

# Michelle DePrenger-Levin

Denver Botanic Gardens  
Denver, CO 80206

(720) 865 3630  
[deprengm@botanicgardens.org](mailto:deprengm@botanicgardens.org)

## Education

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| 2024 | Ph.D., <i>University of Colorado Denver</i> , Department of Integrative and Systems Biology<br>Dissertation: Uses of demography to inform plant conservation.<br>Advisors: Dr. Mike Wunder, Dr. Rebecca Hufft, Dr. Michael P. Moore, Dr. Laurel Hartley                          |
| 2007 | M.S., <i>University of Colorado at Denver and Health Science Center</i> , Biology<br>Thesis: Conservation genetic analysis with codominant marker, allozymes, on a rare North American endemic, <i>Carex scirpoidea</i> ssp. <i>convoluta</i> .<br>Advisor: Dr. Leo P. Bruederle |
| 1999 | B.A., <i>Macalester College</i> , St. Paul, Minnesota<br>Major: Environmental Studies; Core: Biology; Minor: Mathematics.<br>Advisor: Dr. Mark Davis   |

## Experience

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| 2025-present | <i>Manager of Conservation Programs</i> , Denver Botanic Gardens, Denver, CO.<br>Implement conservation programs focusing on the conservation, ecology, and demography of rare plants. Engage in state, regional, and global conservation networks. |
| 2007-2025    | <i>Research Associate</i> , Denver Botanic Gardens, Denver, CO.<br>Develop rare plant demographic field studies and analyses. Model population viability over time and space, with expertise in GIS and statistical analyses. Public outreach.      |
| 2002-2007    | <i>Research Assistant</i> , Denver Botanic Gardens, Denver, CO.<br>Field studies of Colorado rare plants, seed collection for ex-situ conservation.   |
| 2001-2002    | <i>Research Intern</i> , Denver Botanic Gardens, Denver, CO.<br>Data collection for over 50 Center for Plant Conservation rare plant species.   |
| 2001-2001    | <i>Apprentice</i> , Easy Bean Farm, Milan, MN.<br>Organic planting and weeding  |
| 2000-2000    | <i>Volunteer Coordinator</i> , AmeriCorps–Vancouver-Clark Parks and Recreation, Vancouver, WA,<br>Invasive plant species control in public parks, manage volunteers, outreach.  |

## Publications

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**DePrenger-Levin, M.**, Dawson, C., Grant III, T., Wunder, M. **2025**. Imperfect detection in plant populations can cause misestimates of demographic rates and missed population trends: the case for *Astragalus microcymbus* Barneby. *Journal of Applied Ecology* *in press*.

Goebel, A. M., **DePrenger-Levin, M.**, Hufft, R. A., & Doak, D. F. **2025**. Optimizing demographic analysis in the face of missing data years to improve conservation of threatened species. *Biological Conservation*, 301.

Seglias, A. E., & **DePrenger-Levin, M.** **2024**. Can alpine species take the heat? Impacts of increased temperatures on early life stages. *Seed Science Research*.

**DePrenger-Levin, M. & Wunder, M.B. 2024.** Pace and parity predict the short-term persistence of small plant populations. *Ecology and Evolution* 1-18

Alba, C., **DePrenger-Levin, M.**, and Hufft, R.A. **2024.** Incorporation of indaziflam into natural areas management of cheatgrass and other short-lived invasive species: Post-fire assessment in a semi-arid Colorado grassland. *Natural Areas Journal* 44(1), 9-20.

Contina, A, Yanco, S.W., Pierce, A.K., **DePrenger-Levin, M.**, Wunder, M.B., Neophytou, A.M., Lostroch, C.P., Telford, R.J., Benito, B.M., Chipperfield, J., O'Hara, R.B., Carlson, C.J. **2020.** Comment on "A global-scale ecological niche model to predict SARS-CoV-2 coronavirus infection rate", author Coro. *Ecological Modelling* 436 1-4.

Hufft, R.A., **DePrenger-Levin, M.E.**, Levy, R.A., and Islam, M.B. **2018.** Using herbarium specimens to select indicator species for climate change monitoring. *Biodiversity and Conservation* 27(6) 1487-1501.

