

MEGAN L. VAHSEN

mvahsen.weebly.commlvahsen@gmail.com
(703) 851-4685

PROFESSIONAL APPOINTMENTS	Postdoctoral Fellow 2023-current Utah State University, Logan, UT Advisor: Dr. Peter Adler, Department of Wildland Resources <i>Bromecast: Forecasting climate impacts on regional-scale invasion dynamics</i>
	Adjunct Faculty 2023-current 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 <i>Eco-evolutionary dynamics of coastal marshes in response to environmental change</i>
	MS Ecology 2017 Colorado State University, Fort Collins, CO Advisor: Dr. Ruth Hufbauer, Department of Agricultural Biology <i>Disentangling drivers of colonization success in laboratory and natural systems</i>
	BS Biology 2014 The College of William and Mary, Williamsburg, VA <i>Summa cum laude</i>
PEER-REVIEWED PUBLICATIONS	‡ co-first authors † undergrad mentee
	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. In press at <i>New Phytologist</i> . doi: 10.1111/nph.19117 • Commentary highlighting manuscript in <i>New Phytologist</i> doi: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. <i>Science</i> 379:393-398. doi: 10.1126/science.abq0595 • Press release from University of Notre Dame • Highlighted in <i>Nature Ecology & Evolution</i> doi:10.1038/s41559-023-02004-0 • ESA Early Career Ecologists Outstanding Publication Award (2nd place)
	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. <i>Evolutionary Applications</i> 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. <i>Ecology Letters</i> 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. <i>ISPRS International Journal of Geo-Information</i> 7:397-416. doi: 10.3390/ijgi7100397

**PEER REVIEWED
PUBLICATIONS**
(continued)

‡ co-first authors | † undergrad mentee

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**

Vahsen ML, Todd-Brown KEO, Hicks J, Pilyugin SS, Morris JT & Holmquist JR. The Cohort Marsh Equilibrium Model (CMEM): History, mathematics, and implementation. In revision for *JGR: Biogeosciences*.

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 review at *Trends in Ecology & Evolution*.

Holmquist JR, Klimes 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 & Magonigal JP. The Coastal Carbon Library and Atlas: Open source soil data and tools supporting blue carbon research and policy. In review at *Global Change Biology*.

**NON-PEER
REVIEWED
PUBLICATIONS**

McDonough CM, Barak R, Bayer S, Bletz M, Brunson M, Dudney J, Gaoe 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](https://doi.org/10.1002/bes2.1663)

Carroll S, Butler K, Hilde A, **Vahsen ML**, West A, Woodward B & Evangelista P (2017). Mapping quaking aspen in the Laramie Mountain Range, Wyoming. *IEEE Earthzine*. [Online access](#).

**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](https://doi.org/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 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
TECHNICAL SKILLS	• R • Matlab • L ^A T _E X • Bayesian inference • MCMC • QGIS • Remote sensing	
TEACHING: INSTRUCTOR	BIO3302: Ecology Lab	Fall 2023
	Undergraduate-level course (20 students), Appalachian State University <i>Instructor-of-record</i>	
	BIOS40411: Biostatistics	Spring 2021
	Undergraduate-level course (120 students), Notre Dame <i>Instructor-of-record</i>	
TEACHING: ASSISTANTSHIP	BIOS42411: Biostatistics	Spring 2020
	Undergraduate-level course (25 students), Notre Dame <i>Teaching assistant</i>	
	Quant Camp: Intro to Computation and Modeling	Summer 2017 & 2018
	Graduate-level course (15 students), Notre Dame <i>Teaching assistant and guest lecturer</i>	
	BIOS20202: General Biology Lab B	Spring 2018
	Undergraduate-level course (120 students), Notre Dame <i>Technical teaching assistant and course development</i>	
	ESS575: Models for Ecological Data	Spring 2017
	Graduate-level course (25 students), Colorado State <i>Teaching assistant and guest lecturer</i>	
	AGRI116: Plants and Civilizations	Spring 2016 - Spring 2017
	Undergraduate-level course (25 students × 3 sections), Colorado State <i>Teaching assistant, guest lecturer, and course development</i>	
	LIFE320: Ecology	Spring 2015
	Undergraduate-level course (100 students), Colorado State <i>Teaching assistant and guest lecturer</i>	
	LIFE102: Biology Laboratory	Fall 2014 & Fall 2015
	Undergraduate-level course (25 students × 2 sections), Colorado State <i>Teaching assistant</i>	
MENTORSHIP	Graduate students	
	• Helena Kleiner : MS, University of Notre Dame Experimental design & statistical analysis	2020-2022
	• Haley Kodak : MS, University of Notre Dame Experimental design & statistical analysis	2018-2021

