

CURRICULUM VITAE

REUBEN BIEL, PhD

16 July 2018

Department of Geological Sciences
University of North Carolina at Chapel Hill
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ACADEMIC APPOINTMENTS:

2017-2018 **Postdoctoral Associateship, Department of Geological Sciences**
University of North Carolina at Chapel Hill – Chapel Hill, NC
Research: Integration of vegetation growth dynamics into the Coastal Dune Model, a process-based eco-geomorphic numerical of dune development; analysis of coastal vegetation distribution, abundance, and growth in the mid-Atlantic region, USA.
Advisor: L. Moore

EDUCATION:

2017 **Ph.D. in Zoology, Minor in Statistics**
Oregon State University – Corvallis, OR (Advisor: S.D. Hacker)

2010 **B.A. Biology, *summa cum laude*, Minor in Chemistry**
Colby College, Waterville, ME

RESEARCH AND EMPLOYMENT EXPERIENCE:

2017 **Graduate Research Assistantship, Department of Integrative Biology**
Oregon State University – Corvallis, OR
Research: Development and analysis of Bayesian network of U.S. Pacific Northwest foredune morphology; Analysis of beachgrass climate change mesocosm experiment.
Principle Collaborators/Supervisors: S.D. Hacker, P. Ruggiero

2014-2016 **Graduate Fellow, EPA STAR Graduate Fellowship**
Oregon State University – Corvallis, OR
Research: Performed interdisciplinary and collaborative research across ecology, geosciences, and statistics. Designed and performed a beachgrass climate change mesocosm experiment, in which invasive beachgrasses were subject to combinations of warming and sand burial treatments.
Principle Collaborators/Supervisors: S.D. Hacker, P. Ruggiero, N. Cohn, L. Carroll

- 2012-2014 **Graduate Research Assistantship, Department of Integrative Biology**
Oregon State University – Corvallis, OR
Research: Performed analysis of ecosystem service in the U.S. Pacific Northwest coastal dune ecosystem; Performed coastal vulnerability assessment using XBeach; Developed an estuary eco-geomorphological model that accounts for estuarine morphological change, eelgrass biogenic sediment deposition, and eelgrass distributional responses to sea-level rise.
Principle Collaborators/Supervisors: S.D. Hacker, P. Ruggiero, E. Seabloom
- 2011-2012 **Graduate Fellow, Provost's Distinguished Graduate Fellowships, Department of Integrative Biology**
Oregon State University – Corvallis, OR
Research: Survey of the U.S. Pacific Northwest foredune plant community and foredune geomorphology.
Principle Collaborators/Supervisors: S.D. Hacker, P. Ruggiero, N. Cohn, L. Carroll
- 2010-2011 **Research Assistant, School of Natural Resources and Environment**
University of Michigan – Ann Arbor, MI
Research: Reviewed the history and current status of ~30 environmental threats to the Great Lakes ecosystem. Constructed maps quantifying the geospatial distribution of several environmental threats in the Great Lakes basin.
Principle Supervisors: J.D. Allan, S. Smith
- 2009 **NSF REU Intern, Shannon Point Marine Center (SPMC)**
Western Washington University – Anacortes, WA
Research: Investigated inducible anti-herbivory defenses in the green alga *Ulva lactuca* via waterborne herbivory cues from the herbivore *Idotea wosnesenskii*.
Principle Supervisor: K. van Alstyne
- 2009 **Research Technician, University of Georgia Marine Institute – Sapelo Island**
University of Georgia – Sapelo Island, GA
Research: Prepared pilot study to determine density dependent non-trophic effects of the detritivorous snail *Littoraria irrorata* on smooth cordgrass *Spartina alterniflora* biomass.
Principle Supervisor: R. Kneib

REFEREED PUBLICATIONS:

4. EB Goldstein, E Mullins, LJ Moore, **RG Biel**, JK Brown, SD Hacker, KR Jay, RS Mostow, P Ruggiero, JK Zinnert. (*accepted*), Literature-based latitudinal distribution and possible range shifts of two US east coast dune grass species (*Uniola paniculata* and *Ammophila breviligulata*), *PeerJ*, 6:e4932.
3. **RG Biel**, SD Hacker, P Ruggiero, N Cohn, EW Seabloom. 2017. Coastal protection and conservation along sandy beaches and dunes: context-dependent tradeoffs in ecosystem service supply. *Ecosphere*, 8(4): e01791.

2. JD Allan, SD Smith, PB McIntyre, CA Joseph, CE Dickinson, AL Marine, **RG Biel**, JC Olson, PJ Doran, ES Rutherford, JE Adkins, AO Adeyemo. 2015. Using cultural ecosystem services to inform restoration priorities in the Laurentian Great Lakes. *Frontiers in Ecology and the Environment*, 13: 418–424.
1. AS David, PL Zarnetske, SD Hacker, P Ruggiero, **RG Biel**, EW Seabloom. 2015. Invasive congeners differ in successional impacts across space and time. *PLOS ONE*, 10(2): e0117283.

