



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

2022 ANNUAL REPORT



RM IN NUMBERS 2022

The Rocky Mountain Herbarium (RM), including the US Forest Service Herbarium (USFS) and Solheim Mycological Herbarium (RMS), is the 4th largest public university herbarium and is ranked 14th out of 873 herbaria in the United States. With over 1.4 million total specimens, our collections are central to basic and applied research investigating the diversity and distribution of plants and fungi in Wyoming and the Rocky Mountains. The RM is a leader in the digitization of herbarium collections, and our digital collections are among the largest publicly accessible datasets at the University of Wyoming.

1,041,194 accessioned plant specimens **50,906**

accessioned fungal specimens **932,892** publicly

accessible digitized specimen records **410,002**

digitized records with images **159** researchers and

community members visited the herbarium **319** K-20

students participated in education programs **692**

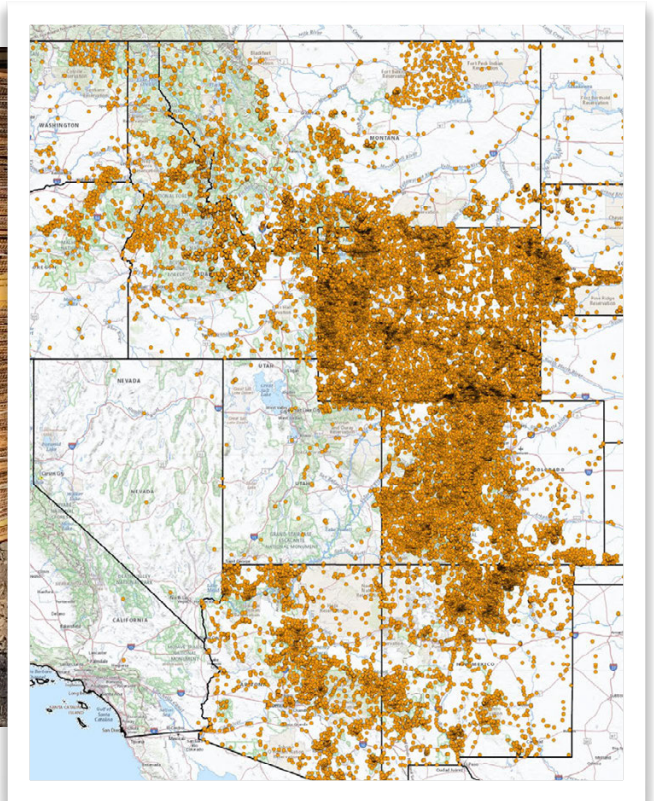
specimens loaned to researchers **5,195** newly

accessioned specimens **1,973** specimen records

digitized **2,668** newly imaged specimens

RESEARCH TRADITIONS

FLORISTIC INVENTORIES OF THE ROCKY MOUNTAINS



Over the last five decades, the Rocky Mountain Herbarium has documented the flora of Wyoming and the Rocky Mountains from Canada to northern New Mexico and Arizona through an aggressive inventory program. To date, 52 graduate students have been trained as part of the RM floristics program. The result of this unprecedented effort is a very complete picture of the flora of Wyoming and the Rocky Mountains of Colorado and northern New Mexico, with a more recent emphasis on the central and northern Rockies of Montana and Idaho. This depth and breadth of specimen coverage sets the RM apart from other herbaria, increasing the value of the collection for current and future researchers.

Map of the Rocky Mountain region emphasizing the coverage accomplished through the focused effort to document the flora of Wyoming and the Rocky Mountains. Each dot is a collection site that represents from 1 to 150+ specimens.

NEW RESEARCH



LAUNCHING A NEW RESEARCH PROJECT ON ALPINE FLORAS OF WESTERN NORTH AMERICA

What are the patterns and drivers of alpine plant species richness and diversity across Western North America's mountain ranges? How do dispersal dynamics influence these patterns? How will climate change impact our alpine floras? These and other questions are being explored through a new research project examining the alpine floras of Western North America using new data and methods. RM Digital Curator Ben Legler joined colleagues at five other institutions to gather baseline survey data for a set of alpine peaks ranging from British Columbia to New Mexico.

2022 SURVEY SUMMARY

With the assistance of UW undergraduate and RM intern Joshua Mattson, and supported by funding from a private donor, Ben comprehensively surveyed five peaks in Wyoming and Colorado. Data from this pilot study will inform a collaborative grant proposal to the National Science Foundation.

