



**UNIVERSITY OF WYOMING
ROCKY MOUNTAIN HERBARIUM (RM)**



2025

STUDENT HIGHLIGHTS & ANNUAL UPDATE



Our Mission

The Rocky Mountain Herbarium champions the stewardship of plant diversity, inspires and prepares the next generation of botanists, and advances collections-based botanical research, education, and outreach at the University of Wyoming through innovative thinking, transformative educational experiences, and community engagement.



2025 Herbarium Foray participants (and their full presses!) celebrating a successful weekend of collecting in the Kootenai National Forest in NW Montana.

a note from the Director

October 22, 2025

The Rocky Mountain Herbarium has had an extraordinary year of growth and momentum. Thanks to our dedicated staff, students, and partners, we continue to make remarkable progress on our **National Science Foundation-funded expansion project**, which has increased our collections capacity and accelerated digitization efforts. As of October 2025, our holdings have grown to more than **1.16 million plant and fungal specimens**, with nearly a million digitized records now accessible to researchers and the public worldwide.

Yet, the true energy of the Herbarium comes from our **students**. Their research, curiosity, and commitment to fieldwork and collections-based science continue to shape the future of botany in the Rocky Mountain region. This year, our graduate students led major floristic inventories in Wyoming and Montana, presented their research at the national *Botany 2025* conference, and trained a growing team of undergraduate field assistants who are gaining their first hands-on experience as botanists.

None of this would be possible without **donor support**. Gifts to the **Rocky Mountain Herbarium Excellence Fund** directly sustain student fieldwork, research stipends, and professional development opportunities—helping our students turn passion into purpose. We are also proud to celebrate the growth of the **Aven Nelson Fellowship Fund**, established through a generous gift that supported our first fellow, Marguerite Trost, whose graduate work exemplifies the Herbarium's mission to connect people, plants, and place.

As we celebrate these achievements during **UW Giving Day** this week, I want to thank everyone who has contributed their time, talent, and resources to the Herbarium this year. Your support not only strengthens our collections but also ensures that the next generation of botanists has the tools, mentorship, and inspiration to continue this vital work.

With gratitude,



David Tank
Director, Rocky Mountain Herbarium



continuing the tradition of Floristics in the RM

For nearly five decades, the Rocky Mountain Herbarium has been a training ground for the next generation of field botanists. Since 1978, more than 75 major floristic inventories—52 led by graduate students—have added over 600,000 new specimens to our vascular plant collection, deepening our understanding of the Rocky Mountain flora. Many of those students have gone on to careers in land management and conservation, carrying the Herbarium’s field-based legacy across the West and beyond.

This tradition of hands-on botanical training is alive and well today. Our two current Master’s students, Dan Coles and Marguerite Trost, are carrying the Herbarium’s legacy forward through ambitious, place-based floristic inventories in partnership with the U.S. Forest Service. Each is documenting the plant diversity of remote and underexplored landscapes in the Rockies—work that not only deepens scientific understanding but also reflects the Herbarium’s mission to connect people, plants, and place through research, education, and stewardship.



Dan Coles
*UW Distinguished
Graduate Scholar*



Marguerite Trost
*RM Aven Nelson
Research Fellow*

Dan Coles began his Master's research in summer 2024 after earning his B.S. degrees in Botany and Wildlife & Fisheries from the University of Wyoming. Supported by a UW Distinguished Graduate Scholar Fellowship during the academic year and the Rocky Mountain Herbarium Excellence Fund during field seasons, Dan is leading a new floristic inventory of the Bighorn National Forest—one of the last major gaps in Wyoming's botanical record.

Although the Bighorns have a storied history of exploration, beginning with B.C. Buffum's 1891 collection of *Allium brevistylum*, much of this 1.2-million-acre range remains poorly documented, particularly in the remote high-elevation terrain of the Cloud Peak Wilderness. Building upon the foundational work of early botanists like Aven Nelson and the large-scale 1979 survey by Ron Hartman and Ernie Nelson, Dan's inventory represents the first comprehensive effort in nearly half a century to map the Bighorns' plant diversity.

In two field seasons, Dan has collected over 8,500 specimens, documenting numerous species previously unrecorded for the forest and expanding the known distributions of several rare alpine plants, including *Antennaria aromatica*, *Eritrichium howardii*, and *Pedicularis pulchella*. His meticulous fieldwork has also uncovered new ecological stories—most notably, the discovery of several ornamental plants that have naturalized along riverbanks, including five new state records (*Aquilegia vulgaris*, *Salvia pratensis*, *Papaver orientale*, *Achillea filipendulina*, and *Convallaria majalis* var. *majalis*) and one new North American record (*Anemone sylvestris*).

