

Megan L. DeMarche

* published as Megan L. Peterson until 2021

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PROFESSIONAL APPOINTMENTS

- | | |
|----------------|--|
| 2021 – present | Lilly Teaching Fellow, University of Georgia |
| 2020 - present | Assistant Professor
Haines Family Distinguished Professorship in Field Botany
Department of Plant Biology, University of Georgia |
| 2015 – 2019 | Postdoctoral Research Associate
Environmental Studies, University of Colorado Boulder |

EDUCATION

- | | |
|-------------|--|
| 2011 – 2015 | Ph.D., Ecology and Evolutionary Biology
University of California, Santa Cruz, CA |
| 2009 - 2011 | Ph.D. student, Program in Ecology
Colorado State University, Fort Collins, CO. |
| 2009 | B.S. Evolution, Ecology and Biodiversity with Highest Honors
University of California, Davis, CA. |

PUBLICATIONS

Note: ML DeMarche published as ML Peterson until 2021. Some publications prior to 2021 have since been updated to ML DeMarche as allowed by journal policies.

*Undergraduate author

- 27) Zettlemoyer, M, J Wilson*, and **ML DeMarche**. Estimating phenological sensitivity in contemporary vs. historical datasets: effects of climate resolution and spatial scale. *In press at American Journal of Botany*.
- 26) Zettlemoyer, M, S Ellis, C Hale, E Horne, R Thoen, and **ML DeMarche**. Limited evidence for phenological differences between nonnative and native species. *In press at Frontiers in Ecology and Evolution*.
- 25) Doak, DF, RE Langendorf, AM Louthan, E Waddle, NI Chardon, R Dibner, D Keinath, E Lombardi, C Steenbock, R Shriver, C Linares, MB Garcia, WF Morris, and **ML**

- DeMarche.** 2022. A critical comparison of integral projection and matrix projection models for demographic analysis: Reply. *Ecology* e3822.
- 24) Wadgymar, S., **ML DeMarche**, E Josephs, S Sheth, and J Anderson. 2022. Local adaptation: Causal agents of selection and adaptive trait divergence. *Annual Reviews in Ecology, Evolution, and Systematics* 53:1.
 - 23) Zettlemoyer, M. and **ML DeMarche**. 2022. Dissecting impacts of phenological shifts for performance across biological scales. *TREE* 37: 147-157.
 - 22) Zettlemoyer, M. and **ML Peterson**. 2021. Does phenological plasticity help or hinder range shifts under climate change? *Frontiers in Ecology and Evolution* 9: 689192
 - 21) Louthan, A, **ML DeMarche**, L Shoemaker. 2021. Climate sensitivity across latitude: scaling physiology to communities. *TREE* 36: 931-942
 - 20) Reed, P. S Bridgham, L Pfeifer-Meister, **ML DeMarche**, B Johnson, B Roy, G Bailes, A Nelson, W Morris, and D Doak. 2021. Climate warming threatens the persistence of a community of disturbance-adapted native annual plants. *Ecology* 102: e03464.
 - 19) Mackin*, H, K Shek, T Thornton, K Evens, L Hallett, K McGuire, **M DeMarche**, B Roy. 2021. The ‘black box’ of plant demography: how do seed type, climate and seed fungal communities affect grass seed germination? *New Phytologist* 231: 2319-2332.
 - 18) Doak, DF, RE Langendorf, AM Louthan, E Waddle, NI Chardon, R Dibner, D Keinath, E Lombardi, C Steenbock, R Shriver, C Linares, MB Garcia, WF Morris, and **ML DeMarche**. 2021. A critical comparison of integral projection and matrix projection models for demographic analysis. *Ecological Monographs* 91: e01447.
 - 17) Rollinson, CR, A Finley, MR Alexander, S Banerjee, KD Hamil, LE Koenig, DH Locke, **ML DeMarche**, MW Tingley, K Wheeler, C Youngflesh, E Zipkin. 2021. Working across space and time: nonstationarity in ecological research and application. *Frontiers in Ecology and the Environment* 19: 66-72.
 - 16) **DeMarche, ML**, G Bailes, L Hendricks, L Pfeifer-Meister, P Reed, S Bridgham, B Johnson, R Shriver, E Waddle*, H Wroton*, DF Doak, B Roy, WF Morris. 2021. Latitudinal gradients in population growth do not predict demographic responses to climate. *Ecological Applications* 31: e02242.
 - 15) Reed, P, **ML Peterson**, L Pfeifer-Meister, WF Morris, DF Doak, B Roy, B Johnson, G Bailes, A Nelson, S Bridgham. 2020. Climate manipulations differentially affect plant population dynamics within versus beyond northern range limits. *Journal of Ecology* 109: 664-675.
 - 14) **DeMarche, ML**, AL Angert, and KM Kay. 2020. Experimental migration upward in elevation is associated with strong selection on life history traits. *Ecology and Evolution* 10: 612-625.
 - 13) Chardon, NI, S Pironon, **ML Peterson**, and DF Doak. 2020. Incorporating intraspecific variation into species distribution models improves distribution predictions, but cannot predict species traits for a wide-spread plant species. *Ecography* 43: 60-74.
 - 12) **Peterson, ML**, WF Morris, C Linares, DF Doak. 2019. Improving structured population models with more realistic representations of non-normal growth. *Methods in Ecology and Evolution* 10: 1431-1444.
 - 11) Waddle*, E, L Piedrahita*, E Hall*, G Kendzierski*, WF Morris, **ML DeMarche**, and DF Doak. 2019. Asynchrony in individual and subpopulation fecundity stabilizes reproductive output of an alpine plant population. *Ecology* 100: e02639.