- 5 peaks sampled—Browns Peak, Dome Peak, Duncum Mountain, Medicine Bow Peak, Mount Mahler
- 10 days in the field
- 345 voucher specimens collected
- 559 photos captured
- 285 species documented across all five peaks
- Species diversity per peak ranged from 64 (Dome Peak) to 123 (Duncum Mtn) unique taxa



Ben Legler (left), RM Digital Curator, and Joshua Mattson, UW undergraduate and RM intern, on the summit of Mount Mahler.



Anemone multifida var. *tetonensis* (Teton cut-leaf Anemone) on the slopes of Duncum Mountain.

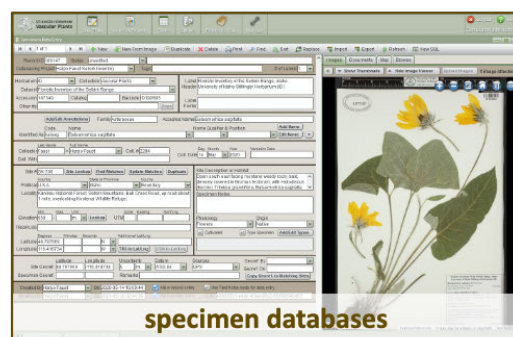
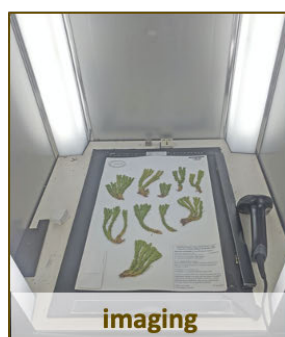
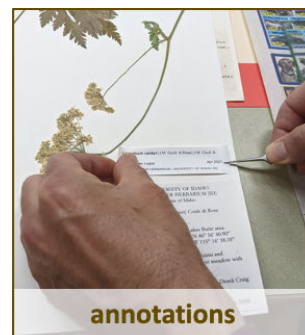


The Cascade willow (*Salix cascadiensis*) on the summit of Medicine Bow Peak. This tiny alpine shrub is only about four inches tall and is found scattered across the mountain tops of the Cascade and Rocky Mountains of North America.

TRAINING THE NEXT GENERATION EDUCATION

A NEW RM INTERNSHIP PROGRAM

Student interns learned the in-and-outs of herbarium management from the experts! In this new Herbarium Internship course, RM Curators, Ben Legler and Ernie Nelson provided students a foundational knowledge of herbarium management and curation through directed, hands-on experience in the Rocky Mountain Herbarium. Students learned how to collect, process, preserve, and digitize herbarium specimens, providing them the skills to build a foundation for graduate studies or careers in botany, natural resource management, or natural history collections.



Each week, a new task or aspect of herbarium curation was introduced, learned, and practiced by the students.



Advanced Field Botany 2022 on the top of Browns Peak during our final field day of the course.

ADVANCED FIELD BOTANY

There is no better way to learn the flora of a region than in the field. In June and July, Dr. David Tank, RM Director and Botany Professor, taught a two-week, intensive field course for upper division undergraduates and early career graduate students that wanted to enhance their botanical knowledge and field skills with focused training in field botany as applied to evolutionary, ecological, and floristic studies.



Processing collections with the expert help of Ernie Nelson (back center), RM Curator.

Throughout the course students spent alternating days in the field and the classroom, with field days strategically targeting a diversity of habitats throughout the Medicine Bow National Forest. Classroom days were focused on identifying the collected specimens using a mix of short lectures, discussions, and hands-on learning.

EXPANDING TO THE K-12 CLASSROOM

With support from the UW Biodiversity Institute and in collaboration with UW education graduate students, the RM has been developing educational resources for the K-12 classroom. Our goal is to provide resources for educators who are interested in bringing the herbarium into their classrooms. Along with lesson plans and progressions with connections to the Next Generation Science Standards, teachers can request classroom kits with scanned copies of RM specimens, grass seeds, identification keys, books, a plant press to build a classroom herbarium, and other resources to support student exploration of the flora of Wyoming and the Rocky Mountains.

The screenshot shows the 'Education' page of the Rocky Mountain Herbarium website. The page features a navigation bar with links for HOME, COLLECTIONS, RESEARCH, EDUCATION (highlighted), WHO WE ARE, EVENTS, GIVE, and STORE. The main content area is titled 'Education' and includes several sections: 'Welcome to the Rocky Mountain Herbarium's K-12 education resources', 'Lessons' (with sub-sections for 'General Resources — Start Here', 'Cheatgrass - A Challenging Visitor to Wyoming', 'Build Your Own Herbarium', and 'Seed Growing Lesson'), and 'Request a Classroom Kit'. Each section provides detailed information and links to resources. A sidebar on the left contains social media sharing options (17 Shares, YouTube, Facebook, Twitter, Email, Tumblr) and a 'Click to Open in Google Drive' button. The footer notes that the educational material was funded by a private donation to the UW Biodiversity Institute.