MANUSCRIPTS IN REVIEW:

1. **RG Biel**, SD Hacker, P Ruggiero. Bayesian network analysis of beachgrass ecomorphodynamics and foredune morphology along US Pacific Northwest coastal sand dunes. *J. Geophys Res: Earth Surf.*
2. N Cohn, P Ruggiero, G García-Medina, D Anderson; K Serafin; **RG Biel**. Environmental and morphologic controls on wave-induced dune response. *Geomorphology*.

MANUSCRIPTS IN PREPARATION:

4. **RG Biel**, LJ Moore, EB Goldstein. Influence of beach wrack on foredune development and habitat complexity. Target Journal: Journal of Geophysical Research: Biogeosciences
3. **RG Biel**, EB Goldstein, LJ Moore. Influence of vegetation dynamics on foredune development in the Coastal Dune Model. Target journal: TBD
2. **RG Biel**, S Gerrity, SD Hacker, EW Seabloom, AS David, P Ruggiero. Facilitation, competitive hierarchies, and invasiveness and invasibility in a coastal foredune grass community. Target journal: *Biological Invasions*
1. **RG Biel**, SD Hacker. Will rising temperatures alter the distribution, abundance, and morphology of dune-building invasive beachgrasses in the US Pacific Northwest? Target journal: *Ecology*

RESEARCH GRANTS:

FUNDING TO DATE: \$19,200

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| 2015 | Oregon State University, Dept. of Integrative Biology , Research Fund (\$400) |
| 2014-2016 | EPA STAR , Graduate Fellowship (\$10,000)
<i>Coastal vulnerability amidst climate change: the dual effects of altered biogeomorphology and variable seas on Pacific coast dunes.</i> |
| 2014 | Sigma Xi , Grant in Aid of Research (\$1,000)
<i>Climate change impacts on invasive dune grass, dune shape, and coastal protection in the Pacific Northwest</i> |
| 2014 | Oregon State University, Dept. of Integrative Biology , Zoology Research Fund (\$400) |
| 2013-2015 | Hatfield Marine Science Center , Mamie Markham Research Award (\$7,000)
<i>Climate change impacts on invasive dune grass, dune shape, and coastal protection in the Pacific Northwest.</i> |
| 2013 | Oregon State University, Dept. of Integrative Biology , Research Fund (\$400) |

COMPETITIVE FELLOWSHIPS AND AWARDS:

FUNDING TO DATE: \$83,300

Excludes Tuition

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| 2016 | Oregon State University, Graduate School , Graduate Student Travel Award (\$500) |
| 2016 | Hatfield Marine Science Center , Best Ignite Presentation at Markham Research Symposium (\$200) |
| 2013-2016 | EPA STAR Graduate Fellowship (\$50,000) |
| 2013 | Oregon State University, College of Science , Student Travel Award (\$400) |
| 2012 | NSF GRFP Honorable Mention |

2011 **Provost's Distinguished Graduate Fellowships, Oregon State University** (\$30,000)
 2010 **Phi Beta Kappa**
 2009 **Colby College**, Phi Beta Kappa Scholastic Achievement Award
 2008-2010 **Colby College**, Julius Seelye Bixler Scholar (\$1,200)
 2006 **Anchor Bank Scholarship** (\$1,000)

TEACHING EXPERIENCE:

2016-2017 **Graduate Teaching Instructor**, Introductory Biology I (eCampus BI204), Oregon State University
 2013-2014 **Graduate Teaching Instructor**, Human Anatomy and Physiology (Z341, Z342), Oregon State University
 2013-2014 **Graduate Teaching Instructor** and **Guest Lecturer**, Marine Biology (Z341, Z342), Oregon State University Hatfield Marine Science Center
 2013 **Graduate Teaching Instructor**, Principles of Biology (BI212), Oregon State University

STUDENT RESEARCH AND TRAINING SUPERVISION:

2011-2016 Oregon State University, training and mentoring of 7 undergraduate students

UNDERGRADUATE HONORS THESIS COMMITTEE MEMBER:

2014 Josh Borland. Evidence for the Potential Hybridization of *Ammophila breviligulata* and *Ammophila arenaria* in the Pacific Northwest.

INVITED SEMINAR PRESENTATIONS:

RG Biel. Coastal dune ecology, geomorphology, and ecosystem services: How invasive beachgrasses, their interactions, and sediment dynamics shape U.S. Pacific Northwest dunes. UNC Chapel Hill. 8 Feb 2018.
RG Biel. The Ecology and Ecomorphodynamics of Invasive Beachgrasses along U.S. Pacific Northwest Coastal Dunes. USGS St. Petersburg Coastal and Marine Science Center. 11 Aug 2016.
RG Biel. 2014. Risk of Storms and Sea Level Rise on Plover Restoration Areas. Western Snowy Plover Regional Meeting. Salem, OR. 30 Oct 2014.

