

Jennifer M. Ramp Neale

Denver Botanic Gardens Department of Research & Conservation: e-mail: nealejr@botanicgardens.org

EDUCATION

1999-2005 Ph.D. *University of Colorado*, Department of Ecology and Evolutionary Biology
1995-1999 B.S. *Rhodes College*, Memphis, Tennessee, Major: Biology; Minor: French

RELEVANT PROFESSIONAL EXPERIENCE

As the Director of Research & Conservation at Denver Botanic Gardens, I serve as the public face of our work. I participate in regional, national and international collaborative projects focused on biodiversity conservation. My research is focused on using molecular methods to address questions of conservation concern related to rare plants in Colorado.

Sept 2010 – Present *Director of Research & Conservation*, Denver Botanic Gardens, Denver CO.
Nov 2013 – Present *Graduate Faculty Equivalence*, University of Northern Colorado, Greeley CO.
School of Biological Science
Mar 2008-Present *Adjunct Professor of Biology*, University of Denver, Denver CO. Department of Biological Sciences.
Jan 2007-Present *Affiliated Faculty Department of Integrative Biology*, University of Colorado at Denver, Denver CO. Department of Integrative Biology.
May 2006-Oct 2009 *Conservation Genetic Consultant*, LSA Associates & Solano County Water Agency, CA. (Through the University of Colorado Museum).

RELEVANT RESEARCH EXPERIENCE

Sept 2010 – Present *Director of Research & Conservation*, Denver Botanic Gardens, Denver CO.
Director of research efforts at the Botanic Gardens. Supervise a staff of 11 including a rare plant research team, the Kathryn Kalmbach Herbarium and the Sam Mitchel Herbarium of Fungi.
Jan 2009-Aug 2010 *Associate Director of Research & Conservation*, Denver Botanic Gardens, Denver, CO. Director of the conservation genetics program. Manager of long-term demographic monitoring. Manager of seed collection for ex-situ conservation of imperiled Colorado plant species. Manager of the Kathryn Kalmbach Herbarium and the Sam Mitchel Herbarium of Fungi. Director of the Rare Plant Monitoring Steward Program in collaboration with the Colorado Natural Areas Program.
May 2006-Oct 2009 *Conservation Genetic Consultant*, University of Colorado Museum, “*Solano habitat conservation plan/Natural community conservation plan*” Working with LSA Associates, INC. Ft. Richmond, CA, and Solano County Water Agency, CA.

SELECTED PEER REVIEWED PUBLICATIONS

Kramer, Andrea T., Barbara Crane, Jeff Downing, James L. Hamrick, Kayri Havens, Amy Highland, Sarah Jacobi, Thomas N. Kaye, Eric Lonsdorf, **Jennifer Ramp Neale**, Ari Novy, Peter Smouse, Doug Tallamy, Abigail White, Jacob Zeldin. IN REVIEW. Sourcing native plants to support ecosystem function in urban and rural restoration contexts. *Restoration Ecology*.

Lea, Marian V., John Syring, Tara Jennings, Richard Cronn, Leo P. Bruederle, **Jennifer Ramp Neale**, and Diana F. Tomback. IN PRESS. Development of nuclear microsatellite loci for *Pinus albicaulis* Engelm. (Pinaceae), a conifer of conservation concern. PLOS ONE.

Riser, James P., Anna L. Schwabe, **Jennifer Ramp Neale**. 2017. Novel microsatellite development and characterization for *Phacelia formosula* (Hydrophyllaceae). *Applications in Plant Science* 5(7): 1700030.

Faist, Akasha M., **Jennifer M. Ramp Neale**, Brita Mines, Sharon K. Collinge. 2015. Maintenance of pollinator function in restored vernal pools: Gnats filling the role of solitary bees. *Ecological Restoration* 33(1):51-60.

Schwabe, Anna L., **Jennifer Ramp Neale**, Mitchell E. McGlaughlin. 2015. Examining the genetic integrity of a rare endemic Colorado cactus (*Sclerocactus glaucus*) in the face of hybridization threats from a close and widespread congener (*Sclerocactus parviflorus*). *Conservation Genetics* 16: 443-457.

