

# Seth J. Raynor

## Curriculum Vitae

### EDUCATION

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#### University of Colorado Boulder

Currently pursuing Ph.D. Ecology and Evolutionary Biology  
Advisor: Dr. Erin Manzitto-Tripp  
Committee: Dr. Patrick Kociolek, Dr. Stacey Smith, Dr. Ryan St Laurent, Dr. Toby Spribille  
Dissertation: *Increasing clarity and stability of the lichen genus Lecidea Ach. in North America through nomenclatural resolutions, phylogenetic analyses, and taxonomic innovations*

2024 May M.S. Museum & Field Studies (Collections & Field track)  
Advisor: Dr. Erin Manzitto-Tripp  
Committee: Dr. Patrick Kociolek & Dr. Steve Leavitt  
Thesis: *Lichens and Associated Fungi of the Indian Peaks Wilderness, Front Range Mountains, Colorado*

#### North Carolina State University

2019 May B.Sc. Environmental Science  
2019 May B.Sc. Plant Biology  
2019 May Applied Ecology Minor  
Advisor: Dr. William Hoffman  
Thesis: *Quantifying above ground carbon allocation and leaf display of woody resprouting plants after fire in the Brazilian Cerrado (Aguas de Santa Bárbara, São Paulo, Brazil)*

### PROFESSIONAL AFFILIATIONS

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2024 Aug. - Present **Teaching Assistant**, University of Colorado Boulder  
2023 Aug. - 2024 Aug. **Interim Cryptogam Collections Manager**, University of Colorado Boulder  
2022 May - Present **Graduate Researcher/Assistant**, University of Colorado Boulder  
2020 May - 2022 Apr. **Research Associate**, Edwin L. Bridges, Botanical and Ecological Consultant  
2019 Sep. - 2020 May **Research Intern**, Archbold Biological Station, Florida  
2019 Aug. - 2016 Aug. **Undergraduate Researcher**, North Carolina State University

### PUBLICATIONS

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16. Schmidt-Knapik R.J., Ackerfield J., Gostel M., Heberling J.M., King M.R., Krosnick S., Graves S.M., **Raynor S.J.**, Thiers B., Watts J.L., Weeks A., Manzitto-Tripp E.A., and Struwe L. (in review) 100 uses for an herbarium, well actually 143: reassessing the true value of herbaria. *Proceedings of the National Academy of Sciences*. *In review*.
15. Hollinger, J.P., Manzitto-Tripp, E.A., Boggess, L.M., & **Raynor, S.J.** (in review) *Rhizoplaca soledica* (Lecanoromycetes), another rare lichen from the Anakeesta Formation in Great Smoky Mountains National Park. *In review*.
14. Carter, P., Groff, O.D., Kang, H., ... **Raynor, S.J.**, Kocourková, J., Knudsen, K., & Leavitt, S.D. (in review) Disturbance, clonality, and ancient refugia shape population structure in the federally endangered Perforate Reindeer Lichen (*Cladonia perforata*). *In review*.
13. Manzitto-Tripp, E.A., Watts, J.L., **Raynor, S.J.** & McNeill, J. (in review) Interhemispheric Lichen Disjunctions Revealed by Inventory of the Southern Rocky Mountains: Three Species New to North America. *In review* at *The Lichenologist*.