PRESENTATIONS AT SCIENTIFIC CONFERENCES: (12 TOTAL)

RG Biel, LJ Moore, EB Goldstein. Influence of vegetation dynamics, wave climate, and shoreline change on dune field development. LTER All Scientists' Meeting 2018. Pacific Grove, CA. 1-3 Oct 2018.
RG Biel, LJ Moore. Inhibition or facilitation of dune development on barriers: The influence of back-beach vegetation on barrier island stable states. ESA 2018. New Orleans, LA. 7 Aug 2018.
 SD Hacker, P Ruggiero, EW Seabloom, PL Zarnetske, **RG Biel**. Beachgrass invasions, climate change, and effects of dune ecosystem functions and services in the US Pacific Northwest. ESA 2018. New Orleans, LA. 7 Aug 2018.
RG Biel, L Carroll, P Ruggiero, SD Hacker. Analysis of beachgrass ecomorphodynamics and foredune morphology along US Pacific Northwest coastal sand dunes using a Bayesian network. AGU Fall Meeting. San Francisco, CA. 12 Dec 2016.
 E Tom, **RG Biel**, SD Hacker. 2016. Morphological and Genomic Investigation of Hybridized Beach Grass. Center for Genome Research and Biocomputing Fall Conference. Corvallis, OR. 9 Sept 2016.

- RG Biel**, SD Hacker, P Ruggiero. 2016. Predicting coastal sand dune morphology and coastal hazard exposure in the U.S. Pacific Northwest using a Bayesian network. ESA 2016. Ft. Lauderdale, FL. 10 Aug 2016.
- RG Biel**, SD Hacker, P Ruggiero, N Cohn, EW Seabloom. 2015. Context-dependent tradeoffs among three Pacific Northwest sandy beach and dune ecosystem services. SERNW 2016. Portland, OR. 4-6 April 2016.
- RG Biel**, SD Hacker, P Ruggiero, EW Seabloom. 2015. Coastal protection and restoration along sandy beaches and dunes: context-dependent tradeoffs in ecosystem services. CERF 2015. Portland, OR. 12 Nov 2015.
- P Ruggiero, SD Hacker, **RG Biel**, L Carroll, J Bolte, E Lipiec, A. Mills, K Serafin, C Zanocco, P Corcoran, J Stevenson. 2015. Presented by R Biel. Incorporating the ecosystem services provided by coastal beaches and dunes into climate change adaptation planning. ESA 2015. Baltimore, MD. 13 Aug 2015.
- RG Biel**, SD Hacker, P Ruggiero, EW Seabloom. 2013. Climate change, coastal hazards, and coastal dune habitat restoration in the Pacific Northwest. Heceta Head Coastal Conference. Florence, Oregon. 26 October 2013.
- RG Biel**, SD Hacker, P Ruggiero, EW Seabloom. 2013. Climate change, coastal hazards, and coastal dune habitat restoration in the Pacific Northwest. ESA 2013. Minneapolis, Minnesota. 9 June 2013.
- JD Allan, S Smith, P McIntyre, B Halpern, G Boyer, A Buchsbaum, A Burton, L Campbell, L Chadderton, J Ciborowski, D Doran, T Eder, D Infante, L Johnson, D Lodge, J Read, E Rutherford, S Sowa, A Steinman, C Joseph, **R Biel**, J Olsen. 2011. Project GLEAM: Mapping Individual Stressors Across the Great Lakes. 54th Annual Conference on the Great Lakes. International Association for Great Lakes Research. Duluth, Minnesota. 31 May 2011.

OTHER PRESENTATIONS:

- RG Biel**. 2014. Coping with Change: Species Invasions, Dune Habitat Restoration, and Coastal Vulnerability. Biology Graduate Student Symposium. Newport, OR. 8 March 2014.
- R Biel**. 2009. Eavesdropping Algae? Induction of Activated Defenses via Waterborne Cues in *Ulva lactuca*. NSF REU Presentation. Shannon Point Marine Center, Western Washington University. 19 August 2009.

RELEVANT COMPUTING SKILLS

R Statistical Computing	ArcGIS / QGIS / PyQGIS
Stan (Bayesian Statistics)	Microsoft Access
Jags (Bayesian Statistics)	LaTeX
Matlab	
C++	

SERVICE:

Professional Service

- 2012-2018 **Journal Referee**, *Ecosphere*, *Earth Surface Processes and Landforms*, *J. Coastal Res*
- 2017-2018 **Grant Proposal Reviewer**, National Science Foundation (NSF), Netherlands
Organisation for Scientific Research (NWO)

Departmental Service

2012-2017 **Oregon State University**
Website committee chair, Dept. of Integrative Biology
Website committee, Dept. of Integrative Biology
Outreach committee, Dept. of Integrative Biology

ORGANIZATIONS AND AFFILIATIONS:

Ecological Society of America (ESA)
American Geophysical Union (AGU)
Hatfield Marine Science Center (HMSC)
Society for Integrative and Comparative Biology (SICB)