MEGAN L. VAHSEN

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PROFESSIONAL APPOINTMENTS

Postdoctoral Fellow Apr 2023 - current
Utah State University, Logan, UT
Advisor: Dr. Peter Adler, Department of Wildland Resources
Bromecast: Forecasting climate impacts on regional-scale invasion dynamics

Adjunct Faculty Aug - Dec 2023
Appalachian State University, Boone, NC
Department of Biology

EDUCATION

PhD Biology 2023
The University of Notre Dame, Notre Dame, IN
Advisor: Dr. Jason McLachlan, Department of Biological Sciences
Eco-evolutionary dynamics of coastal marshes in response to environmental change

MS Ecology 2017
Colorado State University, Fort Collins, CO
Advisor: Dr. Ruth Hufbauer, Department of Agricultural Biology
Disentangling drivers of colonization success in laboratory and natural systems

BS Biology 2014
The College of William and Mary, Williamsburg, VA
Summa cum laude

PEER-REVIEWED PUBLICATIONS

‡ co-first authors | † undergrad mentee

Cocciardi JM, Hoffman AM, Alvarado-Serrano DF, Anderson J, Blumstein M, Boehm E, Bolin LG, Borokini IT, Bradburd D, Branch HA, Brudvig LA, Chen Y, Collins SL, Des Marais DL, Gamba D, Hanan NP, Howard MM, Jaros J, Juenger TE, Kooyers NJ, Kottler EJ, Lau JA, Menon M, Moeller DA, Mozdzer T, Sheth S, Smith M, Toll K, Ungerer MC, **Vahsen ML**, Wadgymar SM, Waananen A, Whitney KD & Avolio ML. The value of long-term ecological research for evolutionary insights. In press at *Nature Ecology & Evolution*.

Vahsen ML, Todd-Brown KEO, Hicks J, Pilyugin SS, Morris JT & Holmquist JR (2024). The Cohort Marsh Equilibrium Model (CMEM): History, mathematics, and implementation. *JGR: Biogeosciences* 129: e2023JG007823. doi:10.1029/2023JG007823

Holmquist JR, Klinges DH, Lonneman M, Wolfe J, Boyd B, Eagle M, Sanderman J, Todd-Brown K, Belshe EF, Chapman S, Corstanje R, Janousek C, Morris JT, Noe G, Rovai A, Spivak A, **Vahsen ML**, Windham-Myers L, Kroeger K & Megonigal JP (2024). The Coastal Carbon Library and Atlas: Open source soil data and tools supporting blue carbon research and policy. *Global Change Biology* 30: 17098. doi:10.1111/gcb.17098

Vahsen ML, Kleiner HS, Kodak H, Summers JL, Vahsen WL, Blum MJ, Megonigal JP & McLachlan JS (2023). Complex eco-evolutionary responses of a foundational coastal marsh plant to global change. *New Phytologist* 240:2121-2136. doi:10.1111/nph.19117

- Commentary highlighting manuscript in *New Phytologist*. doi:10.1111/nph.19240

PEER REVIEWED PUBLICATIONS (continued)

‡ co-first authors | † undergrad mentee

Vahsen ML, Blum MJ, Megonigal JP, Emrich SJ, Holmquist JR, Stiller BS†, Todd-Brown KEO, & McLachlan JS (2023). Rapid plant trait evolution can alter coastal wetland resilience to sea level rise. *Science* 379:393-398. doi:10.1126/science.abq0595

- ESA's George Mercer Award winner (2024)
- ESA Early Career Ecologists Outstanding Publication Award (2nd place)
- Press releases from the University of Notre Dame (1, 2) and Utah State University
- Highlighted in *Nature Ecology & Evolution* doi:10.1038/s41559-023-02004-0

Vahsen ML, Gentile RM, Summers JL, Kleiner HS, Foster B, McCormack R, James E, Koch RA, Metts D, Saunders CJ, Megonigal JP, Blum MJ & McLachlan JS (2021). Accounting for variability when resurrecting dormant propagules substantiates their use in eco-evolutionary studies. *Evolutionary Applications* 14:2831-2847. doi:10.1111/eva.13316

Endriss SB‡, **Vahsen ML**‡, Bitume EV, Monroe JG, Turner KG & Hufbauer RA (2019). The importance of growing up: juvenile environment influences dispersal of individuals and their neighbours. *Ecology Letters* 22:45-55. doi:10.1111/ele.13166