Dan's work highlights why natural history collections remain indispensable in understanding biodiversity and ecological change. By combining modern data-driven methods with traditional field botany, his project is helping to fill critical gaps in the Rocky Mountain Herbarium's regional database—providing a baseline for future studies on species distributions, climate resilience, and conservation priorities.

Working alongside undergraduate assistant Austin Akers, Dan spent much of this past summer exploring the rugged backcountry of the Bighorns, often navigating to sites that had never before been botanically surveyed. His fieldwork is not just about plants—it's about preserving the story of a landscape. **As Dan explains, “By documenting and understanding the flora of the Bighorn Mountains, we can better protect the rare and fragile ecosystems that define Wyoming's wildest places.”**



Field assistant Austin Akers joins Dan and RM volunteers on a backpacking trip in the Cloud Peak Wilderness (left) and processes collections back at the Hunter Ranger Station (right)



Marguerite Trost M.S. Student, Kootenai National Forest Floristic Inventory

Marguerite began her Master's research in the summer of 2024 after several seasons working as a field botanist and biological technician across the Pacific Northwest. Her project focuses on the Kootenai National Forest in northwestern Montana—a vast and diverse landscape that, despite its size and ecological richness, remains one of the least-documented regions in the northern Rockies. Supported through a partnership between the Rocky Mountain Herbarium and the Kootenai National Forest, as well as competitive small grants she has independently secured, Marguerite is building the first comprehensive floristic inventory of this understudied region.

Through two field seasons, she has collected more than 10,000 specimens—representing over 1,000 taxa—including significant range extensions, unique plant assemblages, and both endemic and newly invasive species. But her project extends far beyond fieldwork. Rooted in her belief that **“biodiversity documentation is ancient, intuitive, and community-powered,”** Marguerite has woven public engagement into every step of her research.

With funding from the UW Biodiversity Institute, she organized two community botanical forays, bringing students, volunteers, and local naturalists directly into the process of discovery. These forays not only added more than 1,200 new specimens to the Herbarium's collections, but also sparked a growing network of citizen botanists committed to local conservation. Back on campus, she hosts “Foray Work Parties,” hands-on identification sessions where participants learn to use dichotomous keys and herbarium resources to identify the plants they collected—transforming data gathering into education and stewardship.

Marguerite is also the first recipient of the Rocky Mountain Herbarium's newly established **Aven Nelson Research Fellowship**, which provides an academic-year stipend for students to work and learn within the Herbarium. Her work embodies the fellowship's purpose—bridging rigorous scientific research with community engagement, and ensuring that the Rocky Mountain Herbarium continues to inspire new generations of botanists to care for the natural world through knowledge and connection.



Field assistants Desire Umbora and Wren Hybertson help to process collections (left) and RM volunteers at a recent Foray Work Party identifying collections back on campus (right)



RM graduate students at Botany 2025

Graduate students from the herbarium were well represented at *Botany 2025* — the joint annual meeting of the Botanical Society of America and the American Society of Plant Taxonomists. The annual Botany meeting is an excellent opportunity for RM students to connect with botanists from around the world and present their research. Our students presented in sessions dedicated to floristics, conservation biology, and multiple invited symposia.

Malia Santos (PhD, summer 2025)

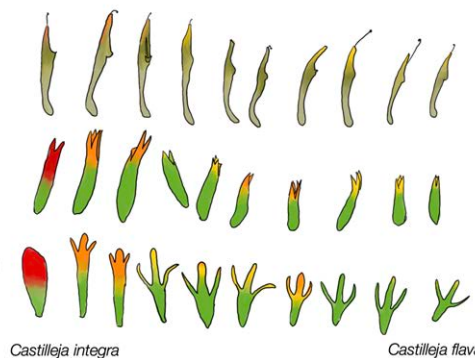
Invited symposium presentation: *Overcoming the barriers to on-going Castilleja research: From botanical enigma toward an emerging model system*



Genomic Evidence for Widespread Hybridization in *Castilleja*

A. Santos¹, Sarah J. Jacobs², Ribeth Latvis³, David Tank¹

¹University of Wyoming
²California Academy of Sciences
³University of Arkansas



Castilleja integra

Castilleja flava



BEYOND BOUNDARIES:
INVESTIGATING SPECIES BOUNDARIES IN COMPLEX GROUPS AND
ACCESSIBILITY IN FIELDWORK

Caroline Brose, Sean Harrington, Dave Tank
University of Wyoming

Office on the web Frame



Caroline Brose (PhD candidate)

