

SCIENCE

2020 YEAR IN REVIEW

Biodiversity is fundamental to life, from the air that we breathe to the food that we eat. The scientific study of biodiversity is the foundation of botanic gardens as it allows us to conserve diversity at home and around the world through greater documentation and understanding. Thus, science serves as a key programmatic element at Denver Botanic Gardens.



DENVER BOTANIC
GARDENS

2020 was a year like no other. Not only did we face a global pandemic, which dramatically altered our day-to-day work habits, but we moved our entire program into a new facility. As the Gardens closed on March 16 for what would be a two-month shut down in public operations, no one knew what to expect. Our team, which was accustomed to working in a bustling office and herbarium, transitioned to working at home full time. We stayed in touch via a team chat where we shared “Daily Hoorays” to keep our spirits up and to find small wins on a regular basis. Construction and inspections on the Freyer – Newman Center continued during these quiet times and when we returned to the Gardens, it was to pack and move. The pandemic created a unique set of challenges, but through careful planning and preparation, we were able to make the move to the Center a success. The newly opened Center includes expanded capacity for our ~100,000 natural history collections, genetics and ecology programs, 12 staff and four graduate students. We briefly welcomed volunteers into the herbarium to assist with processing our 12-month backlog of plant collections. The volunteers loved the new space and were comfortable with the safety protocols in place. The galleries in the new building were also open long enough to show off some of our favorite non-living collections as part of the From the Vault exhibition.



Center for Plant Conservation 2020 Star Award

In honor of her commitment to the conservation of the flora of the United States, **Dr. Jennifer Ramp Neale** received the 2020 CPC Star Award. The CPC Star Award honors those who demonstrate the concern, cooperation and personal investment needed to conserve our imperiled native plants. Her clear communication, science-based recommendations and collaborations with a broad array of partners have contributed to knowledge of and protection for imperiled native plants in Colorado. Her efforts have been a shining model for the CPC Network.