DePrenger-Levin, Michelle, **Jennifer M. Ramp Neale**, Thomas A. Grant III., Carol Dawson, Yasemin Ergüner Baytok. 2013. Life History and Demography of *Astragalus microcymbus* Barneby (Fabaceae). *Natural Areas Journal* 33(3):264-275.

Schwabe, Anna L., Ashley R. Hubbard, **Jennifer Ramp Neale**, Mitchell McGlaughlin. 2013. Microsatellite loci development for rare Colorado *Sclerocactus* (Cactaceae). *Conservation Genetics Resources* 5(1) 69-72.

Ramp Neale, Jennifer M., Tom A. Ranker, Sharon K. Collinge. 2008. Conservation of rare species with island-like distributions: a case study of *Lasthenia conjugens* (Asteraceae) using population genetic structure and distribution of rare markers. *Plant Species Biology* 23:97-110. Awarded Best Paper of the Year 2008 by Plant Species Biology.

Geiger, Jennifer M.O., Tom A. Ranker, **Jennifer M. Ramp Neale**, Susan T. Klimas. 2007. Molecular biogeography and origins of the Hawaiian fern flora. *Brittonia* 59(2):142-158.

Ramp, Jennifer M., Tom A. Ranker, Sharon K. Collinge. 2006. Restoration genetics of the vernal pool endemic *Lasthenia conjugens*. *Conservation Genetics* 7:631-649.

Book Sections/Chapters

- **Neale, Jennifer M.R.** Genetic considerations in rare plant restoration: practical applications. Washington, D.C., Island Press. In Plant Reintroductions in a changing climate: promises and perils. 2012, pp. 71-88.

OTHER PUBLICATIONS

Strategic Reports:

- Statwick, Joseph, **Jennifer Ramp Neale**, Anna Sher. 2016. A report to concerned parties on the taxonomy and conservation of the San Rafael milkvetch (*Astragalus rafaensis* M.E. Jones) and Grand Junction milkvetch (*Astragalus linifolius* Osterh.) (Fabaceae).
- Neely, Betsy, Susan Panjabi, Eric Lane, Paige Lewis, Carol Dawson, Andrew Kratz, Brian Kurzel, Tim Hogan, Jill Handwerk, Sarada Krishnan, **Jennifer Neale**, and Nicola Ripley. 2009. Colorado

Rare Plant Conservation Strategy. Developed by the Colorado Rare Plant Conservation Initiative. The Nature Conservancy, Boulder, Colorado. 117pp.

- **Ramp Neale, Jennifer M.** 2009. Population genetic analysis of *Lasthenia conjugens* (Asteraceae) (Contra Costa Goldfields) populations within Solano County, CA. Appendix D of 'The Status and Distribution of Contra Costa Goldfields in Solano County, California' Prepared by: LSA Associates, Point Richmond, CA. 83pp.

Specialized publications:

- **Neale, Jennifer Ramp,** Mary Goshorn. 2016. Examining genetic diversity in *ex situ* and *in situ* collections of the federally endangered *Penstemon penlandii* (Kremmling beardtongue). Bulletin of the American Penstemon Society 75:36-44.

Articles published in Denver Botanic Gardens' member's newsletter, "In the Gardens":