You can explore the RM's educational resources on the '[Education](#)' tab at the RM website www.rockymountainherbarium.org

BROADENING OUR IMPACT_{OUTREACH}

PLANT WALKS FOR THE PUBLIC

If you've spent any time with a botanist, you know that we are always looking for an opportunity to teach people about plants. This might even be at the dinner table (you know that tomato is a fruit not a vegetable, right?! Of course, our favorite place to talk about plant diversity is in the field. The experts in the RM collaborate with the UW Biodiversity Institute and UW Extension to host several 'plant walks' each year, where participants can spend a few hours in the field learning to identify common species.



Learning the early spring flora on the Laramie Plains with several RM Team members, including Bonnie Heidel (left with backpack), Wyoming Natural Diversity Database Botanist; Dorothy Tuthill (left with blue jacket and dark hat), Biodiversity Institute Associate Director and Education Coordinator; Kristina Hufford (center with red jacket), Associate Professor and Extension Restoration Ecologist; Ernie Nelson (right with tan jacket and hood), RM Curator; and Dave Tank (right with green jacket), Professor and RM Director.

COLLECTING EXPEDITIONS



Ernie Nelson, RM Curator, leading a plant walk during the 2022 Wyoming Native Plant Society Annual Meeting near Thermopolis, WY.

This year the RM has extended some plant walks to include the collection of voucher specimens for research. The first of these expeditions was included as part of the RM's participation in the Wyoming Native Plant Society Meeting in Thermopolis in June. RM Curators, Ernie Nelson and Ben Legler, led a team of participants in a day of collecting on private land in the area. Our goal with these collecting expeditions is to both document the flora of these areas and to teach participants how to properly and ethically collect and press voucher specimens that will be accessioned into the Rocky

Mountain Herbarium. This includes learning what parts are needed for identification, as well as the data necessary for a museum-quality, research-grade specimen.



Ben Legler, RM Curator, teaching Wyoming Native Plant Society members how to prepare a cactus specimen for pressing.

PLANT IDENTIFICATION WORKSHOPS



As part of our participation in events across the state, like the annual Wyoming BioBlitz and the Wyoming Native Plant Society annual meeting, and in collaboration with UW Extension events, the RM leads workshops to teach the basics of plant identification, including plant reproductive morphology and the botanical terminology necessary for plant identification. In these workshops we focus on common plant families found in the state, and give participants the knowledge and tools they need to identify any plant they encounter.

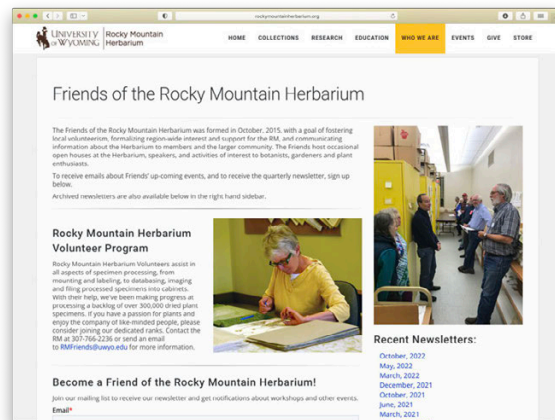
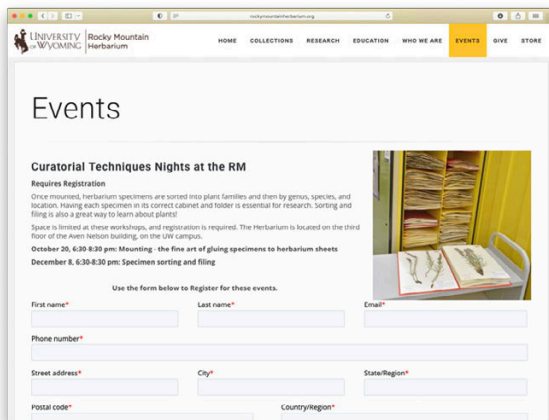
CURATORIAL NIGHTS

Have you ever been curious about the day-to-day work that goes on in the herbarium? This fall marked the start of our *Curatorial Nights* series, where the RM hosts students and members of the community to learn specific curatorial techniques used in the herbarium in a hands-on, active learning setting.