12. Kaminsky, L., **Raynor, S.J.**, Hodges, M., Rosentreter, R., DeBolt, A., & Manzitto-Tripp, E. (in press). Lichens of the North American Coastal Plain. In E. L. Bridges & T. Pullaiah (Eds.), Biodiversity hotspot of the North American Coastal Plain. *Apple Academic Press*.
11. Loeffelholz, J., **Raynor, S.J.**, Morris, E. & Manzitto-Tripp, E.A. (2026). Tardigrades of North America: more new records of occurrences for species of green tardigrades (Heterotardigrada: Echiniscoidea: Echiniscidae: Viridiscus). *Natural History Sciences* 13(1).
10. Manzitto-Tripp, E.A., Watts, J.L., & **Raynor, S.J.** (2025). New and noteworthy reports of lichens and allied fungi to Colorado (USA), including descriptions of two species new to science. *Journal of the Botanical Research Institute of Texas*, 19(4), 389-418.
9. **Raynor S.J.**, J.L Watts & E.A Manzitto-Tripp. (2025) *Polycauliona pancakeana*, a new lichen species from the southern Rocky Mountains. *The Bryologist*, 128(3), 556-566.
8. Watts, J.L., **Raynor, S.J.** & Manzitto-Tripp, E.A. (2025) Character evolution in Heterodermia s.l. (Physciaceae; Caliciales) and two new species from the southern Rocky Mountains, USA. *Phytotaxa*, 698(2), 61-81.
7. Loeffelholz, J., Raynor S.J., Sanchez-Moreno, S., Momeni, S., & Manzitto-Tripp, E.A. (2025) Tardigrada and Nematoda associations with lichen and bryophyte habitats from Southwest Wisconsin state parks, universities, and private land. *Biogeographia* 40(1).
6. **Raynor S.J.**, Watts J.L., & Manzitto-Tripp E.A. (2024) *Sarea cirrhendocarpa*, a fungus species new to science from the southern Rocky Mountains. *Phytotaxa*, 671(1), 87-97.
5. Watts, J.L., **Raynor, S.J.**, Li, Y., Meier, R., Cook, C., Casini, G., ... & Manzitto-Tripp, E.A. (2024). *Lecanora exspersa*: A new lichen record for North America and a key to soresiate *Lecanora* (Lecanoraceae) in western North America. *The Bryologist*, 127(4), 427-440.
4. Orzell SL, Bitomský M, Bridges EL, Budach, B, Klimešová J, Martínková J, Reed, ZE, & **Raynor S.J.** (2024). Florida's fiery subtropical grasslands: growth forms, belowground organs, and post-fire recovery strategies. *Folia Geobotanica*.
3. **Raynor S.J.**, Kesler J., Allen J.R., & Manzitto-Tripp E.A. 2023. New and Noteworthy Reports on Colorado Lichens and Lichen Allies, 2: *Biatoropsis hirtae* and *B. minuta*. *Western North American Naturalist* 83: 454–461.
2. Manzitto-Tripp E.A., **Raynor S.J.**, and Anderson Stewart C.R. 2023. Diversity of Lichens in Northern Alabama Yields Evidence of an Exceptionally Diverse Biota. *Southeastern Naturalist* 22: 170-191.
1. **Raynor S.J.** 2022. A Preliminary Lichen Species Checklist for Archbold Biological Station. Archbold Biological Station Newsletter and Website.

#### PUBLICATIONS IN PREP

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7. **Raynor S.J.** & Manzitto-Tripp E.A. (in prep) Lichens and Associated Fungi of the Indian Peaks Wilderness. *In review at Systematic Botany*.
6. **Raynor S.J.**, Bailey S., Watts J.L., & Manzitto-Tripp E.A. (in prep) Guide to the Campus Lichens of CU Boulder. Museum of Natural History Leaflet Series.
5. Raynor S.J., Watts, J.L., Sclater, V., Ward, S.G., Koontz, S., Manzitto-Tripp, E.A. & Menges, E. (in prep). Time Since Fire drives *Cladonia* presence, abundance and diversity, but not community composition in Florida Sugar Sand Scrub Habitat. *Frontiers in Plant Science*. In prep.

4. Blair, N., Raynor, S.J., Watts, J.L. & Manzitto-Tripp, E.A., (in prep) Establishment of a long-term post-burn plot for study of lichen succession in the Front Range Foothills (Colorado, USA) and reports of two lichenicolous fungi new to the region. In prep.
3. Loeffelholz J., Raynor S.J., Boothby T., & Manzitto-Tripp E.A. (in prep) Rocky Mountain Way: Tardigrada and lichen associations in Arapaho & Roosevelt National Forests and Curt Gowdy State Park. In prep.
2. Manzitto-Tripp, E.A. & Raynor, S.J., (in review) Asclepias. In M. Sharples (Eds.), Flora of Nevada. In review.
1. Raynor, S.J., (in review) Eleocharis. In M. Sharples (Eds.), Flora of Nevada. In review.