- Interdisciplinary Inspiration and Impact: Program Expansion in the Freyer – Newman Center July – Sept 2018 with Lisa Eldred
- Conservation Genetics: How the Gardens is using DNA to Conserve Biodiversity April – June 2018 with Andrew Wilson
- Rare Plant Rescue: Collaboration and Quick Response Jan – March 2018 with Alexandra Seglias
- Representing the Gardens at the Sixth Global Botanic Garden Congress in Geneva, Switzerland Oct – Dec 2017
- Training the Next Generation of Botanists Jan-March 2017
- The Importance of Seed Banks for Ex Situ Conservation July – Sept 2016
- Meet our Scientists Jan-March 2014
- Prairies to Peaks: Ecosystems of Colorado Jan-March 2013
- Scientific Capacity at the Gardens Jan-March 2012
- A Species on the Brink: What Gardens Researchers Are Doing to Help Sept/Oct 2010
- The Gardens' new conservation genetics program: expanding rare plant research Jan/Feb 2010
- Countless hours in the field: 2009 research wrap-up Sept/Oct 2009
- 2008 Field work: Gardens' research department monitors plants in the wild Sept/Oct 2008
- Seed collecting: preserving rare native plants Jan/Feb 2008
- Good cheer and good stewardship: reducing your carbon footprint during the holidays Nov/Dec 2007
- Biofuels: Switchgrass and Sugarcane Could Help Slow Global Climate Change Sept/Oct 2007

RECENT RESEARCH GRANTS AND AWARDS RECEIVED

In addition to the receipt of the specific funding awards below, I am responsible for a \$900,000 annual budget and the management of 11 staff and 4 graduate students. Funding sources include Botanic Gardens operating funds, government grants and assistance agreement funds, private grants and contracts, internal endowment funds and private gifts and awards.

September 2018	Bureau of Land Management, \$249,209. Region 6: Wyoming Basin and Colorado Seed Collection and Botanical Services. Contract awarded to Denver Botanic Gardens.
September 2018	Institute for Museum and Library Services, \$440,199. Enhanced Capacity for Collections.

August 2014 United States Bureau of Land Management, up to \$275,000. Rare Plant Restoration Project with Denver Botanic Gardens in Colorado. A Five-year Assistance Agreement awarded to DBG.

May 2014 Desert Ecosystem Analysis and Restoration, \$6,839.49. Refinement of species boundaries between the Colorado hookless cactus (*Sclerocactus glaucus*) and the smallflower fishhook cactus (*S. parviflorus*).

March 2014 Black Hills Exploration & Production, \$40,000. Monitoring and study of development impacts on the Colorado hookless cactus (*Sclerocactus glaucus*) in the areas leased by Black Hills Exploration and Production outside of DeBeque, Colorado. Contract to DBG. Total award 2009 – 2014 \$139,120.

March 2012 Colorado Department of Natural Resources Species Conservation Trust Fund, \$23,406. Testing the genetic identity of *Corispermum* at the North and East Sand Dunes of Northern Colorado. Co-PI.

October 2011 Association of Zoological Horticulture, \$5,000. Seed collection and germination of federal status plant species in Colorado. Co-PI.

August 2011 United States Fish and Wildlife Service, \$39,406. Financial Assistance Award: A Genetic Investigation of *Sclerocactus brevispinus* (Pariette Cactus) and *Sclerocactus wetlandicus* (Uintah basin hookless cactus) Genetic Diversity and Taxonomic Relations in the Uintah basin of Utah. Co-PI

December 2009 National Fish and Wildlife Foundation, \$90,000. The Colorado Plant Conservation Strategy Implementation-II project. Participant

August 2009 United States Fish and Wildlife Service, \$53,185. Assessment of Genetic Diversity of *Physaria (Lesquerella) congesta*, Dudley Bluffs bladderpod and *Physaria obcordata*, Dudley Bluffs twinpod. PI

June 2009 United States Fish and Wildlife Service, \$55,520. Preventing Extinction Award: Surveys, Population Assessment, and Assessment of Genetic Diversity of the North Park Phacelia (*Phacelia formosula*). PI

May 2009 United States Fish and Wildlife Service, \$33,754.18. Financial Assistance Award: A Genetic Investigation of *Sclerocactus glaucus* (Colorado Hookless Cactus) Genetic Diversity and Taxonomic Relations in Western Colorado. Co-PI

October 2008 Gladys Cheesman Evans Endowment Fund, \$250,000. For the establishment and support of the Conservation Genetics Program at Denver Botanic Gardens.