Woodward B, Evangelista P, Young N, Vorster A, West A, Carroll S, Girma R, Hatcher E, Anderson R, **Vahsen ML**, Vashisht A, Mayer T, Carver D & Jarnevich C (2018). CO-RIP: A riparian vegetation and corridor extent dataset for Colorado River Basin streams and rivers. *ISPRS International Journal of Geo-Information* 7:397-416. doi:10.3390/ijgi7100397

Monroe JG, Markman DM, Beck WS, Felton AJ, **Vahsen ML** & Pressler Y (2018). Ecoevolutionary dynamics of carbon cycling in the Anthropocene. *Trends in Ecology & Evolution* 33:213-225. doi:10.1016/j.tree.2017.12.006

- Press release from Colorado State University

Vahsen ML, Shea K, Hovis CL, Teller BJ & Hufbauer RA (2018). Prior adaptation, diversity, and introduction frequency mediate the positive relationship between propagule pressure and the initial success of founding populations. *Biological Invasions* 20:2451-2459. doi:10.1007/s10530-018-1713-4

Szűcs M‡, **Vahsen ML**‡, Melbourne BA, Hoover C, Weiss-Lehman C & Hufbauer RA (2017). Rapid adaptive evolution in novel environments acts as an architect of populations range expansion. *Proceedings of the National Academy of Sciences* 114:13501-13506. doi:10.1073/pnas.1712934114

- Press release from Colorado State University

PUBLICATIONS IN REVISION / REVIEW

Chang CC, Ladouceur E & **Vahsen ML**. Integrating evolutionary and ecological feedbacks to understand plant succession in disturbed environments. In review at *New Phytologist*.

Vahsen ML, Maxwell TM, Blumenthal DM, Gamba D, Germino MJ, Hooten MB, Lasky JR, Leger EA, Pirtel N, Porensky LM, Romero S, Van Ee J, Copeland SM, Ensing DJ & Adler PA. Phenological sensitivity of *Bromus tectorum* genotypes depends on current and source environments. In review at *Ecology*.

PUBLICATIONS IN PREP

all manuscripts in prep are available as a PDF upon request

Vahsen ML, Ashander J, Blum MJ, Megonigal JP & McLachlan JS. Plastic and evolutionary responses of plants to seal level rise alters predictions of marsh ecosystem processes: Lessons from a joint eco-evolutionary model.

NON-PEER REVIEWED PUBLICATIONS

McDonough CM, Barak R, Bayer S, Bletz M, Brunson M, Dudney J, Gaoue O, Gill J, Harris A, Kuebbing S, McGill B, Nocco M, Tonietto R, **Vahsen ML** & Waring E (2020). Plant Love Stories: Share your story and grow a movement. *Bulletin of the Ecological Society of America* 101:e01663. doi:10.1002/bes2.1663

Carroll S, Butler K, Hilte A, **Vahsen ML**, West A, Woodward B & Evangelista P (2017). Mapping aspen in the Laramie Mountain Range, Wyoming. IEEE Earthzine.

SOFTWARE DEVELOPMENT

Holmquist JR, Todd-Brown KEO, Morris JT, **Vahsen ML** & Hicks J. rCMEM: R package for the Cohort Marsh Equilibrium Model (CMEM). doi:10.5281/zenodo.6629447

GRANTS

US Coastal Research Program: Quantifying and reducing uncertainty of marsh accretion through data-model integration of aboveground plant productivity (PI: Jan 2020 - April 2022). $89,524

NASA Carbon Monitoring System*: Data-model integration for monitoring and forecasting coastal wetland carbon exchanges: Serving local to national greenhouse gas inventories (Nov 2019 - Nov 2022) $1.125 mil
**contributed substantially to proposal; not PI because of grad student status*

AWARDS & FELLOWSHIPS

- ESA George Mercer Award 2024
- ESA Early Career Ecologists Outstanding Publication Award (2nd place) 2023
- Shaheen Graduate Student Award in the College of Science 2023
- Exemplary Graduate Career in the Department of Biological Sciences 2023
- Kaneb Center Award for Outstanding Graduate Student Instructor 2021
- Notebaert Premier Fellowship 2017-2022
- Louis G. Davis Scholarship 2016
- William M. Brown Professional Development Award 2015 & 2016
- Ynez Morey and Chuck Reagin Memorial Entomology Scholarship 2015
- 1st Place Student Poster, EMAPI International Conference 2015
- CSU Programs for Research and Scholarly Excellence Fellowship 2014

TEACHING: INSTRUCTOR

BIO3302: Ecology Lab Fall 2023
Undergraduate-level course (20 students), Appalachian State University
Instructor-of-record

BIOS40411: Biostatistics Spring 2021
Undergraduate-level course (120 students), Notre Dame
Instructor-of-record