**MENTORSHIP
(continued)****Undergraduate students**

- 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**

† undergrad mentee | ♣ won award

Vahsen ML (September 2023). Reconstructing marshes over the past century: the relative roles of plant trait plasticity and evolution in driving ecosystem-level change. Appalachian State University, Boone, NC.

Vahsen ML (June 2023). Accelerating research synthesis in predictive ecology. Gordon Research Conference: Predictive Ecology. Stonehill College, Easton, MA.

Vahsen ML (March 2023). Interspecific and intraspecific interactions: A case-study with coastal marsh plants. Lees-McRae College, Banner Elk, NC.

Vahsen ML (February 2023). Eco-evolutionary dynamics of coastal marshes in response to climate change. Duke Marine Lab, Beaufort, NC.

Vahsen ML, Kleiner HS, Kodak H, Summers JL, Blum MJ, Megonigal JP & McLachlan JS (March 2021). Blue Genes: Eco-evolutionary responses of *S. americanus* to global change and implications for ecosystem function. 7th Annual Global Change Research Wetland Symposium. Virtual.

Vahsen ML, Bonas M, Castruccio S, Holmquist JR, Petty C†, Samagalsky CL†, Megonigal JP & McLachlan JS (March 2021). Quantifying and reducing uncertainty of marsh accretion through data-model integration of aboveground plant productivity. 7th Annual Global Change Research Wetland Symposium. Virtual.

Vahsen ML, Holmquist JR & McLachlan JS (August 2020). Quantifying and incorporating uncertainty in predictions of coastal wetland stability. Ecological Society of America Annual Meeting. Virtual.

Vahsen ML (August 2019). Resurrecting my happiness while working with sedges. Ecological Society of America Annual Meeting. Louisville, KY.

Vahsen ML (December 2018). Bayesian Hierarchical Modeling. Coastal Carbon Research Coordination Network working group meeting. Smithsonian Environmental Research Center, Edgewater, MD.

Vahsen ML, Szűcs M, Melbourne BA, Weiss-Lehman C, Hoover C & Hufbauer RA (August 2017). Rapid adaptive and spatial evolution drive range expansions of colonizing populations. Ecological Society of America Annual Meeting. Portland, OR.

Vahsen ML (April 2016). Aren't we all evolutionary ecologists? Biodiversity IGNITE! The School of Global and Environmental Sustainability, Colorado State University. Fort Collins, CO.

**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.

Holmquist JR, Wolfe J, Lonneman M, Klinges D, Belshe F, Boyd B, Brown L, Chapman S, Corstanje R, Eagle M, Janousek C, Morris JT, Noe G, Rovai A, Sanderman J, Spivak A, Todd-Brown K, **Vahsen ML**, Megonigal JP, & Windham-Meyers L (December 2021). Progress in data-model integration for long term carbon burial rates in coastal wetlands. 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.

Holmquist J, Megonigal JP, Klinges D, Lonneman M, *13 others*, **Vahsen ML** (November 2019). Data-model integration for forecasting carbon sequestration in coastal wetland soils. 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. Guid 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
	◦ <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>	