagiobryoides* sp.
  - *Bryum* sp. #1
  - *Bryum* sp. #2

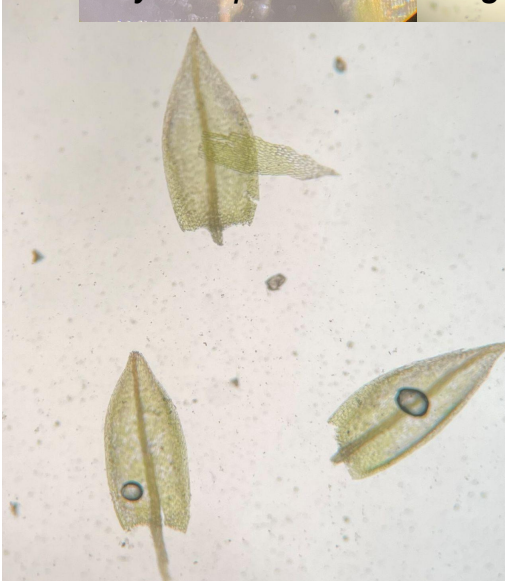
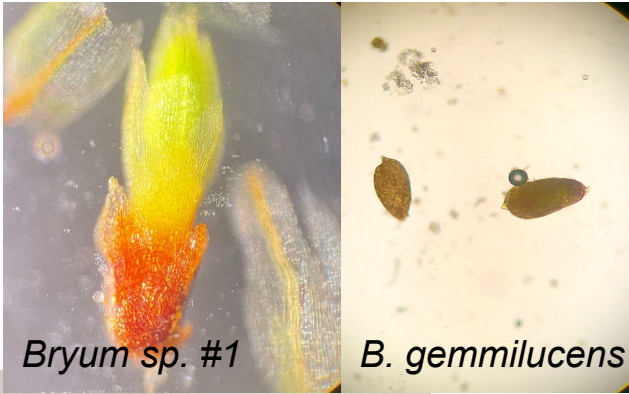


*Plagiobryoides* sp. in crevice of creek rock.

## Important Bryophyte Records



# Bryum sp. #1: dichotomum complex





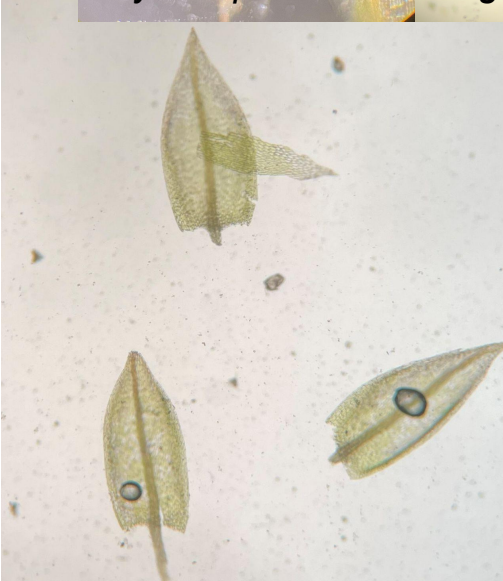
# Bryum sp. #1: dichotomum complex



*Bryum* sp. #1



*B. gemmilucens*



# Takeaways

- Understudied organism and understudied region
- New discoveries
- Most diverse region in the Diablo Range



# Acknowledgements

CNPS Bryophyte Chapter, Santa Clara Valley CNPS Chapter, the Northern California Botanical Society, Save Mount Diablo, and the San Jose State University Biological Sciences Department for funding.

My thesis committee Ben Carter, James Shevock, Fred Larabee.

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# Work Cited

CARTER, B. E., SHAW, B., & SHAW, A. J. (2016). Endemism in the Moss Flora of North America. *American Journal of Botany*, 103(4), 769–779. <https://doi.org/10.3732/ajb.1500484>

HUTTON, DAVID, JOHN C. GAME, KIAMARA F. LUDWIG, JAVIER JAUREGUI-LAZO, AND BENITO C. TAN. 2021. A Bryophyte Inventory Of Mount Diablo, Contra Costa County, California *Madroño*, 68(3), 163-190

KLING, M. M., MISHLER, B. D., THORNHILL, A. H., BALDWIN, B. G., AND ACKERLY, D. D. (2018). Facets of phylodiversity: Evolutionary diversification, divergence and survival as conservation targets. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 374 (1763), 20170397. <https://doi.org/10.1098/rstb.2017.0397>

SHARSMITH, HELEN K. 1945. Flora of the Mount Hamilton Range of California (A Taxonomic Study and Floristic Analysis of the Vascular Plants). *American Midland Naturalist* 34 (2): 289. <https://doi.org/10.2307/2421123>.