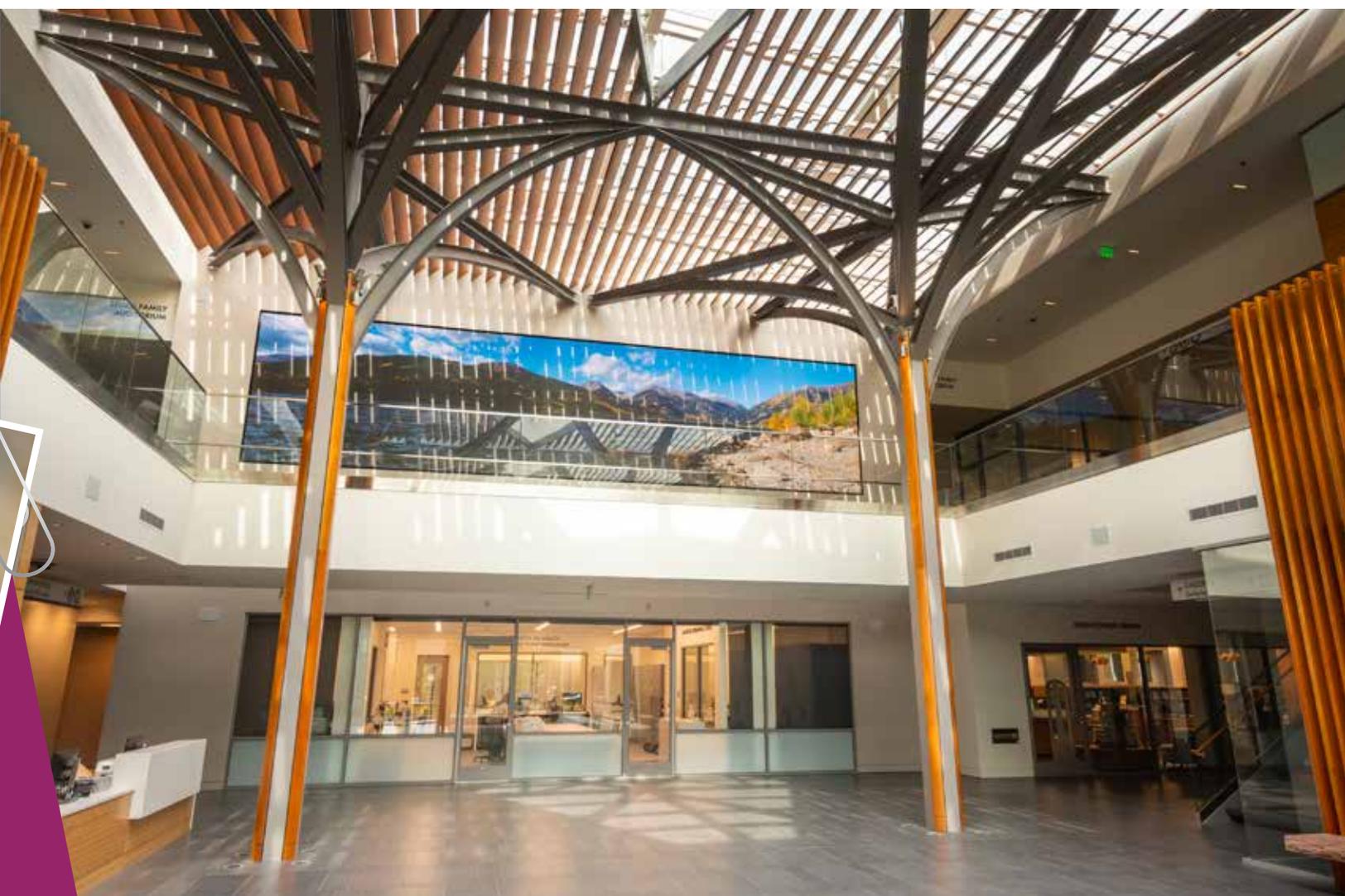


Science at the Gardens

A new head curator of natural history collections joined our team in early February. A collections assistant joined us mid-year to fill a much-needed role in our natural history collections overseeing daily processing and specimen management. We were fortunate to successfully continue much of our planned field work, including Seeds of Success collections in Colorado and Wyoming, long-term demographic monitoring of rare species, mycological collections and scouting alpine plants for seed collection. We were able to adapt our field work routine to new pandemic protocols – we asked our Seeds of Success staff to share housing and keep social circles small and caravanned to field sites instead of carpooling. Within the Denver metro area we continued our riparian and grassland restoration work at Chatfield Farms, began an assessment of green stormwater infrastructure on the High Line Canal

and launched the Denver EcoFlora project, a citizen science-based initiative to document the flora of the Denver metro region and connect citizens with biodiversity.

Despite the challenges brought by the last year, we were able to successfully pivot the majority of our projects and proceeded to collect and analyze data, publish papers, secure funding and generally continue our pursuit of studying the patterns and processes of biodiversity. While 2020 looked different than previous years, we are grateful to be able to continue to do meaningful science at the Gardens safely. As we enter 2021, we continue to adapt projects and protocols to our current global reality and look forward to a time when we can safely work in the same space as others, and once again have a herbarium bustling with activity.



Featured Projects



Repurposing the High Line Canal to Hold and Treat Stormwater

The High Line Canal greenway is set to undergo its next incarnation, having evolved from serving solely as a water conveyance, to providing a natural respite for recreationists along Colorado's Front Range. Now, as a result of the Stormwater Transformation and Enhancement Program (STEP), parts of the Canal will be repurposed to hold and treat incoming stormwater, serving to reduce localized flooding, enhance vegetation and improve water quality. To support this effort, the Gardens has partnered with the High Line Canal Conservancy to describe canal vegetation and soil characteristics in the context of how each might respond to, and shape, the functioning of new green stormwater infrastructure.

A view spanning the surrounding banks and bed of the High Line Canal.



Seeds of Success Collaboration

Funding from the Bureau of Land Management allowed us to employ two Seeds of Success collection crews in 2020, one in Colorado and one in Wyoming. These two crews traversed rough terrain and overcame various hardships – including drought, seed predation, and COVID-19 restrictions – to make over 30 seed collections each of native, restoration-priority species. Some collections were planned months in advance, waiting for just the right moment when seeds were perfectly ripe. Other collections occurred spur of the moment while driving on backcountry roads. All final collections contained at least 10,000 seeds and are currently stored at the U.S. Forest Service Bend Seed Extractory, where they are available for future large-scale restoration projects in the western U.S.

Colorado SOS team during a scouting trip.