## **PUBLISHED ACKNOWLEDGMENTS**

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11. Graves, S., & Manzitto-Tripp, E. A. (2026). Changes in temperature and precipitation drive shifts in mean flowering timing of tropical plants from 1960 to 2021 across seven locations. *Biology Open*, 15(3), bio062467.
10. Graves, S., Kamauskas, K. B., & Tripp, E. M. (2026). Future projections of climate-driven tropical flowering phenology. *Environmental Research Communications*, 8(5), 051022.
9. Graves, S. M. 2026. Assessing Tropical Flowering Phenology (Doctoral dissertation, University of Colorado at Boulder).
8. Manzitto-Tripp, E. A., & Watts, J. L. 2025. Ochrolechia raynori, a New Lichen Species from the Southern Rocky Mountains (Colorado, USA) and Key to Asexually Reproducing Ochrolechia in Western North America. *Wild*, 2(3), 28.
7. Graves, S., Spitz, G., & Manzitto-Tripp, E. 2024. Observing Shifts In Global Tropical Flowering Phenology.
6. Glew, K. 2023. 2023 ABLs Vagrant Lichens Field Trip Report: Vagrant Lichens and Their Unique Arid Habitats. *Evansia*, 40(3), 110-115.
5. Pfeffer, B. 2023. Comparative genomics of the putatively asexual powder lichens Lepraria and other Lecanoromycete lichens.
4. Woo, B. (2021). A new species of pygmy mole cricket (Orthoptera: Tridactylidae) from the Lake Wales ridge of Florida and new records of Ellipes eisneri from the northern Brooksville ridge. *Journal of Orthoptera Research*, 30(2), 131-143.
3. Flake S.W., Abreu R.C.R., Durigan G., & Hoffmann W.A. 2021. Savannas are not old fields: Functional trajectories of forest expansion in a fire-suppressed Brazilian savanna are driven by habitat generalists, *Functional Ecology*.
2. Hoffmann, W. A., Flake, S. W., Abreu, R. C., Pilon, N. A., Rossatto, D. R., & Durigan, G. (2019). Rare frost events reinforce tropical savanna–forest boundaries. *Journal of Ecology*, 107(1), 468-477.
1. Hartley, S.M. 2019. Sparrow Swap: Testing Management Strategies for House Sparrows and Exploring the Use of Their Eggshells for Monitoring Heavy Metal Pollution. North Carolina State University. ProQuest Dissertations Publishing.

## **POPULAR WRITING**

4. Brown J. & Raynor, S.J. 2021. The Path to Enlichenment. Archbold Biological Station Newsletter.
3. Ward S.G. & Raynor S.J. 2020. Live, Love, Lichen. Archbold Biological Station Newsletter.

2. **Raynor, S.J.** 2016. Service Raleigh. North Carolina State University College of Natural Resources News.

1. **Raynor, S.J.** 2016. The Life of a Freshman Environmental Sciences Student. North Carolina State University College of Natural Resources News.

## HONORS, AWARDS, AND GRANTS

|         |                                                                              |                          |
|---------|------------------------------------------------------------------------------|--------------------------|
| 2026    | ABLS Tuckerman and Hale Award in Lichenology                                 | (\$1000)                 |
| 2026    | ABLS Conference Travel Grant                                                 | (\$ 700)                 |
| 2026    | EBIO Graduate Student Research Grant                                         | (\$2000)                 |
| 2026    | Beverley Sears                                                               | (\$2000)                 |
| 2025    | EBIO Graduate Student Research Grant                                         | (\$2000)                 |
| 2025    | ASPT Conference Travel Grant                                                 | (\$ 400)                 |
| 2024    | CUB MFS Graduate Student Research Grant                                      | (\$1200)                 |
| 2024    | California Lichen Society Educational Grant                                  | (\$2000)                 |
| 2023    | International Association of Plant Taxonomists Biodiversity Challenge winner | (\$4000)                 |
| 2023    | CUB MFS Graduate Student Research Grant                                      | (\$1200)                 |
| 2023    | Indian Peaks Wilderness Alliance Paddon-Gellhorn Grant                       | (\$2000)                 |
| 2023    | Botanical Society of America Graduate Student Research Grant                 | (\$1500)                 |
| 2023    | American Society of Plant Taxonomists Graduate Student Research Grant        | (\$1500)                 |
| 2023    | Colorado Native Plant Society John Marr Grant                                | (\$1000)                 |
| 2023    | Boulder County Nature Association Grant in Aid of Research                   | (\$4000)                 |
| 2022    | CUB MFS Collie Fund                                                          | (\$750)                  |
| 2022    | ASPT Botany '22 Travel Grant                                                 | (\$400)                  |
| 2021    | IAL9 Travel Award                                                            | (\$300)                  |
| 2019    | Graduated Summa Cum laude                                                    | (Both B.S. Degrees)      |
| 2015-19 | Dean's List Award                                                            | (All Semesters Attended) |
| 2015-19 | NCSU Pack Promise Scholarship                                                | (All Semesters Attended) |
| 2015-19 | Federal Pell Grant                                                           | (All Semesters Attended) |