TEACHING: ASSISTANTSHIP

BIOS42411: Biostatistics Spring 2020
Undergraduate-level course (25 students), Notre Dame
Teaching assistant

Quant Camp: Intro to Computation and Modeling Summer 2017 & 2018
Graduate-level course (15 students), Notre Dame
Teaching assistant and guest lecturer

BIOS20202: General Biology Lab B Spring 2018
Undergraduate-level course (120 students), Notre Dame
Technical teaching assistant and course development

ESS575: Models for Ecological Data Spring 2017
Graduate-level course (25 students), Colorado State
Teaching assistant and guest lecturer

TEACHING: ASSISTANTSHIP (continued)

AGRI116: Plants and Civilizations Spring 2016 - Spring 2017
Undergraduate-level course (25 students × 3 sections), Colorado State
Teaching assistant, guest lecturer, and course development

LIFE320: Ecology Spring 2015
Undergraduate-level course (100 students), Colorado State
Teaching assistant and guest lecturer

LIFE102: Biology Laboratory Fall 2014 & Fall 2015
Undergraduate-level course (25 students × 2 sections), Colorado State
Teaching assistant

MENTORING

Graduate students

- Helena Kleiner: MS, University of Notre Dame 2020-2022
  Experimental design & statistical analysis
- Haley Kodak: MS, University of Notre Dame 2018-2021
  Experimental design & statistical analysis

Undergraduate students

- Anthony Villalobos: BS, Utah State University 2024-current
  Data collection and analysis of NSF funded *Bromecast* project
- Charlotte Steinhorst: BS, Appalachian State University 2023-current
  The effect of drought stress on competition for agricultural plants
- Clayton Glasgow: BS, University of Notre Dame 2021-2022
  Technical development for USCRP-funded project
- Casey Samagalsky: BS, University of Notre Dame 2020-2021
  Marsh species classification using remote sensing data
- Brady Stiller: BS, University of Notre Dame 2017-2020
  Co-author on Vahsen *et al.* 2023, *Science*
- Aleah Appling: BS, University of Notre Dame 2017-2019
  Inquiry-based laboratory course: Current status and future improvement
- Valerie Doebley: BS, Colorado State University 2016-2017
  The effects of maternal environment on cheatgrass diaspore morphology

INVITED PRESENTATIONS

Smithsonian Environmental Research Center, Virtual. Oral presentation. Apr 2024

University of Utah, UT, Department seminar. Feb 2024

Washington State University, WA, Department seminar. Dec 2023

The Cary Institute, Millbrook, NY. Research seminar. Dec 2023

University of Tennessee, Knoxville, TN. Department seminar. Nov 2023

University of Georgia, Athens, GA. Department seminar. Nov 2023

University of Maryland, College Park, MD. Department seminar. Oct 2023

Appalachian State University, Boone, NC. Department seminar. Sept 2023

Gordon Research Conference, Easton, MA. Oral presentation. Jun 2023

East Carolina University, Wanchese, NC. Department seminar. Apr 2023

Lees-McRae College, Banner Elk, NC. Department seminar. Mar 2023

INVITED PRESENTATIONS (continued)

Duke University, Beaufort, NC. Department seminar.	Feb 2023
Smithsonian Environmental Research Center, Virtual. Oral presentation.	Mar 2021
Ecological Society of America Meeting, Virtual. Oral presentation.	Aug 2020
Ecological Society of America Meeting, Louisville, KY. Oral presentation.	Aug 2019
Ecological Society of America Meeting, Portland, OR. Oral presentation.	Aug 2017
Biodiversity IGNITE, Fort Collins, CO. Oral presentation.	Apr 2016

SELECT CONTRIBUTED PRESENTATIONS

† undergrad mentee | ♣ won award

Vahsen ML, Ashander J, Blum MJ, Megonigal, JP & McLachlan JS (August 2023). Plastic and evolutionary responses of plants to sea level rise impacts predictions of marsh ecosystem processes. Ecological Society of America Annual Meeting. Portland, OR.

Vahsen ML, Stiller B†, Blum MJ, Megonigal JP & McLachlan JS (December 2021). Accounting for genetic variation and diversity in plant functional traits alters predictions of marsh accretion and carbon sequestration. American Geophysical Union Fall Meeting. New Orleans, LA.

Kleiner HS♣, **Vahsen ML**, Kodak H, Summers JL, Blum MJ, Megonigal JP & McLachlan JS (November 2021). Eco-evolutionary responses of *Schoenoplectus americanus* to global change. Coastal and Estuarine Research Federation Biennial Conference. Virtual.