Precipitation Tracking at the Gardens

The Gardens has been collecting precipitation data since 2006 as part of the Community Collaborative Rain, Hail, & Snow (CoCoRaHS) network. 2020 was the driest year at the Gardens since data collection started, 3.53 inches below the yearly average of 15 inches. This year we also saw the earliest snow fall since 1961 on September 8.



Creating a Digital Field Book

Plant ecologists often set out to measure conditions that influence processes like nutrient cycling, biomass production, fire regimes and exotic species invasions. One method frequently employed to measure such conditions is the line-point intercept method, providing a quantitative snapshot of an area's vegetation and ground cover. This year we began developing a new web application, *point-intercept*, that acts as a digital field book for ecologists collecting this type of data. Measurements are sent directly to a database, charts revealing patterns are automatically generated and data are immediately available for download in a format ready for statistical analysis.

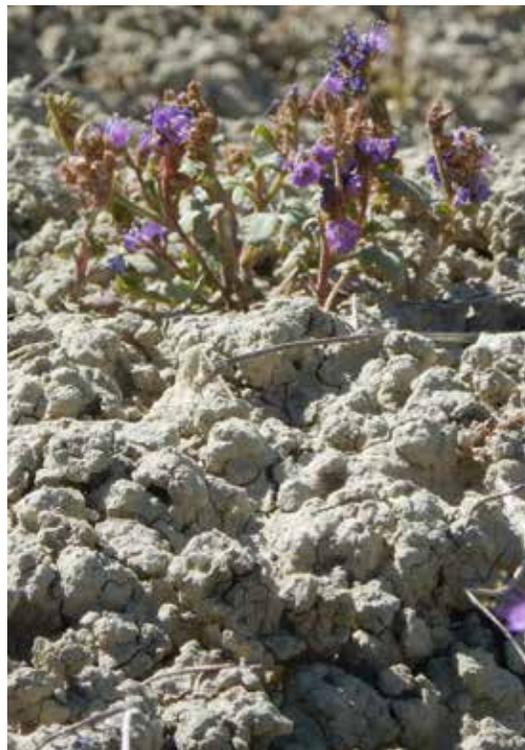
Ecologist collecting plant and soil data along the High Line Canal.



Improving Seed Harvesting Guidelines

As a participating institution in the Center for Plant Conservation (CPC), we work alongside an international network of botanic gardens, arboreta, and research facilities that actively conserve plant species through *ex situ* seed conservation, restoration and reintroductions. While collecting seed can safeguard against extinction, removing seed from small populations can increase extinction risk. We are testing the 10% rule, a threshold set by the CPC for safe levels of seed harvest based on perennials, to determine risk levels across life history traits. Our work will help guide genetically robust seed collection that limits harm to rare and imperiled plant populations.

Updating seed harvesting guidelines will help protect rare species such as *Phacelia gina-glenneae* in both *in situ* and *ex situ* conservation.



Can Alpine Species "Bank" on Conservation?

Seed banks are the primary method of *ex situ* plant conservation, allowing seeds to be stored for up to hundreds of years. Recent studies have shown that alpine species are short-lived in seed banks compared to low-elevation species, but this has yet to be explored for alpine species in North America. Seeds of five Colorado alpine species were included in a germination and seed longevity experiment to determine if alpine species in the U.S. exhibit the same patterns. The study showed that alpine species from Colorado may be short-lived in seed bank conditions. Seeds will be tested every few years in storage to understand viability change over time.

Ipomopsis globularis





MOVING IN...

The Freyer – Newman Center for Science, Art and Education

Despite all the challenges of 2020, it was a year of great celebration for scientific programs at the Gardens. Construction on the Freyer – Newman Center for Science, Art and Education wrapped up in early spring and we are now feeling right at home in the new facility. The Center provides us with expanded office, lab and collections space to continue to grow our research and programs for years to come.

The state flower carefully pressed from a local mountain collection, invasive grasses from across the state, delicate mushrooms, giant puffballs, tiny snowbank cup fungi and even slime molds – these are the objects we carefully steward as part of our natural history collections. These collections consist of historical specimens, such as ones collected by Alice Eastwood, a pre-eminent botanist from the 19th – 20th centuries, as well as recent collections providing important vouchers for work done by scientists at the Gardens. In 2020, these collections received a breath of new life with an expanded permanent home in the Center.