Invited symposium presentation: *Disabled in Botany: Breaking Barriers in Plant Science Research*

Erin Bentley (PhD candidate)

Contributed paper: *Conservation Biology*
Isolation and divergence in the endangered
*edaphic endemic *Penstemon haydenii**

Photo: Bonnie Heidel, WYNDD



**Isolation and
divergence in the
endangered
edaphic endemic
*Penstemon haydenii***

Erin Bentley¹, Dr. David Tank^{1,2}, Dr. Sean Harrington¹

¹University of Wyoming, ²Rocky Mountain
Herbarium



A Flora of the Bighorn Mountains

Dan Coles

Rocky Mountain Herbarium

University of Wyoming

Advisors: Dr. Dave Tank, Ben Legler

Dan Coles (MS student)

Contributed paper: *Floristics*

*A Flora of the Bighorn Mountains: Sheridan, Big
Horn, Johnson, and Washakie Counties,
Wyoming*



Marguerite Trost (MS student)

Contributed paper: *Floristics*

*A comprehensive, community-powered
vascular floristic inventory of the Kootenai
National Forest, Northwest Montana*

community-powered

**FLORA
OF THE**

**KOOTENAI
National
Forest**

U.S. DEPARTMENT
OF AGRICULTURE



Marguerite Trost
Rocky Mountain Herbarium,
University of Wyoming

Advisors:
David Tank
Ben Legler

undergraduate students in the field

Alongside our graduate students, a team of dedicated undergraduates gained hands-on experience in plant collecting, identification, and field research this summer.



Austin Akers, a Botany major from Sheridan, WY and member of UW's Cross Country team, joined M.S. student Dan Coles as a research assistant on the Bighorn National Forest floristics project. Supported by the *Rocky Mountain Herbarium Excellence Fund*, Austin applied his endurance and local knowledge to help document the flora of remote alpine peaks in the Cloud Peak Wilderness—an experience that deepened his field skills and connection to Wyoming's native landscapes.

Wren Hybertson, a sophomore majoring in Environment and Natural Resources, spent four weeks as a field assistant with M.S. student Marguerite Trost on the Kootenai National Forest floristics project. Supported by the *Wyoming Research Scholars Program*, Wren brought her experience from the Rocky Mountain Herbarium—where she's worked since her freshman year mounting specimens and conducting phylogenetic research on the Rocky Mountain endemic genus *Chionophila*—to help document one of Montana's most understudied botanical regions.



Desire Umbora, a senior majoring in Wildlife and Fisheries, spent six weeks assisting M.S. student Marguerite Trost on her Kootenai National Forest floristics project. Supported by grants from both the *UW Biodiversity Institute* and the *Garden Club of America's Summer Scholarship in Field Botany*, Desire brought exceptional teamwork, curiosity, and field skills to the project—especially during Marguerite's community forays.

An international student from Papua, Indonesia, Desire's passion for biodiversity and conservation has flourished in Wyoming's vastly different landscapes. From working summers on a ranch near Cody to leading youth backpacking trips, he has embraced every opportunity for hands-on learning. He is now continuing his training as part of the Rocky Mountain Herbarium Internship Program.

2024-2025 by the numbers



Over **400** external users ranging from elementary school students to researchers visited the herbarium.

55,300 new plant and fungal specimens were added to the herbarium's collections.

We added **666,478** high-resolution specimen images to our specimen databases.

256,828 new images were linked to existing database records to create fully digitized specimens.

4,310 historical specimens were databased and added to our online publicly accessible databases.

Active floristic projects resulted in **17,362** new collections from the Rocky Mountain region.

The herbarium was busy this year! As of October 2025, the total number of accessioned plant and fungal collections has grown to **1,167,093** specimens; **976,604** of these specimens have digital records and **644,763** specimens are fully digitized, with both high-resolution images and digitized specimen label data.

While much of our recent progress is the result of activities associated with the National Science Foundation funded herbarium expansion project, active student research projects continue to contribute strategically to the growth of the largest herbarium in the Rocky Mountain region.