Parobek, C.M., Archer, F.I., **DePrenger-Levin, M.E.**, Hoban, S.M., Liggins, L., and Strand, A.E. **2017.** SKELESIM: an extensible, general framework for population genetic simulation in R. *Molecular Ecology Resources* 17(1), 101-109.

**DePrenger-Levin, M.**, Neale, J.R., Grant III, T., Dawson, C., and Baytok, Y. **2013.** Life history and demography of *Astragalus microcymbus* Barneby (Fabaceae). *Natural Areas Journal* 33(3), 264-275.

**DePrenger-Levin, M.**, Grant III, T., and Dawson, C. **2010.** Impacts of the introduced biocontrol agent, *Rhinocyllus conicus* (Coleoptera: Curculionidae), on the seed production and populations dynamics of *Cirsium ownbeyi* (Asteraceae), a rare, native thistle. *Biological Control* 55, 79-84.

Sher, A, Lair, K, **DePrenger-Levin, M.**, and Dohrenwend, K. **2010.** Best Management Practices for Revegetation after Tamarisk Removal in the Upper Colorado River Basin. Denver Botanic Gardens, Denver, CO.

## Recent Meeting Presentations

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**DePrenger-Levin, M. 2025.** Strategies for providing the best available knowledge on population trends. Contributed paper presented at *The Global Strategy for Plant Conservation - International Plant Conservation Conference*. St. Louis, MO.

**DePrenger-Levin, M. 2024.** Imperfect detection in plant populations impacts conservation actions through misestimates of vital rates and missed population trends. Contributed paper presented at *Ecological Society of America*. Long Beach, CA.

**DePrenger-Levin, M. 2023.** Pace and mode of reproduction predict short-term persistence of small populations. Contributed paper presented at *Ecological Society of America*. Portland, OR.

**DePrenger-Levin, M. 2022.** The role of life history traits in population dynamics in a changing environment. *Ecological Society of America*. Montral, Quebec, Canada.

**DePrenger-Levin, M 2021** Addressing uncertainty in extinction risk due to projection length. Contributed paper presented at *Ecological Society of America* (virtual)

**DePrenger-Levin, M 2020** Flexible seed harvest: revisiting the 10% rule. Center for Plant Conservation (virtual)

**DePrenger-Levin, M. 2019.** The impacts of spatial uncertainty in herbaria data on species distribution models. Contributed paper presented at *Ecological Society of America*, Louisville, KY

**DePrenger-Levin, M, R Hufft. 2018.** Accounting for Spatial Error in Herbarium Records for Species Distribution Models of Rare Plant Species. Contributed paper presented at *Natural Areas Conference*, Bloomington, IN

**DePrenger-Levin, M, J Neale, R Hufft. 2017.** Conservation planning for Colorado's alpine plant communities based on herbarium records: predicting community response to a changing climate. Contributed paper presented at *Natural Areas Conference*, Fort Collins, CO

**DePrenger-Levin, M, R Hufft, R Levy, M Islam. 2016.** Using herbarium records to assess shifts in phenology in alpine plant communities. Contributed paper presented at *Natural Areas Conference*, Davis, CA

**DePrenger-Levin, M, J Neale. 2011.** Methods to evaluate the risk of extinction of *Astragalus microcymbus*, a recent candidate species. Contributed paper presented at *Natural Areas Conference*, Tallahassee, FL

**DePrenger-Levin, M, J Neale. 2009.** PVA predicts a grim future for the skiff milkvetch (*Astragalus microcymbus*): Where can we go from here? Contributed paper presented at *Botany*, Snowbird, UT

## Working groups

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| 2020 – Present | Ecological Society of America's Vegetation Classification Panel   |
| 2017           | <i>NIMBioS Investigative Workshop</i> , Knoxville, TN<br>Species' range shifts in a warming world   |
| 2015           | <i>NIMBioS short-term visit</i> , Knoxville, TN<br>Completed R package, skeleSim. Enhance the accessibility of population genetic simulation frameworks using R.  |
| 2015           | <i>NESCent hackathon on population genetics in R</i><br>Solving interoperability, scalability, and workflow challenges among population genetics R packages, Collaborative work on code, documentation, use-cases, and resources to aid population genetic communities. |