In late May, our team carefully began rolling half-herbarium cabinets full of specimens from our location in the Boettcher Memorial Center to the new housing areas of the Center. Our months of detailed planning paid off and we were able to safely move our nearly 100,000 collections of plants, fungi and arthropods

to their new homes in 128 cart trips. Our three-person move teams swiftly and efficiently loaded, transported and unloaded the contents of all 1,528 occupied cubbies from one space to the other. The multi-step process involved coordination with our third-party vendor to move and install existing cabinets and then rehouse all specimens into their new spacious housing. By mid-July we had completely moved all specimens to their new cubbies and began to feel settled.

The new herbarium space located directly off the main atrium of the Center brings our scientific work to visitors in a whole new way. The collections are now poised to continue growing for another 50 years thanks in part to funding from the Institute of Museum and Library Services (MA-30-18-0410-18), which has provided for new cabinets.

Beyond our natural history collections, the Center houses two state-of-the-art science labs. The Ecology



Lab is a flexible open space allowing myriad activities to take place from fungal microscopy to seed cleaning to soil sieving. The adjacent Genetics and Tissue Culture Lab is designed as a clean space to allow for sensitive research without the risk of contamination from dirtier activities. While the Ecology Lab has been relatively quiet due to a pandemic-related reduction in 2020 field work, the Genetics and Tissue Culture Lab has been busy. The move to the new lab aligned with the implementation of new genetic methodologies. University of Colorado Denver graduate students advised by scientists at the Gardens are pursuing questions associated with rare plant conservation genetics and fungal taxonomy. A seasonal mycology specialist conducted a study on the fungal diversity of the Lemhi range in Idaho. These studies were made possible through the expanded facilities and funding opportunities for these students. As the tissue culture program settles into this expanded space, we can now increase the number of plants we grow, the species we are working with and the research we can conduct.

Heading into 2021, we are excited to work in this state-of-the-art facility and begin to achieve the potential the Center offers.

The Intersection of Science and Art

The science of art and the art of science have come together at the Gardens in a more overt way than ever before. With the opening of the Center we now have four gallery spaces that will showcase art and exhibitions throughout the year. We launched the opening of the galleries with *From the Vault* – an internally conceived and produced exhibition highlighting objects from each of the Gardens’ non-living collections (natural history, rare books, art, archives). While we are not yet able to welcome the public into the Center to work with our specimens, visitors can catch a glimpse of our collections through the outdoor sculpture *Leaf* from Jason Klimoski and Lesley Chang of Studio KCA. Part of the Denver Public Art program, it features silhouettes of 251 specimens housed in the Kathryn Kalmbach Herbarium. Each specimen includes the accession number linking the art to the scientific specimens. Until we can welcome the public fully into the Center, we are sharing glimpses of our behind-the-scenes work on digital platforms such as the Gardens’ blog.





Natural History Collections

Natural history collections are valuable snapshots, capturing the biodiversity of a particular place at a specific moment in time. Each specimen is a permanent record of our natural world – documenting morphological, genetic and distributional information all in a single collection. Together, these collections provide precious evidence of how landscapes, ecosystems and populations change over time. As a museum, the Gardens’ natural history collections support and engage all who are curious about the natural world, including scientists, artists and activists. And as permanent records of the past, these collections provide invaluable and irreplaceable resources for protecting our future. We continue to expand and curate our collections in the **Kathryn Kalmbach Herbarium of Vascular Plants** and **Sam Mitchel Herbarium of Fungi** and find new ways to use the collections in research.

New Curator of Natural History Collections

In 2020, the Gardens welcomed a new head curator of natural history collections, Dr. Jennifer Ackerfield. She is a well-known expert on the flora of the Southern Rocky Mountains, having written the “Flora of Colorado.” At the Gardens, Jennifer will continue research on the Rocky Mountain flora, mentor and educate students, communicate science, provide outreach and most importantly: connect people with plants.