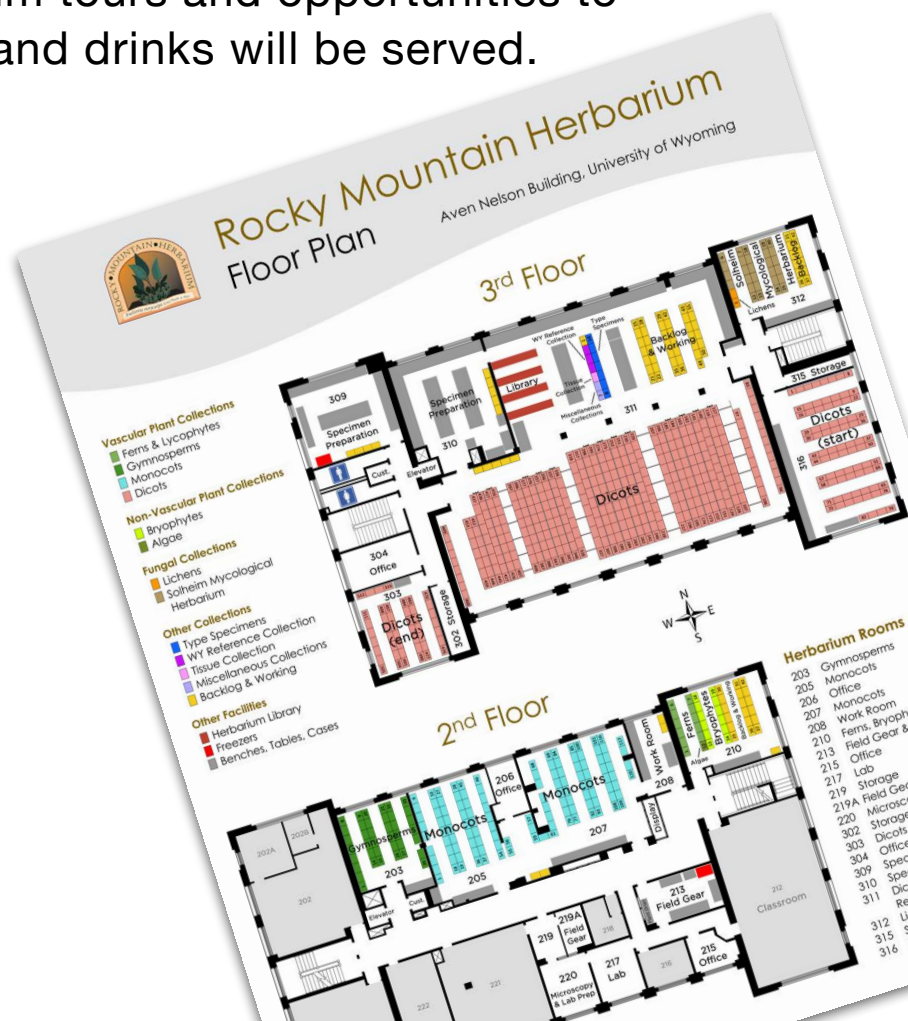
Save the Date!

Rocky Mountain Herbarium Open House & Retirement Celebration for Curator Ernie Nelson

Wednesday, December 3, 2025, 5:00-7:00 PM
Aven Nelson Building, UW Campus, Laramie

Join us to celebrate the retirement of Ernie Nelson in honor of his distinguished 51-year career as the collections manager and curator at the Rocky Mountain Herbarium, together with an open house showcasing the herbarium's newly reorganized collections and expanded space.

A presentation about the herbarium and Ernie's career will be followed by guided herbarium tours and opportunities to mingle. Light refreshments and drinks will be served.



Thank You!

At the Rocky Mountain Herbarium, we work to champion the stewardship of plant diversity, inspire and prepare the next generation of botanists, and advance collections-based botanical research, education, and outreach at the University of Wyoming through innovative thinking, transformative educational experiences, and community engagement.

We could not do this without your continued support and want to take this space to thank our many donors, volunteers, and students for an exciting, productive, and successful year!

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And a very special thanks to:

Hollis Marriott | Richard & Ann Boelter | Tim Chumley | Mary Scriptor | Joseph Lloyd Waner

STUDENTS

Ethan Bacon | Aspen Brown | Zachary Decker | Brianna Drew | Emma Duvall | Chris Folsom
Leona Hackenberg | Angela Hendricks | Lily Hitchcock | Ingrid Hofmeister | Wren Hybertson | Tighe Jones
Murie Judd | Emma Khoury | Anna Krepel | Sofia Kucerak | Elizabeth Linse | Rebecca Lockhart | Belle Luhrsen
Lillianna Martens | Maicey Pickrell | Molly Pirus | Veronique Pixley | Anne Pollard | Trinity Preston
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Heather Ward | Kai Wilson

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Shane Habel | Bonnie Heidel | Kris Kenelak | Hollis Marriott | Marita McDaniels | Pat McLeod | Ed Pederson
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