- 10) Dibner, R, **ML DeMarche**, A Louthan, and DF Doak. 2019. Multiple mechanisms confer stability to isolated populations of a rare endemic plant. *Ecological Monographs* 89: e01360.
- 9) **DeMarche, ML**, DF Doak, and WF Morris. 2019. Incorporating local adaptation into forecasts of species' distribution and abundance under climate change. *Global Change Biology* 25: 775-793.
- 8) Hall*, E, L Piedrahita*, E Waddle*, G Kendzierski*, DF Doak, and **ML DeMarche**. 2018. Climate and synchrony with conspecifics determine the effects of flowering phenology on reproductive success in *Silene acaulis*. *Arctic, Antarctic, and Alpine Research* 50: e1548866.
- 7) **DeMarche, ML**, DF Doak, and WF Morris. 2018. Both life history plasticity and local adaptation will shape range-wide responses to climate warming in the tundra plant *Silene acaulis*. *Global Change Biology* 24: 1614-1624.
- 6) Abbott, RE, DF Doak, and **ML DeMarche**. 2017. Portfolio effects, climate change, and the persistence of small populations: analyses on the rare plant *Saussurea weberi*. *Ecology* 98: 1071-1081.
- 5) **DeMarche, ML**, KM Kay, and AL Angert. 2016. The scale of local adaptation in *Mimulus guttatus*: comparing life history races, ecotypes, and populations. *New Phytologist* 211: 345-356.
- 4) **Peterson, ML**, and KM Kay. 2015. Mating system plasticity promotes persistence and adaptation of colonizing populations of hermaphroditic angiosperms. *The American Naturalist* 85(1): 28-43.
- 3) **DeMarche, ML**, TJ Miller, and KM Kay. 2015. An ultraviolet floral polymorphism associated with life history drives pollinator discrimination in *Mimulus guttatus*. *American Journal of Botany* 102(3): 1-11.
- 2) Angert, AL, S Kimball, **ML DeMarche**, TE Huxman, and DL Venable. 2014. Phenotypic constraints and community structure: Linking trade-offs within and among species. *Evolution* 68(11): 3149-3165.
- 1) **DeMarche, ML**, KJ Rice, and JP Sexton. 2013. Niche partitioning between close relatives suggests trade-offs between adaptation to local environments and competition. *Ecology and Evolution* 3(3): 512-522.

Other publications –

- 5) Doak, DF, D Keinath, C Linares, MB Garcia, WF Morris, and **ML DeMarche**. 2021. Testing demographic methods using field studies of five dissimilar species. *The Bulletin of the Ecological Society of America* 102: 1-5.
- 4) **ML DeMarche**. 2020. Moving forecasts forward. *New Phytologist* 228: 403-405.
- 3) Lowry, D, J Sobel, A Angert, TL Ashman, R Baker, B Blackman, Y Brandvain, K Byers, A Cooley, J Coughlan, M Dudash, C Fenster, K Ferris, L Fishman, J Friedman, D Grossenbacher, L Holeski, C Ivey, K Kay, V Koelling, N Kooyers, M Vallejo-Marín, C Murren, **ML Peterson**, J Puzey, M Rotter, J Seemann, J Sexton, S Sheth, M Streisfeld, A Sweigart, A Twyford, J Willis, C Wu, Y Yuan. 2019. The case for the continued use of the genus name *Mimulus* for all monkeyflowers. *Taxon*. 68(4): 617-623.
- 2) **ML Peterson**. 2019. The importance of local variation for the conservation of rare plants. *Aquilegia* 43(4) 26:27.