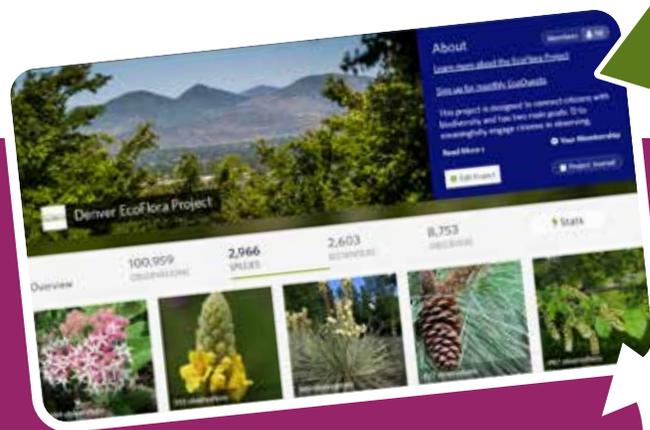
Jennifer is also excited to bring her research on native thistles to the Gardens and continue to promote the importance of them in our ecosystems. In particular, the alpine thistles have long been a source of intrigue – they stand tall against a landscape of tiny plants, looking very alien-like with their spiny leaves and dense clusters of woolly heads.

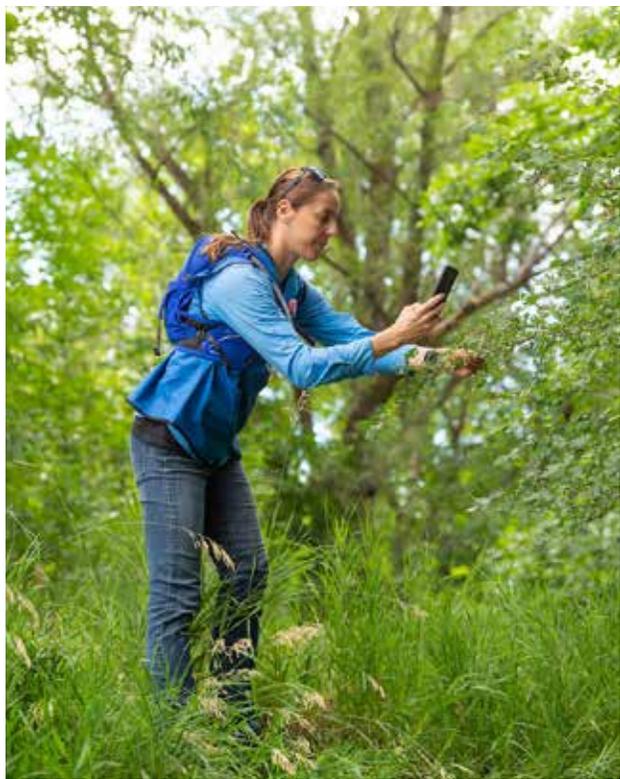
Through her research efforts, Jennifer has clarified the scientific names given to our native thistles and identified two new species of alpine thistles for Colorado. In 2020, members of the Research & Conservation Department, in collaboration with the U.S. Forest Service, embarked on a trip to collect type specimens for one of these new species. These type specimens will serve as a reference for this new species – and will be preserved indefinitely as part of the Gardens’ natural history collections.



Interns

During fall 2020, we hosted three interns from the Denver School of Science and Technology Cole Campus. The interns learned about the Denver EcoFlora Project by photo-documenting plants on iNaturalist and provided outreach by promoting the project to fellow high school students. Over the summer we were fortunate to have a high school student join us through the Eureka! Internship program to assist in a restoration experiment at Chatfield Farms and the Denver EcoFlora Project. The intern was able to learn about our work and we received much-needed help in data collection. We look forward to expanding our internship opportunities to introduce more students to biodiversity and conservation and to train the next generation of scientists.





Keep specimens separate.

One of several rules of collecting mushrooms, and tackle boxes are a handy tool for this purpose.

Connecting People With Plants Through the Denver EcoFlora Project

Nature is all around us, even in the Denver metro area. One way that the Gardens is working to connect people with nature is through the Denver EcoFlora Project (IMLS MG-70-19-0057-19). Citizens use an app, iNaturalist, to record their own observations of plants and fungi. Researchers can then use these observations to explore the influence of climate change on biodiversity, the role of rare species in protecting critical ecosystem functions, and the identification of priority areas for conservation, to name a few applications. Through the Denver EcoFlora Project, we anticipate the connections made with the local flora will also help build appreciation of the biodiversity all around us. And once biodiversity is appreciated, our hope is that a greater effort will be made to preserve it for future generations.