SELECT INVITED SEMINARS

October 2018 *Ecological Stewardship at Denver Botanic Gardens Chatfield Farms*, Denver Master Gardeners Association, Denver, CO.

September 2018 *Steppe Into Applied Conservation at Denver Botanic Gardens*, Garden Club of America Conservation Study Trip, Denver, CO.

June 2017 *Rare plants and precipitation in Colorado*. With Michelle DePrenger-Levin. Presented to the National Center for Atmospheric Research Advanced Study Program.

March 2017 *Applied Conservation at Denver Botanic Gardens*, University of Colorado Colorado Springs, Conservation Biology course, Spring Semester

February 2017 *Applied Conservation at Denver Botanic Gardens*, Colorado Native Plant Society, Denver Chapter.

November 2016 *Applied Conservation at Denver Botanic Gardens*, Department of Integrated Biology, Departmental Seminar, University of Colorado Denver.

- May 2016 *Applied conservation genetics*, University of Denver, Department of Biological Sciences, Conservation Biology course, Spring Quarter.
- February 2016 *Conserving Our Rarest Plants*, Colorado Biology Teachers Association, Winter Meeting at Denver Botanic Gardens, Denver, CO.
- November 2015 *Conserving Our Rarest Plants*, Colorado Federation of Garden Clubs Judges Council, Denver, CO.
- August 2013 *Conserving Our Rarest Plants*, Aurora History Museum, Aurora, CO.
- March 2013 *Denver Botanic Gardens: Leaders in Horticulture and Conservation*, Colorado Coalition of Land Trusts, Denver, CO. Keynote.
- October 2012 *The Rare Plant Conservation Initiative: Saving Colorado's Wildflowers*, Colorado Native Plant Society, Boulder Chapter.
- July 2012 *The Rare Plant Conservation Initiative: Saving Colorado's Wildflowers*, Rocky Mountain National Park Science Behind the Scenery series Summer 2012. Rocky Mountain National Park, Estes Park, CO.
- March 2012 *Protecting rare plants in Colorado: Beyond the Endangered Species Act*, University of Colorado at Denver and Health Sciences Center, Biology Department, Conservation Biology course, Denver, CO.
- February 2012 *Rare Plant Stewardship*, Presented with Brian Kurzel. Colorado Native Plant Society, Denver Chapter.
- October 2011 *Protecting rare plants in Colorado: Beyond the Endangered Species Act*, University of Denver, Endangered Species and Wildlife course, Denver, CO.
- October 2010 *Ex situ Conservation and Collaborations*, American Public Garden Association Collections Symposium, Denver, CO.
- October 2010 *Establishing a Conservation Genetics Lab*, American Public Garden Associate Collections Symposium, Denver, CO.
- February 2010 *The Rare Plant Conservation Initiative: Saving Colorado's Wildflowers* Denver Master Gardener Program, Denver, CO.
- October 2009 *Genetic Considerations in Rare Plant Restoration: Practical Applications*. Center for Plant Conservation International Symposium on Reintroduction. St. Louis, MO.

ADDITIONAL PRESENTATIONS

- September 2017 *Applied Conservation at Denver Botanic Gardens*. Presented to the Denver Botanic Gardens docent program, Denver, CO.
- May 2017 *Correlations between precipitation and phenology in Colorado's alpine with an eye towards predicting plant response to changing climates*. With Michelle DePrenger-Levin, Rebecca Hufft, Richard Levy, Melissa Islam. Presented to the Denver Botanic Gardens Board of Trustees, Denver, CO.
- September 2013 *Conserving our rarest plants*, Denver Botanic Gardens Meet Our Scientists Series, Denver CO.
- August 2013 *Conserving our rarest plants: the Colorado hookless cactus*, Presented to Black Hills Corporation, Denver, CO.
- February 2013 *Conserving our rarest plants*, Presented at the Succulent Soirée, Denver Botanic Gardens, Denver, CO.
- January 2012 *Research & Conservation at Denver Botanic Gardens: Fifteen years of documenting and protecting our natural heritage*, Presented to the Denver Botanic Gardens Guild, Denver, CO.