## PRESENTATIONS

11. Elevation drives chemistry and speciation within the *Dimelaena oreina* complex in the southern Rocky Mountains. Botany 2026.
10. Lichens of Colorado. St. Cloud State University invited lecture (virtual). 2025.
9. Florida Scrub Fire-Lichen Interactions. Botany 2025.
8. Lichens and Associate Fungi of the Indian Peaks Wilderness, Front Range Mountains, Colorado. (Grand Rapids, MI). Botany 2024.
7. Creating Open-source Keys in LUCID4 to Improve Lichen Research and Conservation in Colorado, USA. (Grand Rapids, MI). Botany 2024.
6. Lichens of the Indian Peaks Wilderness. Indian Peaks Wilderness Alliance Research Grant Update. (Boulder, Colorado) 2023.
5. Lichens of Colorado. Mountain Research Station Seminar Series. (Nederland, Colorado) 2022.
4. A Synopsis of Lichenology Research in Colorado and Plans for Future Exploration. (Anchorage, Alaska) Botany 2022.
3. Lichens of the Lake Whales Ridge. Archbold Biological Station. (online) 2020.
2. Lichens of the Lake Whales Ridge. Florida Native Plant Society Conference. (Jacksonville, Florida) 2020.
1. Cost of Leaf Display in Tropical Savanna Plants. NCSU Applied Ecology EOY Meeting. (Raleigh, North Carolina) 2019.

## COLLECTION AND FIELD WORK PERMITS RECEIVED AND WORKED UNDER

|              |                                                                                    |
|--------------|------------------------------------------------------------------------------------|
| 2024-present | Statewide National Forest lands permit, CO, USA (Lichen Collection)                |
| 2024-present | Statewide Colorado BLM permit, CO, USA (Lichen Collection)                         |
| 2023 Sep.    | Kananaskis Conservation Area, AB, Canada (Lichen Collection)                       |
| 2022-2023    | Arapahoe and Roosevelt National Forest, CO, USA (Lichen Collection)                |
| 2022 Mar.    | De Soto National Forest and surrounding natural areas, MS, USA (Lichen Collection) |

2020-22 Avon Park Air Force Range, FL, USA (Lichen Collection, Field Work)  
 2020-21 Lake Wales Ridge State Forest, FL, USA (Lichen Collection)  
 2019 Sep. Archbold Biological Station, FL, USA (Lichen Collection, Field Work)  
 2017 May Santa Barbara Ecological Station, SP, Brazil (Plant Collection and Field Work)

## COLLECTIONS MADE

|           |                     |                  |
|-----------|---------------------|------------------|
| 2022-2026 | Colorado, USA       | 5182 collections |
| 2024-2025 | California, USA     | 32 collections   |
| 2025 July | West Virginia, USA  | 5 Collections    |
| 2025 Oct. | Virginia, USA       | 9 collections    |
| 2024 July | Maine, USA          | 5 collections    |
| 2024 June | Michigan, USA       | 6 collections    |
| 2023 Sep. | Alberta, Canada     | 198 collections  |
| 2023 July | Idaho, USA          | 92 collections   |
| 2022 July | Alaska, USA         | 119 collections  |
| 2022 Mar. | Mississippi, USA    | 176 collections  |
| 2022 Feb. | North Carolina, USA | 3 collections    |
| 2019-2022 | Florida, USA        | 638 collections  |
| 2017      | São Paulo, Brazil   | 320 collections  |