Mushrooms of the Lemhi Range, Idaho

Fungi provide essential ecosystem services to Rocky Mountain forests, yet enormous gaps remain in our knowledge of fungal diversity and distributions throughout the region. The Colorado Mycoflora Project and Sam Mitchel Herbarium of Fungi are working to fill these gaps by documenting macrofungi in the Rockies. This summer, we conducted a fungal field survey in the Central Rockies, sponsored by the Stuntz Memorial Foundation. This project was designed to contribute data towards a regional funga (i.e. a "flora" for fungi) of Idaho's Lemhi Range. Over the course of two weeks we documented and vouchered 58 specimens, collected in habitats that range from subalpine forests of white bark pine (*Pinus albicaulis*) to montane sagebrush steppe. A number of interesting and uncommon species were documented – such as *Helvella corium* – but many specimens are yet to be identified. In the Genetics Lab at the Freyer – Newman Center we are using new sequencing techniques to generate DNA data for these and other Rocky Mountain macrofungal collections. With the combination of high-quality fungarium collections and next-generation DNA sequencing, we aim to advance understanding of Rocky Mountain macrofungal diversity.

Graduate Training

The Research & Conservation Department at the Gardens is committed to training future and current scientists through immersive research opportunities. University of Colorado Denver students pair with a lead scientist at the Gardens to answer questions pertaining to ecology, biodiversity and conservation. Research opportunities not only help us answer these important questions, but also teach students how to conduct research and contribute to science.



Liam Cullinane – Liam graduated from the Master’s program in May 2020, working with Dr. Rebecca Hufft on the High Line Canal bee project – a bee and ecological survey along the canal trail. Liam found 40% of all Colorado bee genera along the canal and discovered that certain plant species supported a large abundance and diversity of bees. His results highlight the importance of the High Line Canal as an urban ecosystem and wildlife corridor.



Michelle DePrenger-Levin – Michelle is completing her Ph.D. with Dr. Michael Wunder at UC Denver. She is exploring ways to use spatial and trend modeling using data from multiple sources (including long-term demographic monitoring, herbarium specimens, and experimental field studies) to answer applied conservation questions.



Alissa Iverson – Alissa began the Master’s program in the fall of 2020, working with Dr. Christina Alba on the soil seed bank of the High Line Canal, where soil samples were taken along a section that will be enhanced with green stormwater infrastructure. She will be examining if the change of hydrologic regime will shift the ecology of the site and encourage different plants – whose seeds reside in the soil – to germinate.



Amanda Miller – Mandi is a Master’s student working with Dr. Rebecca Hufft on how different restoration techniques – herbicide and seed treatments – impact potential pollinator habitat. She is conducting her research on the long-term grassland restoration plots at Chatfield Farms.



Gary Olds – Gary is a Master’s student working with Dr. Andrew Wilson on an evaluation of different methods of DNA barcode sequencing for fungi, using the milkcap mushrooms (*Lactarius*). For his research, Gary is sampling from specimens in the Sam Mitchel Herbarium of Fungi and processing these in the genetics lab in the Center.



Emily Orr – Emily is a Master’s student working with Dr. Jennifer Neale on a population analysis of *Astragalus microcymbus*, a rare plant found in western Colorado. Emily’s work will aid in understanding the genetic variation within this species – vital information that can then be used to protect and conserve this rare species.



Margo Youssef – Margo graduated from the Master’s program in May 2020, working with Dr. Rebecca Hufft exploring the efficacy of a low-cost stream restoration method known as Beaver Dam Analogs (BDAs). The BDAs were installed in Deer Creek at Chatfield Farms in 2016 to increase native plant abundance. Margo compared vegetation from the banks surrounding the BDAs to non-BDA sections of the creek. BDAs increased species richness and decreased the abundance of smooth brome (*Bromus inermis*), an aggressive, weedy species.