July 2011 *Conservation genetics at the Gardens: Using DNA to protect our rarest plants*, Denver Botanic Gardens Meet Our Scientists Series, Denver CO.

May 2011 *Research & Conservation at Denver Botanic Gardens: Fifteen years of documenting and protecting our natural heritage*, Presented to the Denver Botanic Gardens Board of Trustees, Denver, CO.

May 2010 *The Rare Plant Conservation Initiative: Saving Colorado's Wildflowers* Presented to the Denver Botanic Gardens Mt. Goliath volunteers, Denver, CO.

May 2009 *Denver Botanic Gardens Conservation Genetics and Tissue Culture Program*, Presented to the Denver Botanic Gardens Board of Trustees, Denver, CO.

March 2008 *Finding and Documenting Rare Plants*, Denver Botanic Gardens brown bag lunch talk, Denver, CO. Presented with Michelle DePrenger-Levin.

SELECT PAPERS PRESENTED AT MEETINGS

Neale, Jennifer. Denver Botanic Gardens: GGI-Gardens Symposium. American Public Gardens Association Annual Meeting 2018, Anaheim, CA.

Neale, Jennifer, Levy, Richard. Data standardization at Denver Botanic Gardens. Center for Plant Conservation Annual Meeting 2018, Fort Worth, TX.

Havens, Kayri, Kramer, Andrea T., **Neale, Jennifer M. Ramp.** Seed Sourcing: how to make the best decisions about what seed provenances to use. World Conference on Ecological Restoration, 2017, Iguassu, Brazil.

Crane, Barbara S., Cruse-Sanders, Jennifer M., Downing, Jeff, Hamrick, James L., Havens, Kayri, Highland, Amy, Jacobi, Sarah, Kaye, Tom N., Kramer, Andrea T., Lonsdorf, Eric V., Novy, Ari, **Neale, Jennifer M. Ramp***, Smouse, Peter, Tallamy, Doug, White, Abbey. When does local matter? A new tool to assess risks and benefits when selecting native plant materials for planting. 6th Global Botanic Gardens Congress 2017, Geneva, Switzerland.

Neale, Jennifer Ramp*, Denver Botanic Gardens: GGI-Gardens roundtable. 6th Global Botanic Gardens Congress 2017, Geneva, Switzerland.

Neale Jennifer R. *, DePrenger-Levin, Michelle E., Hufft, Rebecca A., Levy, Richard A., Islam, Melissa. Correlations between precipitation and phenology in Colorado's alpine with an eye towards predicting plant response to changing climates. Center for Plant Conservation Annual Meeting 2017, San Diego, CA.

Neale, Jennifer Ramp*, Schwabe, Anna. Conservation genetic assessment of the federally protected Dudley Bluffs mustards (*Physaria congesta* and *Physaria obcordata*) with implications for oil and gas development in the Piceance Basin of Colorado, USA. Botany 2016, Savannah, GA.

Neale, Jennifer R. *, Goshorn, Mary. Examining genetic diversity in *ex situ* and *in situ* collections of the federally endangered *Penstemon penlandii* (Kremmling beardtongue). Center for Plant Conservation Annual Meeting 2016, Framingham, MA.

Manion, John T., **Neale, Jennifer R. ***, Westwood, Murphy, Cruse-Sanders, Jennifer, Randall, Johnny, Griffith, Patrick. Growing and nurturing a plant conservation program – from roots to shoots. American Public Gardens Association Annual Meeting 2015, Minneapolis, MN.

Neale, Jennifer R.*, Islam, Melissa, DePrenger-Levin, Michelle. Population genetic assessment of *Phacelia* in Northern Colorado. Center for Plant Conservation Annual Meeting 2015, Athens, GA.

Hubbard, Ashley, McGlaughlin, Mitchell E., **Neale, Jennifer Ramp**. Examination of *Sclerocactus wetlandicus* and *Sclerocactus brevispinus* genetic diversity and population structure in the Uinta Basin, UT. Botany 2014 Boise, ID.

