

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

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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1111/nph.19117)
• Commentary highlighting manuscript in *New Phytologist*. doi:[10.1111/nph.19240](https://doi.org/10.1111/nph.19240)

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](https://doi.org/10.1126/science.abq0595)
• **Press release** from University of Notre Dame
• Highlighted in *Nature Ecology & Evolution* doi:[10.1038/s41559-023-02004-0](https://doi.org/10.1038/s41559-023-02004-0)
• ESA Early Career Ecologists **Outstanding Publication Award** (2nd place)

**PEER REVIEWED
PUBLICATIONS
(continued)**

‡ co-first authors | † undergrad mentee

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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1073/pnas.1712934114)

- [Press release](#) from Colorado State University

**PUBLICATIONS
IN REVISION /
REVIEW**

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 revision for *Nature Ecology & Evolution*.

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

**PUBLICATIONS
IN PREP**

all manuscripts in prep are available as a PDF upon request

Vahsen ML, Maxwell TM, Blumenthal DM, Gamba D, Germino MJ, Hooten MB, Lasky JR, Leger EA, Pirtel N, Porensky LM, Van Ee J, Copeland SM, Ensing DJ & Adler PA. Phenological responses of *Bromus tectorum* to current and source environments.

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

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| 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. <i>Bulletin of the Ecological Society of America</i> 101:e01663. doi: 10.1002/bes.2.1663 | |
| | Carroll S, Butler K, Hilde A, Vahsen ML , West A, Woodward B & Evangelista P (2017). Mapping aspen in the Laramie Mountain Range, Wyoming. <i>IEEE Earthzine</i> . | |
| 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) <i>*contributed substantially to proposal; not PI because of grad student status</i> | \$1.125 mil |
| AWARDS & FELLOWSHIPS | <ul style="list-style-type: none"> • ESA Early Career Ecologists Outstanding Publication Award (2nd place) 2023 • Shaheen Graduate Student Award in the College of Science 2023 - Press release from University of Notre Dame • 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 Undergraduate-level course (20 students), Appalachian State University <i>Instructor-of-record</i> | Fall 2023 |
| | BIOS40411: Biostatistics Undergraduate-level course (120 students), Notre Dame <i>Instructor-of-record</i> | Spring 2021 |
| TEACHING: ASSISTANTSHIP | BIOS42411: Biostatistics Undergraduate-level course (25 students), Notre Dame <i>Teaching assistant</i> | Spring 2020 |
| | Quant Camp: Intro to Computation and Modeling Graduate-level course (15 students), Notre Dame <i>Teaching assistant and guest lecturer</i> | Summer 2017 & 2018 |
| | BIOS20202: General Biology Lab B Undergraduate-level course (120 students), Notre Dame <i>Technical teaching assistant and course development</i> | Spring 2018 |
| | ESS575: Models for Ecological Data Graduate-level course (25 students), Colorado State <i>Teaching assistant and guest lecturer</i> | Spring 2017 |

TEACHING: **AGRI116: Plants and Civilizations** Spring 2016 - Spring 2017
ASSISTANTSHIP Undergraduate-level course (25 students × 3 sections), Colorado State
(continued) *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

- 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
- Duke University, Beaufort, NC. Department seminar. Feb 2023

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| INVITED PRESENTATIONS continued | 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.

Doebly 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.

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| 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 |
| | ◦ <i>Ecology, Biological Invasions, Ecosphere</i> | |
| | • Graduate Students Against Racial Injustice at Notre Dame | 2019-2023 |
| | ◦ <i>Drafted letters to department and university leaders to encourage accountability in DEI efforts</i> | |
| | • Anti-Racism Reading Group | 2020-2022 |
| | ◦ <i>Led reading group organization and facilitated book discussions</i> | |
| | • Evolution and Long-Term Ecology Working Group | 2022 |
| | ◦ <i>Selected for one-week working group meeting on integrating evolutionary biology research into long-term ecological research sites (La Joya, NM)</i> | |
| | • Intrinsic Schools Career Networking Night | 2021 |
| | ◦ <i>Served as a mentor for Chicago high school students interested in science careers</i> | |
| | • Microaggression Intervention at Notre Dame Workshop | 2021 |
| | ◦ <i>Learned how to identify racial microaggressions on campus and how to intervene</i> | |
| | • Quantitative Undergrad Biology Education and Synthesis Faculty Network | 2021 |
| | ◦ <i>Collaborated with faculty from across the country in developing tools to promote students learning of coding within biology courses</i> | |
| | • Department of Biological Sciences Faculty Hiring Committee | 2021 |
| ◦ <i>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</i> | | |
| • Ecological Forecasting Initiative Student Group | 2019-2020 | |
| ◦ <i>Founding member of student group interesting in developing ecological forecasting skills</i> | | |
| • Near-term Ecological Forecasting Initiative Short Course | 2018 | |
| ◦ <i>Selected for one-week short course in learning and applying ecological forecasting techniques (Boston, MA)</i> | | |
| • Coastal Carbon Research Coordination Network Working Group | 2018 | |
| ◦ <i>Invited for two-day meeting on integrating coastal carbon data and models</i> | | |
| • New Graduate Student Mentor | 2017 | |
| ◦ <i>Led orientation for 15 incoming MS and PhD students</i> | | |
| • Colorado Middle School Science Bowl | 2016-2017 | |
| ◦ <i>Moderated and judged for a quiz bowl competition for 25+ middle school science teams</i> | | |
| • Vice President of Front Range Student Ecology Symposium | 2015-2016 | |
| ◦ <i>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</i> | | |