Select Publications

Ackerfield, J., A. Susanna, V. A. Funk, D. Kelch, D. S. Park, A. H. Thornhill, B. Yildiz, T. Arabaci, T. Dirmenci. 2020. A prickly puzzle: Generic delimitations in the *Carduus-Cirsium* group (Compositae: Cardueae: Carduinae). *Taxon* 69(4): 715-738. <https://doi.org/10.1002/tax.12288>

Ackerfield, J., D. Keil, W. Hodgson, M. P. Simmons, S. Fehlberg, V. A. Funk. 2020. Thistle be a mess: Untangling the taxonomy of *Cirsium* (Cardueae: Compositae) in North America. *Journal of Systematics and Evolution* 58(6): 881-912. <https://doi.org/10.1111/jse.12692>

Contina, A., S. W. Yanco, A. K. Pierce, **M. DePrenger-Levin**, M. B. Wunder, A. M. Neophytou, C. P. Lothrop, R. J. Telford, B. M. Benito, J. Chipperfield, R. B. O'Hara, C. J. Carlson. 2020. Comment on "A global-scale ecological niche model to predict SARS-CoV-2 coronavirus infection rate", author Coro. *Ecological Modelling* 436: 1-4. ISSN 0304-3800, <https://doi.org/10.1016/j.ecolmodel.2020.109288>.

Corrales, A., **A. W. Wilson**, G. M. Mueller, C. Ovrebø. 2020. Novel *Laccaria* species from Juglandaceae forest in Panama with notes on their ecology. *Frontiers in Microbiology*, 11, 1597. <https://doi.org/10.3389/fmicb.2020.01597>.

Kathryn Kalmbach Herbarium (Denver Botanic Gardens). 2020. Denver Botanic Gardens Collection of Arthropods. Occurrence dataset <https://doi.org/10.15468/tdocff>.

Kathryn Kalmbach Herbarium (Denver Botanic Gardens). 2020. Kathryn Kalmbach Herbarium. Occurrence dataset <https://doi.org/10.15468/axrelr>.

Levy, R., R. Hufft, M. Paces. 2020. Deer Creek riparian restoration ecological monitoring. Version 1.6. Kathryn Kalmbach Herbarium (Denver Botanic Gardens). Sampling event dataset <https://doi.org/10.15468/scmp5u>.

Levy, R., M. Paces, R. Hufft. 2020. Sampling event dataset for ecological monitoring of riparian restoration effort in Colorado foothills. *Biodiversity Data Journal* 8: e51817. <https://doi.org/10.3897/BDJ.8.e51817>

Sam Mitchel Herbarium of Fungi (Denver Botanic Gardens.) 2020. Denver Botanic Gardens, Sam Mitchel Herbarium of Fungi. Occurrence dataset <https://doi.org/10.15468/kuagug>.

Seglias, A. E., J. Finch, A. T. Kramer. 2020. Germination behavior of forbs native to the southwestern United States following exposure to short-term seed bank conditions (-20° C). *Seed Science Research* 30 (2): 81-91. <https://doi.org/10.1017/S096025852000001X>

Ullah, S., **A. W. Wilson**, M. Fiaz, S. Hussain, G. M. Mueller, A. N. Khalid. 2020. *Russula shanglaensis* sp. nov. (Basidiomycota: Russulales), a new species from the mixed coniferous forests in District Shangla, Pakistan. *Turkish Journal of Botany*, 44(1), 85-92. <https://dergipark.org.tr/en/download/article-file/935442>.

Weltzin, J. F., J. L. Betancourt, B. I. Cook, T. Crippins, C. A. F. Enquist, M. D. Gerst, J. E. Gross, G. M. Henebry, **R. A. Hufft**, M. A. Kenney, J. S. Kimball, B. C. Reed, S. W. Running. 2020. Seasonality of Biological and Physical Systems as Indicators of Climatic Variation and Change. *Climatic Change*. <https://doi.org/10.1007/s10584-020-02894-0>

Select Presentations

Ackerfield, J. 2020. The importance of natural history collections in a changing world. Colorado College Invited Seminar. Colorado Springs, CO.

Ackerfield, J. 2020. What is taxonomy and how are species defined? Colorado Native Plant Society Workshop.

Ackerfield, J. 2020. Fantastic wildflowers and where to find them. AND Identification tools in your identification toolbox. Crested Butte Wildflower Festival. Crested Butte, CO.

Ackerfield, J., R. P. Barilleaux, W. J. Burns, R. DeHart. 2020. CurCom professional development webinar: A conversation on museum careers. Panel participant and speaker.