## WORK EXPERIENCE

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|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2024 Aug - Present  | <b>Teaching Assistant for CUB EBIO Department</b> <ul style="list-style-type: none"> <li>❖ Effectively disseminated General Biology Lab coursework to 3 classes (54 students)</li> <li>❖ Planning lectures, writing quizzes, grading assignments</li> <li>❖ Collaborating with other teaching assistants to create a course that is accessible, uniform, and fair for all students taking it.</li> <li>❖ Assisting in the design of a new Introduction to Botany course with supervisor Stacey Smith.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 2022 May - Present  | <b>Graduate Researcher/Assistant at CUB Museum of Natural History &amp; Herbarium</b> <ul style="list-style-type: none"> <li>❖ Collecting and processing my own lichen specimens from throughout Colorado and the United States under Dr. Erin Manzitto-Tripp (<i>listed under references</i>).</li> <li>❖ Assisting in herbarium and collection maintenance and upkeep including mounting, curating, depositing, and shipping specimens.</li> <li>❖ Annotating lichen specimens collected by other researchers past and present.</li> <li>❖ Supervising and assisting undergraduate researchers and volunteers.</li> <li>❖ In Collaboration with the Programs team, I created a field guide and INaturalist project for the lichens of campus. This will also be the Museum's first virtual tour in collaboration with the new director Dr. Nancy Stevens.</li> <li>❖ Assisting the Exhibits team with Museum and exhibit creation and maintenance. Tasks included carpentry, painting, installation, deinstallation, and tech support in the main building and collections building at the Museum.</li> </ul> |
| 2026 Jan – 2026 May | <b>Greenhouse Inventory Graduate Research Assistant CU Boulder</b> <ul style="list-style-type: none"> <li>❖ Working in collaboration with greenhouse director Malinda Barberio to document and inventory each plant contained within the three EBIO Greenhouses</li> <li>❖ Confirming species identification, updating taxonomic nomenclature, researching native ranges, and checking for uses of each plant in teaching and by the people living with them</li> <li>❖ Assisting in curriculum development that centers around using the greenhouse</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

- 2023 Aug – 2024 Aug     **Interim Cryptogam Collections Manager at COLO Herbarium**
- ❖ Leading all annotating, processing, mounting, digitizing, and accessioning activities for the incoming cryptogam collections during a time of thousands of new lichens samples entering the collection.
  - ❖ Training, mentorship, and supervision of undergraduate students in herbarium practices.
  - ❖ Assisting in tours of herbarium visitors including classes, perspective students, retired scientists, artists, and many other curious visitors.
- 2020 May - 2022 Apr.     **Independent Botanical and Ecological Contractor**
- ❖ Field studies conducted primarily at Avon Park Air Force Range (APAFR) under Edwin Bridges (*listed under references*) and Steve Orzell (*listed under references*).
  - ❖ Post-burn vegetation surveys, identifying and measuring individuals of every species found within a sampling area, rare plant searches, and orchid demography/phenology projects at APAFR.
  - ❖ Determining lichen diversity and creating identification key at APAFR
  - ❖ Conducted Ecological consulting and research across central Florida.
- 2019 Sept. - 2020 May     **Post-Baccalaureate Intern at Archbold Biological Station**
- ❖ Field and laboratory studies conducted in the Plant Ecology Program under Dr. Eric Menges (*listed under references*).
  - ❖ Demographic and phenological plant monitoring, data entry and validation, and curation of novel personally collected herbarium specimens for the ABS Lichen Collections.
  - ❖ Independent research focusing on how the fire diversity and history at ABS has affected the current state of *Cladonia* abundance, ground cover, and richness in scrub and scrubby flatwoods.
- 2019 Oct. - 2020 Mar.     **Volunteer for Edwin Bridges in central and south Florida**
- ❖ Demographic and phenological monitoring of plants at Avon Park Air Force Range and documenting the flora of natural areas in southwest Florida.
- 2017 Aug. - 2019 Sept.     **Lab Researcher and Assistant at NCSU**
- ❖ Research conducted under Dr. William Hoffmann at North Carolina State University.
  - ❖ Analyzed and evaluated novel data (personally collected) during field studies abroad in Brazil to practice manuscript writing and preparation in conjunction with developing scientific collaboration techniques amongst peers.
  - ❖ Development and execution on experimental design developed to record the transpiration rate in savanna plants.
- 2017 June - 2017 Aug.     **Undergraduate Researcher and Field Technician for NCSU**
- ❖ Field season conducted in Cerrado of Brazil for a REU doing research on tropical plant ecology and fire ecology at the Santa Barbara Ecological Station.
  - ❖ Sampled and collected data on woody vegetation within large plots to determine how forest encroachment is changing the composition of the flora in the surrounding habitat.
  - ❖ Quantified the cost of leaf display in resprouting plants by sampling resprouts of sixty-four plant species and comparing their above ground carbon allocation one year after fire.
  - ❖ Quantified the flammability of twenty plant species to determine what composition of leaf litter is best for an effective fire.