Schwabe, Anna L., **Neale, Jennifer Ramp**, McGlaughlin, Mitchell E.. Hybridization or phenotypic plasticity? A genetic investigation of an endangered Colorado cactus (*Sclerocactus glaucus*) in the face of hybridization threats from a widespread congener (*Sclerocactus parviflorus*). Botany 2014 Boise, ID.

Islam, Melissa, **Neale, Jennifer Ramp**, Schwabe, Anna L.. Use of genetic analyses to distinguish the rare *Corispermum navicula* from its widespread, sympatric relative to inform management in the Northern Colorado Sand Dunes. Botany 2014 Boise, ID.

Ranker, Tom A., Vernon, Amanda L., Geiger, Jennifer M.O., Sundue, Michael A., Morden, Clifford W., **Neale, Jennifer M. Ramp**, Neale, Richard B.. Origins of the Hawaiian fern and lycophyte flora. Island Biology 2014, Honolulu, HI.

Cruse-Sanders, J., McCue, K., McDade, L., Nicholls, W., Hird, A., Cavendar, N., Havens, K., **Ramp Neale, J.***, Taylor, M., Bucalo, K.. The magic that happens when talented people come together: A workshop for the garden community to develop comparative metrics for conservation and research. Workshop, American Public Gardens Association Annual Meeting 2014 Denver, CO.

Hufft Kao, Rebecca, Rosemartin, Alyssa, Goshorn, Mary, **Neale, Jennifer Ramp**. Magic with volunteers: Engaging citizen scientists in phenology to broaden your research impact. American Public Gardens Association Annual Meeting 2014 Denver, CO.

Neale, Jennifer*. Denver Botanic Gardens and the Global Strategy for Plant Conservation: a change in perspective Center for Plant Conservation Annual Meeting 2014, Chanhassen, MN.

Jennifer Ramp Neale*, Anna Schwabe, Melissa Islam, Sarada Krishnan, Mary Goshorn, Mitchell McGlaughlin, Ashley Hubbard, Gina Glenne. Botanic gardens and conservation using molecular techniques – Denver Botanic Gardens as a case study. 3rd Science in Botanic Gardens Congress, 2014, Las Palmas de Gran Canaria.

Cruse-Sanders, J., Kramer, A., Havens, K., Mueller, G., McCue, K., Dosmann, M., Novy, A., Mims, R., Block, T., Bloodworth, S., Cavendar, N., Locklear, J., **Neale, J.R.**, Taylor, M., Bucalo, K.. SUCCESS GLOBALLY – Comparative metrics for assessing conservation capacity at botanic gardens. Fifth Global Botanic Gardens Congress 2013, Dunedin, New Zealand.

Kao, Rebecca, **Neale, Jennifer**, DePrenger-Levin, Michelle, Goshorn, Mary, Wilson, Emily. Longer long-term data in rare plant monitoring are needed. International Congress for Conservation Biology 2013, Baltimore, MD.

DePrenger-Levin, Michelle, **Neale, Jennifer***. *Astragalus Demography* Astragalus Working Group: Center for Plant Conservation Annual Meeting 2013, Austin, TX.

Neale, Jennifer*. Saving our rarest plants: Conservation of the Colorado hookless cactus Center for Plant Conservation Annual Meeting 2013, Austin, TX.

Kao, Rebecca, **Neale, Jennifer R.** Native Plants Count: Understanding the Botanical Value of Your Land. Colorado Coalition of Land Trusts Annual Meeting 2013, Denver, CO.

Neale, Jennifer R.*, Denver Botanic Gardens Foray into Phenology. Center for Plant Conservation Annual Meeting 2012, Claremont, CA.

Neale, Jennifer R.*, DePrenger-Levin, M. Ecological niche models used to guide future conservation of a rare species. Natural Areas Conference, 2011, Tallahassee, FL.