Samagalsky CL†, **Vahsen ML**, Draper A† & McLachlan JS (May 2021). Marsh species classification using remote sensing. College of Science Joint Annual Meeting, University of Notre Dame. Virtual.

Vahsen ML, Holmquist J, Megonigal JP & McLachlan JS (November 2019). Improving estimates of coastal marsh biomass while minimizing costs of data collection. Coastal and Estuarine Research Federation Biennial Conference. Mobile, AL.

Vahsen ML, Blum MJ, Megonigal JP & McLachlan JS (August 2019). Intraspecific variation in productivity of a dominant marsh sedge and implications for ecosystem function. Ecological Society of America Annual Meeting. Louisville, KY.

Appling AA†, **Vahsen ML** & McLachlan JS (May 2018). Inquiry-based laboratory course: Current status and future improvements. College of Science Joint Annual Meeting, University of Notre Dame. Notre Dame, IN.

Doebley V†♣, **Vahsen ML**, Morales L & Brown C (April 2017). The effects of maternal environment on cheatgrass diaspore morphology. Celebrate Undergraduate Research and Creativity. Colorado State University. Fort Collins, CO.

Vahsen ML, Szűcs M, Weiss-Lehman C, Melbourne BA & Hufbauer RA (September 2016). The role of evolution in the growth and spread of colonizing populations. Guild of Rocky Mountain Ecologists and Evolutionary Biologists Annual Meeting. Gothic, CO.

Vahsen ML♣, Hovis CL, Endriss SB, Keller JA, Teller BJ, Shea K & Hufbauer RA (September 2015). The roles of multiple components of propagule pressure in predicting invasion success. Ecology and Management of Alien Plant Invasions. Kona, HI.

PROFESSIONAL MEETINGS

- Ecological Society of America Annual Meeting — 2017, 2019, 2020, 2023
- Gordon Research Conference in Predictive Ecology — 2023
- Coastal and Estuarine Research Federation — 2017, 2019, 2021
- American Geophysical Union Fall Meeting — 2018, 2021
- Rocky Mountain Ecologists & Evolutionary Biologists Meeting — 2014, 2016
- Ecology and Management of Alien Plant Invasions Conference — 2015

PROFESSIONAL DEVELOPMENT & OUTREACH

- Journal Referee — 2019-present
  - *Ecology, Biological Invasions, Ecosphere*
- RIOS Institute Open Science & Social Justice Learning Community — 2024
  - *6-week reading and discussion group covering the tenets of open science and tools for integrating equitable approaches into open science work*
- Graduate Students Against Racial Injustice at Notre Dame — 2019-2023
  - *Drafted letters to department and university leaders to encourage accountability in DEI efforts*
- Anti-Racism Reading Group — 2020-2022
  - *Led reading group organization and facilitated book discussions*
- Evolution and Long-Term Ecology Working Group — 2022
  - *Selected for one-week working group meeting on integrating evolutionary biology research into long-term ecological research sites (La Joya, NM)*
- Intrinsic Schools Career Networking Night — 2021
  - *Served as a mentor for Chicago high school students interested in science careers*
- Microaggression Intervention at Notre Dame Workshop — 2021
  - *Learned how to identify racial microaggressions on campus and how to intervene*
- Quantitative Undergrad Biology Education and Synthesis Faculty Network — 2021
  - *Collaborated with faculty from across the country in developing tools to promote students learning of coding within biology courses*
- Department of Biological Sciences Faculty Hiring Committee — 2021
  - *One of two nominated graduate student representatives; Organized and conducted candidate interviews, solicited graduate student feedback on candidates, and presented graduate student opinions at faculty meeting*
- Ecological Forecasting Initiative Student Group — 2019-2020
  - *Founding member of student group interesting in developing ecological forecasting skills*
- Near-term Ecological Forecasting Initiative Short Course — 2018
  - *Selected for one-week short course in learning and applying ecological forecasting techniques (Boston, MA)*
- Coastal Carbon Research Coordination Network Working Group — 2018
  - *Invited for two-day meeting on integrating coastal carbon data and models*
- New Graduate Student Mentor — 2017
  - *Led orientation for 15 incoming MS and PhD students*
- Colorado Middle School Science Bowl — 2016-2017
  - *Moderated and judged for a quiz bowl competition for 25+ middle school science teams*
- Vice President of Front Range Student Ecology Symposium — 2015-2016
  - *Coordinated a three-day conference, including organizing all posters and talks, inviting and organizing judges for feedback on student presentations, and planning an awards ceremony with live music*