- 2016 Sept. - 2017 May     **Lab Assistant in the NCSU Herbarium**
- ❖ Research conducted under Dr. Alexander Krings on the *Flora of North Carolina Project*.
  - ❖ Curated herbarium specimens from localities spanning across the entirety of North Carolina and created separate databases for multiple collectors based on specimens within the herbarium.
- 2016 Aug. - 2016 Dec.     **Intern at The North Carolina Museum of Natural Sciences in the Biodiversity Lab**
- ❖ Research conducted under Dr. Roland Kays, Dr. Caren Cooper, and Mariah Patton on the *Sparrow Swap Project*.
  - ❖ Hypothetical approach to limiting the population of house sparrows [*Passer domesticus* (Linnaeus, 1758)] within the US.
  - ❖ Using painted replica house sparrow eggs to surrogate fertilized eggs taken from active nests, extracted embryos were analyzed for a subset of selected toxins qualified to determine the air quality across the country.
  - ❖ Replicas fooled participating field sparrow subjects, which did not retaliate, leading to increased native songbird populations as opposed to the nonnative house sparrow.
- 2015 Aug. - 2016 May     **Office and Grading Assistant for the Environmental Science Program at NCSU**
- ❖ Work conducted under Dr. William Winner and established NCSU faculty in the Environmental Science Program at North Carolina University
  - ❖ Managed social media platforms, office duties, and wrote public-outreach level articles for the environmental program targeted at the general public for educational purposes.
  - ❖ Graded papers and assignments for 200-level and 300-level courses.

#### TEACHING EXPERIENCE

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|-----------------------|----------------------------------------------------------|
| 2026 Aug – Present    | Phylogenetics and Comparative Biology lab (Stacey Smith) |
| 2025 Aug – 2025 Dec   | Plants and Society lab (Stacey Smith)                    |
| 2025 June – 2025 July | General Biology 2 lab (John Basey)                       |
| 2025 Jan – 2025 May   | General Biology 2 lab (John Basey)                       |
| 2024 Aug – 2024 Dec   | General Biology 1 lab (John Basey)                       |

#### UNIVERSITY/DEPARTMENTAL/SOCIETAL SERVICE & COMMUNITY OUTREACH

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|                  |                                                                                                   |
|------------------|---------------------------------------------------------------------------------------------------|
| 2026, June 9     | UCAR Center for Science Education Campus Lichen Tour (Boulder, CO)                                |
| 2026 spring      | CUB EBIO Botany Curriculum Committee Graduate Student Representative (Boulder, CO)                |
| 2025, Feb. 25    | “Girls at Museums Exploring Science” S teacher and guide (Boulder, CO)                            |
| 2025, Feb. 5     | “Girls at Museums Exploring Science” teaching assistant (Boulder, CO)                             |
| 2024, June 29    | City of Boulder NCAR OSMP lichen walk (Boulder, CO)                                               |
| 2024, Mar. 12    | Training undergraduate students in ITS Sange Sequencing (Boulder, CO)                             |
| 2024, Feb 15     | Herbarium Tour for museum students at COLO (Boulder, CO)                                          |
| 2023, Nov.       | Training undergraduate students in Thin Layer Chromatography methods at (Boulder, CO)             |
| 2023, Sep. 27    | Herbarium tour for incoming Museum and Field Studies graduate cohort at (Boulder, CO)             |
| 2023, Sep. 7-10  | IAL Western Canadian Lichen Foray: collecting and identifying (Kananaskis, AB, Canada)            |
| 2023, Aug. 31    | Herbarium Tour for incoming Ecology and Evolutionary Biology graduate cohort at COLO              |
| 2023, Aug. 29    | Herbarium Tour for “Women in Science” students from Colorado School of Mines at COLO              |
| 2022, Sep. 21    | Herbarium tour for incoming Museum and Field Studies graduate cohort at COLO                      |
| 2022, July 23-28 | Botany 2022 conference assistant for sessions and award banquets. (Anchorage, Alaska)             |
| 2022, June 2     | Assisted and taught at a lichen seminar and nature walk at Denver Botanical Garden (Denver, CO)   |
| 2021, Mar 3, 26  | Assisted education hikes focusing on lichens, plants, and fire ecology at LWRSF (Avon Park, FL)   |
| 2020, Jan. 11,17 | Assisted and led education hikes focusing on lichens, plants, and fire ecology at ABS (Venus, FL) |
| 2019, Feb. 22    | Service Raleigh, NCSU Environmental Science Program Creek Clean-up (Raleigh, NC)                  |
| 2018, Feb. 21    | Service Raleigh, NCSU Environmental Science Program Creek Clean-up (Raleigh, NC)                  |