Herbarium enthusiasts learning the specimen mounting process at our first *Curatorial Night* in October.

We kicked off the *Curatorial Nights* in October with an introduction to specimen mounting, and continued in December with specimen sorting and filing. Our goal with these activities is as much to educate about curation in Natural History collections as it is to build community around the herbarium.

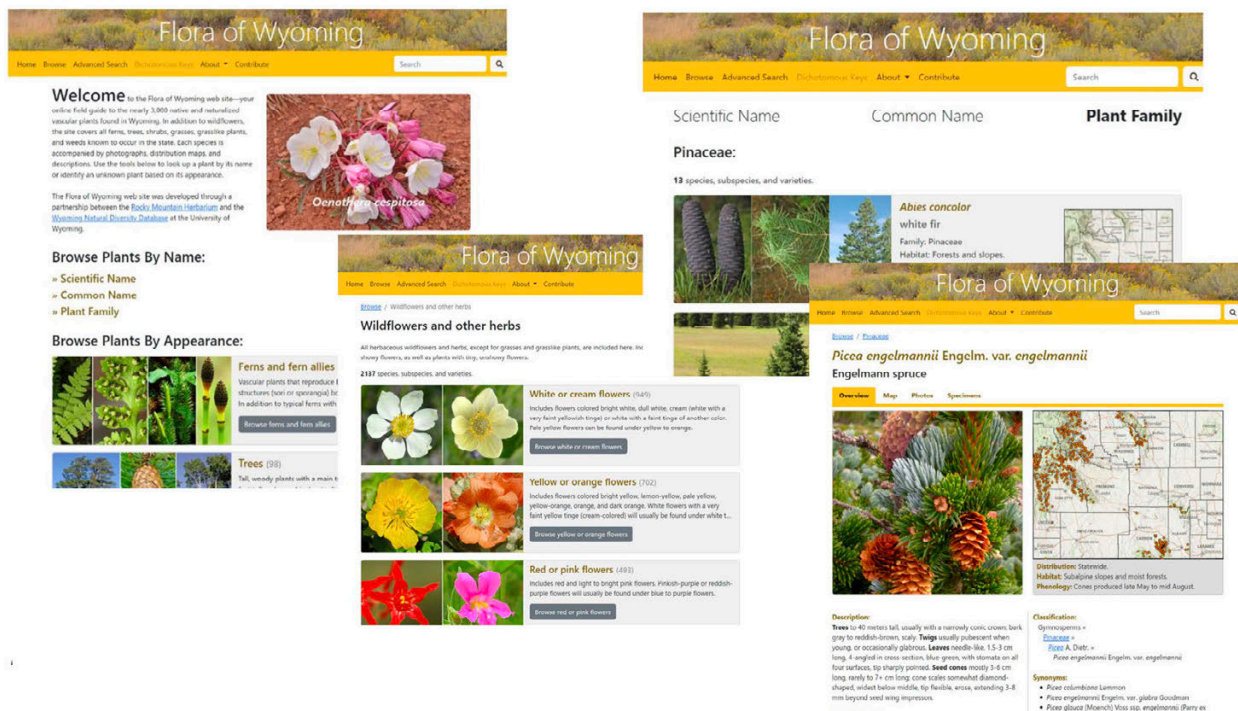


Visit the '[Events](#)' and '[Who We Are](#)' tabs at www.rockymountainherbarium.org for event information and to join the Friends of the Rocky Mountain Herbarium to stay informed!

LOOKING AHEAD EXPANDING RESOURCES

A DIGITAL FLORA OF WYOMING

Together with the Wyoming Natural Diversity Database (WYNDD), and support from the Wyoming Innovation Partnership's DataHub project, we have built the core structure and functionality for a new Flora of Wyoming website. This photo-centric, field-guide style website packages RM and WYNDD's technical data into a more accessible format with the goal of reaching a broad audience, including native plant enthusiasts, tourists, recreationalists, teachers, and K-20 students both within and outside Wyoming. Keep your eye out for a Spring 2023 launch of this new RM resource!



The Flora of Wyoming website includes a variety of interfaces for browsing and searching for species, and species profile pages that integrate the RM's photo collections and specimen data. At this time, the website contains over 10,000 photos of nearly 1,700 species, representing 57% of Wyoming's nearly 3,000 species and we are actively working to flesh out the data across the site.

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 2022!

DONORS

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STUDENTS

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Hannah Morneau | Katie Peel | Marcin Sliwinski | Alicia Thoney | Chelsea-Victoria Turner | Natalie Wehner
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