- 1) Doak, DF, R Dibner, A Louthan, and **ML Peterson**. 2016. Final report on Desert Yellowhead (*Yermo xanthocephalus*) conservation status. Report and recommendations to the Bureau of Land Management and the U.S. Fish and Wildlife Service.

GRANTS AND FELLOWSHIPS

2023-2026	NSF ORCC, “Integrating evolutionary and migratory potential of <i>Chamaecrista fasciculata</i> into forecasts of range-wide population dynamics under climate change” (Co-PI with J. Anderson, S. Wadgymar, S. Sheth, E. Josephs, and J. Cruse-Sanders)	\$2,236,398
2022-2023	US Fish and Wildlife, “Analysis and evaluation of granite rock outcrop pool enhancement/creation efforts” (F22AC02908)	\$4,995
2018-2023	NSF LTREB, “How will local adaptation and environmental extremes shape continental-scale changes in species distribution and abundance?” (Co-PI with D. Doak and W. Morris, DEB 1753954)	\$450,000
2019	NSF RET supplement for “How will local adaptation and environmental extremes shape continental-scale changes in species distribution and abundance?”	\$17,148
2019	NSF REU supplement for “How will local adaptation and environmental extremes shape continental-scale changes in species distribution and abundance?”	\$8,018
2016-2018	NSF REU supplements for “Population-and community-level mechanisms of range limitation in a variable and changing environment” (contributed substantially to writing, PIs D. Doak and W. Morris)	\$21,243
2014	University of California Chancellor’s Fellowship, UC Santa Cruz	\$24,000
2013	Jean H. Langenheim Graduate Research Grant	\$1,500
2012	Educational Grant, California Native Plant Society	\$500
2010	NSF Graduate Research Fellowship	\$130,000
2010	Rosemary Grant Award, Society for the Study of Evolution	\$2,500
2010	Graduate Student Award, Botanical Society of America	\$500
2010	Harold David Harrington Fellowship, Colorado State University	\$500
2009	Graduate Student Fellowship, Colorado State University	\$5,000

PRESENTATIONS

Invited presentations –

2022	Atlanta Botanical Garden
2021	Plant Center, University of Georgia
2021	EDGE seminar series, University of Georgia
2021	Paint Rock Forest Research Center
2020	Odum School of Ecology, University of Georgia
2020	Center for Population Biology, University of California Davis
2020	EDGE seminar series, University of Georgia
2019	Department of Biology, Boise State University
2019	Department of Plant Biology, University of Georgia

- 2018 Department of Biology, University of Maryland
- 2018 Department of Biology, University of Massachusetts Lowell
- 2016 Department of Biology, San Francisco State University
- 2015 Department of Evolutionary Biology, University of Colorado Boulder
- 2014 Department of Biology, University of San Francisco

Contributed presentations –

- 2019 Society for the Study of Evolution, Providence RI. “Earlier snowmelt influences flowering phenology, pollen limitation, and reproductive success in a long-lived alpine plant.”
- 2018 Macrosystems Biology Conference, Alexandria VA. “Can prairie plant communities move to track shifting climate?”
- 2017 Society for the Study of Evolution, Portland OR. “Plasticity and local adaptation shape range-wide responses to climate change in a long-lived tundra plant.”
- 2016 Niwot Ridge LTER annual meeting. “Comparative demography of some common alpine species: setting the stage.”
- 2014 Society for the Study of Evolution, Raleigh NC. “Life history selection drives the early evolution of reproductive barriers in *Mimulus guttatus*.” Honorable mention, W. D. Hamilton Award for outstanding student presentation.
- 2014 *Mimulus* meeting, Duke University. “UV nectar guide polymorphism associated with life history drives floral constancy in *Mimulus guttatus*.”
- 2013 Society for the Study of Evolution, Snowbird UT. “Adaptation to novel environments: can self-fertilization promote niche evolution?”
- 2013 Biennial Plant Research Symposium, UC Santa Cruz. “Self-fertilization promotes colonization of novel environments.”
- 2013 Ecology and Evolutionary Biology Department Research Symposium, UC Santa Cruz. “Self-fertilization promotes colonization of novel environments.”
- 2013 Species Interactions Workshop, UC Santa Cruz/Stanford. “Pollinator responses to a cryptic UV floral polymorphism in *Mimulus guttatus*.”
- 2009 California Native Plant Society Conservation Conference, Sacramento CA. “Intraspecific facilitation and drought avoidance: niche adaptations in a Sierran endemic”