2017, Apr. 21 Earth Day Environmental Outreach Event at NCSU (Raleigh, NC)  
 2017, Feb. 11 Service Raleigh, NCSU Environmental Science Program Creek Clean-up (Raleigh, NC)  
 2016, Sept. 27 Packapalooza Outreach Event, Wolfpack Environmental Student Association (Raleigh, NC)  
 2016, April 13 Earth Day Environmental Outreach Event at NCSU (Raleigh, NC)  
 2016, Feb. 23 Service Raleigh, NCSU Environmental Science Program Creek Clean-up (Raleigh, NC)

#### CONFERENCES AND MEETINGS

|           |                                                         |                                  |
|-----------|---------------------------------------------------------|----------------------------------|
| 2026 Aug. | Botany 2026: Biodiversity at the Boundaries             | (Tucson, AZ)                     |
| 2025 July | Botany 2025: Botany without Barriers                    | (Palm Springs, CA)               |
| 2024 June | Botany 2024: Resilience in a Changing World             | (Grand Rapids, MI)               |
| 2023 July | Botany 2023: One World                                  | (Boise, ID, USA)                 |
| 2022 July | Botany 2022: Plants at the Extreme                      | (Anchorage, AK, USA)             |
| 2021 Aug. | International Association for Lichenology 9th symposium | (online)                         |
| 2021 Apr. | Florida Native Plant Society Meeting                    | (Orlando, FL, USA)               |
| 2020 May  | Archbold Biological Station Internship Presentation     | (Venus, FL, USA)                 |
| 2020 Apr. | Florida Native Plant Society Conference                 | (Jacksonville, Florida)          |
| 2019 Dec. | Archbold Biological Station Research Symposium          | (Venus, FL, USA)                 |
| 2019 May  | NCSU Applied Ecology Meeting                            | (Raleigh, NC, USA)               |
| 2018 Nov. | NCSU Undergraduate Research Symposium                   | (Raleigh, NC, USA)               |
| 2017 July | Brazil Interlab Research Meeting                        | (Águas de Santa Bárbara, SP, BR) |

#### PROFESSIONAL SOCIETIES

|                     |                                                 |
|---------------------|-------------------------------------------------|
| 2023 Oct. - Present | California Lichen Society                       |
| 2023 Mar. - Present | International Association of Plant Taxonomists  |
| 2023 Mar. - Present | Botanical Society of America                    |
| 2023 Feb. - Present | American Society of Plant Taxonomists           |
| 2023 Feb. - Present | Colorado Native Plant Society                   |
| 2022 July - Present | American Bryological and Lichenological Society |
| 2022 May - Present  | American Society of Plant Taxonomists           |
| 2021 Apr. - Present | International Association of Lichenologists     |

#### RELEVANT SKILLS

- ❖ Species-level plant and lichen identification
- ❖ Plant demography and phenology sampling
- ❖ Post-fire vegetation and rare plant surveys
- ❖ Chemical spot testing and Thin Layer Chromatography for lichen chemical identification
- ❖ DNA extraction, PCR, and ITS Sanger Sequencing
- ❖ Phylogenetic methods and analysis using R, Mesquite, PAUP\*, and FigTree
- ❖ Ecological field techniques
- ❖ Collecting techniques for quality lichen and plant specimens
- ❖ Experience with specimen preparation, storage, and shipping
- ❖ Navigation and orientation techniques with compasses and GPS devices
- ❖ GIS querying, analysis, and map making
- ❖ Statistical analysis and coding in R
- ❖ Advanced field and back country skills

## REFERENCES

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Erin Manzitto-Tripp, Ph.D.  
Associate Professor of EBIO  
Curator of Botany at COLO Herbarium  
University of Colorado Museum Herbarium  
350 UCB Clare Small Building, Basement  
Boulder, CO 80309-0350  
Phone: 303-492-2462  
Email: [Erin.ManzittoTripp@colorado.edu](mailto:Erin.ManzittoTripp@colorado.edu)

Patrick Kociolek, Ph.D.  
Emeritus Professor & Director of the Natural History  
Museum CUB  
Phone: 303-492-8464  
Email: [patrick.kociolek@colorado.edu](mailto:patrick.kociolek@colorado.edu)

Stacey Smith, Ph.D.  
Associate Professor of EBIO  
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