DePrenger-Levin, M., **Neale, Jennifer R.**. Methods to evaluate the risk of extinction of *Astragalus microcymbus*, a recent candidate species. Natural Areas Conference, 2011, Tallahassee, FL.

Schwabe, Anna, **Neale, Jennifer**, McGlaughlin, Mitchell E. Analysis of nuclear DNA from *Sclerocactus glaucus* and *S. parviflorus* to determine the level of directionality and hybridization between these two species. Botany, 2011, St. Louis, MO.

Ramp Neale, Jennifer M.* Research & Conservation at Denver Botanic Gardens: fifteen years of documenting and protecting our natural heritage. Center for Plant Conservation Annual Meeting 2011, Denver, CO.

Ramp Neale, Jennifer M.*, The Rare Plant Conservation Initiative: Saving Colorado's Wildflowers. Center for Plant Conservation Annual Meeting 2010, Chapel Hill, NC.

Ramp Neale, Jennifer M.*, Michelle DePrenger-Levin, Carol Dawson, Tom A. Grant III. Fencing populations of a rare native plant (*Astragalus microcymbus*) leads to increased reproduction but doesn't tell the whole story, how can management save this species from extinction? Botany 2009, Snowbird, UT.

Michelle DePrenger-Levin, **Ramp Neale, Jennifer M.**, Carol Dawson, Tom A. Grant III. Thirteen years of demographic monitoring predict a grim future for the skiff milkvetch (*Astragalus microcymbus*), where can we go from here? Botany, 2009, Snowbird, UT.

Ramp Neale, Jennifer.* Protecting rare plants in Colorado through in situ monitoring. American Public Garden Association Annual Meeting, 2009, St. Louis, MO.

Ramp Neale, Jennifer M.*, Michelle DePrenger-Levin, Carol Dawson, Tom A. Grant III. Thirteen years of demographic monitoring predict a grim future for the skiff milkvetch (*Astragalus microcymbus*), where can we go from here? Center for Plant Conservation Annual Meeting 2008, Miami, FL.

TRAINING, ADVISING AND MENTORING

Manage a staff of 11 as Director of Research & Conservation at Denver Botanic Gardens. Provide guidance and support for a total of 15 departmental staff including graduate students.

Co-advised PhD student at University of Denver working on seleniferous *Astragalus* and population genetics. Served on thesis committee for 8 Masters Students at various Colorado universities. – committee member.

VOLUNTEER TRAINING

Developed and led the Colorado Rare Plant Monitoring Steward Training in collaboration with the Colorado Natural Areas Program beginning in 2007. Each year volunteers are trained in the theory and practice of applied plant conservation. They receive classroom and field training. In 2011 we relaunched the Adopt-a-Rare-Plant program in collaboration with the Colorado Natural Heritage Program. The Rare Plant Monitoring Steward training occurs every one to two years across the state of Colorado. The Adopt-a-Rare-Plant training is coupled with the Rare Plant Monitoring Steward Training and managed by the Colorado Natural Heritage Program.

PROFESSIONAL SERVICE

Fall 2016-Present	Colorado Pollinator Network, Steering Committee Member
Fall 2009-Present	Colorado Rare Plant Conservation Initiative, Steering Committee Member
Fall 2007-2017	Colorado Native Plant Society, Board Member at Large
Fall 2010 – Present	Metro Denver Urban Advantage, Scientific Advisor
2000 – Present	Member Botanical Society of America
2000 – Present	Member Society for Ecological Restoration

AWARDS RECEIVED

2012 US Fish & Wildlife Service Partners in Mission Recovery Champion Award. As part of the Rare Plant Conservation Initiative.

REVIEWER

American Fern Journal, Australian Journal of Botany, Biodiversity and Conservation, Botany, Conservation Biology, Conservation Genetics, Functional Ecology, Genetica, International Journal of Plant Biology, Institute of Museum and Library Services National Leadership grant reviewer, National Science Foundation grant reviewer, Natural Areas Journal, Trends in Plant Science, Institute of Museum and Library Services National Leadership Collections Stewardship Panel Reviewer.