TEACHING

Instructor –

- S22 PBIO 8410: Plant Population and Community Ecology, University of Georgia
- S21 -S22 BIOL 2108H: Principles of Biology II honors, University of Georgia
- S21 BIOL 2108H: Principles of Biology II honors, University of Georgia
- F20 PBIO 8840: Foundational theories and modern perspectives in plant ecology and evolution, University of Georgia
- F14 BIOE 20B: Physiology and Development of Organisms, UC Santa Cruz
- S14 BIOE 117: Systematic Botany of Flowering Plants, UC Santa Cruz
- S14 BIOE 117L: Systematic Botany of Flowering Plants Lab, UC Santa Cruz

Teaching assistant –

F13 BIOE 109: Evolution, UC Santa Cruz
S10 BZ 450: Plant Ecology, Colorado State University
F09 Life 102: Attributes of Living Systems, Colorado State University

ADVISING

Graduate students:

Emma Horne (2022 – present, PhD student)
Clayton Hale (2022 – present, PhD student)
-Marie Mellinger Field Botany award (\$1560)
Anna Wyngaarden (2021 – present, PhD student)
- GAIN Fellow, Palfrey grant (\$1240), Haines Field Botany award (\$1050)
Riley Thoen (2020 – present, PhD student)
- RTOA award (\$600), Jaworski travel award (\$722), Palfrey grant (\$1250)

Postdocs:

Meredith Zettlemoyer (2020 – present)

IPS rotation students: Emma Chandler (F22), Logan Novak (F22), Ben Long (F21), Clayton Hale (F21), Emma Horne (F21), Hannah Cook (F20), Madeline Long (F20)

ILS rotation students: Riley Thoen (F20), Hannah Ericson (F20)

Graduate committees:

PhD – Inam Jameel, Mia Rochford, Austin Menzmer, Kelly McCrum, Samantha Day, Limeng (Momo) Xie.

MS – Rebecca Park (2022), Sarah Forget (2021), Nicolas Louw (2021)

Undergraduate research:

UGA research credit – Abigail Lauterbach, Vincent Le, Sydney Speir (Plant Biology Research Award [\$500]), Jill Wilson (CURO research award [\$1000], Plant Center Undergraduate Research Award)

REU students - Ellen Waddle, Lucas Piedrahita, Grace Kendziorski, Elijah Hall, Micaela Seaver, Rebecca Conner, Ethan Rose

UC Santa Cruz senior theses - Matthew Mosher, Ginger Berryman.

High school students: Yesenia Arnold, Adriana Brock, Asuncion Garcia, Cesar Garcia, Emily Hernandez.

SERVICE AND OUTREACH

Reviewer for *American Journal of Botany*, *American Naturalist*, *Ecography*, *Ecology*, *Ecology and Evolution*, *Ecology Letters*, *Evolution*, *Evolutionary Applications*, *Frontiers of Biogeography*, *Global Change Biology*, *Journal of Applied Ecology*, *Journal of Ecology*, *Journal of Vegetation Science*, *Madroño*, *Nature Climate Change*, *New Phytologist*, *Proc. Roy. Soc. B.*, *Science*, *Scientific Reports*, *Theoretical Population Ecology*, *TREE*.

2022 – present	Plant Biology Department greenhouse committee
2022 – present	Plant Biology Department seminar committee
2021	Sharitz-Hatfield Fellowship selection committee
2021	Georgia Plant Conservation Alliance Day of Service
2021	Invited mentor, Alpha Sigma Women in STEM
2020 – present	DeLTA Instructional Action Team in Biology
2020	Visiting speaker, “Plants in the tundra”, Gwin Elementary, Hoover AL
2018	Visiting speaker, ‘Life as a scientist’, Harmony Union School District, CA
2018	K-12 teacher professional development workshop, CU Boulder
2016	Science teen café, “Science speed-dating,” CU Boulder
2014	Visiting speaker, “Science in Action: Flowers and Pollinators”, Harmony Union School District, CA.
2013 – 2014	Reviewer, Graduate Student Awards, Botanical Society of America
2013 – 2014	Graduate Student Coordinator, EEB seminar series, UC Santa Cruz
2013	Panelist, NSF GRFP Roundtable, UC Santa Cruz
2013	Guest Judge, Santa Cruz County Science Fair
2013	Guest Judge, Westlake Elementary School Science Fair
2012 - 2013	Mentor, High School Science Internship (HSSI) Program, UC Santa Cruz
2012	Long Marine Lab High School Student Open House, UC Santa Cruz
2010	Graduate Student Representative, Degree Program in Ecology, CSU