Ackerfield, J. 2020. A Prickly Puzzle: Taxonomy and evolution of the *Carduus-Cirsium* group. Colorado State University Department of Biology Summer Seminar Series. Fort Collins, CO.

Ackerfield, J. 2020. Untangling the taxonomy of Colorado's thistles. Colorado Native Plant Society Annual Meeting.

Ackerfield, J. 2020. Thistle be a mess: Untangling the taxonomy of thistles in North America using next-generation sequencing methods. Colorado State University Department of Biology Fall Seminar Series. Fort Collins, CO.

Alba, C. 2020. Native trees and shrubs of Colorado. Colorado Native Plant Society Workshop.

Alba, C. 2020. Quantifying plant diversity along an urban greenway: A unique approach combining botanical collections with ecological transects. Colorado Native Plant Society Denver-Metro Chapter Meeting; University of Colorado Denver Department of Integrative Biology Seminar Series.

Bone, M. 2020. Gardening with natives, seed collection and propagation. Landscaping with Colorado Native Plants Conference.

DePrenger-Levin, M. 2020. Flexible seed harvest: revisiting the 10% rule. Center for Plant Conservation Annual Meeting.

Hufft, R., N. Elias. 2020. Biophilia. Creative Mornings Denver.

Hufft, R. 2020. Plants in a changing world: evolving strategies for conservation and restoration. Regis University Biology Department Seminar Series. Denver, CO.

Hufft, R. 2020. Collaboration among diverse stakeholders for successful plant conservation, session organizer and moderator. North American Congress for Conservation Biology 2020.

Hufft, R. and N. Shakelford. 2020. Restoration for multiple audiences, from local results to global implications. Society of Range Management, Denver, CO.

Kintgen, M. 2020. Circumboreal alpine and a little biogeography. Colorado Native Plant Society Annual Meeting.

Kintgen, M. 2020. Safeguarding the nationally accredited alpine of the World collection TM. American Public Garden Association Plant Collection Network Forum.

Krishnan, S. 2020. Bridging the divide between consumer horticulture and public gardens, American Society for Horticultural Science Annual Conference.

Neale, J. 2020. Protecting Colorado's Rarest Plants Through Collaboration and Accessible Objectives. Collaboration among diverse stakeholders for successful plant conservation symposium. North American Congress for Conservation Biology.

Neale, J., J. Ackerfield, R. Levy. 2020. Denver EcoFlora Project. American Public Gardens Association Conference.

Seglias, A. 2020. Can alpine species "bank" on conservation? Alpine Curators Annual Meeting; Center for Plant Conservation Annual Meeting; Southern Rockies Seed Network Annual Meeting.

Wilson, A., V. Evenson. 2020. History of the Colorado Mycological Society. 2020 Colorado Mycological Society Exposition.

Wilson, A. 2020. How the Colorado Mycoflora Project will lead to a greater understanding of Colorado's macrofungal diversity. California State University East Bay Presentation; Western Colorado State University Seminar.

Wilson, A. 2020. Adventures in Telluride Macrofungi: Our 2019 collecting trip in Southwestern Colorado. Telluride Mushroom Festival.

Wilson, A. 2020. How to use iNaturalist. Colorado Mycological Society Workshop.

Reports

Alba, C., J. Wingate. 2020. Sandstone Ranch Botanical Survey. Prepared for Douglas County Open Space.

DePrenger-Levin M., R. Hufft. 2020. *Eriogonum brandegeei* Demographic Monitoring Study 2004-2020. Prepared for U.S. Department of Interior Bureau of Land Management, Colorado State Office.

DePrenger-Levin M., R. Hufft. 2020. Life History and Demography of *Astragalus microcymbus* Barneby (Fabaceae). Prepared for U.S. Department of Interior Bureau of Land Management, Colorado State Office.



IDEA – Inclusion, Diversity, Equity, & Accessibility

We are committed to the principles of inclusion, diversity, equity and access – maintaining a diverse organization that reflects and embraces the diversity of the communities we serve, and respecting and valuing all people. We are committed to training the next generation of scientists to appreciate and understand biodiversity in all its forms.

Thank You to Our Funders

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To keep up to date with science at Denver Botanic Gardens, you can sign up for the quarterly science e-newsletter by clicking “Subscribe” at the bottom of botanicgardens.org and selecting “Science.”

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