

## Alice Fay Besterman, Ph.D.

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### EDUCATION

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**Ph.D. Environmental Sciences**, Concentration Ecology, University of Virginia - Dec 2019

**B.S. Environmental Studies**, Virginia Commonwealth University, *Magna Cum Laude* – May 2013

### PROFESSIONAL APPOINTMENTS AND RESEARCH EXPERIENCE

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2023– Assistant Professor, Towson University, MD  
2020–2022 Fellow, Northeast Climate Adaptation Science Center, MA  
2020–2022 Postdoctoral Researcher, Woodwell Climate Research Center, MA  
2020–2022 Postdoctoral Researcher, Buzzards Bay Coalition, MA  
2019 Contracted Researcher, Climate Focus, Washington D.C.  
2015–2018 Fellow, NSF Graduate Research Program, University of Virginia, VA

### AWARDS AND OTHER HONORS

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2021 **Sigma Xi**, Full Membership  
2019 **Maury Environmental Sciences Prize**, Dept. of Env. Sci., UVA.  
Awarded to department's top student.  
2019 **Dissertation Year Research Prize**, Jefferson Scholars Foundation.  
2017 **Raven Honor Society**, Univ. of Virginia.  
Selective society recognizing scholarly accomplishments and service to the university  
2016 **Outstanding Graduate Student in Ecology**, Dept. of Env. Sci, UVA.  
2015 **National Science Foundation Graduate Research Fellowship**

### PUBLICATIONS

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#### Journal Articles: Under Review and In-Prep

13. Buelo, C., **A. Besterman**, S. Tassone, J. Walter, M. Pace. *In Prep*. Quantifying disturbance and recovery in estuaries: Tropical cyclones and high frequency measures of oxygen and salinity.  
12. Tassone, S.J., A.F. Besterman, C.D. Buelo, D.T. Ha, J.A. Walter, M.L. Pace. *In Revision*. Increasing heatwave frequency in streams and rivers of the United States. *Limnology and Oceanography: Letters*

#### Journal Articles: Published

11. Walter, J., **A. Besterman**, C. Buelo, S. Tassone, J. Atkins, M. Pace. 2022. An algorithm for detecting and quantifying disturbance and recovery in high-frequency time series. *Limnology and Oceanography: Methods*. <https://doi.org/10.1002/lom3.10490>  
10. **Besterman, A.F.** R.W. Jakuba, W. Ferguson, D. Brennan, J.E. Costa, L.A. Deegan. 2022. Buying time with runnels: A climate adaptation tool for salt marshes. *Estuaries and Coasts*. <https://doi.org/10.1007/s12237-021-01028-8>  
9. **Besterman, A.F.** and M.L. Pace. 2021. Mudflat geomorphology determines invasive macroalgal effect on invertebrate prey and shorebird predators. *Ecology*. <https://doi.org/10.1002/ecy.3540>

- Photo gallery published in ESA Bulletin. DOI: 10.1002/bes2.1944

## Besterman Curriculum Vitae

8. Tassone, S., **A. Besterman**, C. Buelo, J. Walter, M. Pace. 2021. Co-occurrence of aquatic heatwaves with atmospheric heatwaves, low dissolved oxygen, and low pH events in estuarine ecosystems. *Estuaries and Coasts*. <https://doi.org/10.1007/s12237-021-01009-x>
7. **Besterman, A.F.**, K.J. McGlathery, M.A. Reidenbach, P.L. Wiberg, M.L. Pace. 2021. Predicting benthic macroalgal abundance in shallow coastal bays from geomorphology and hydrologic flow patterns. *Limnology and Oceanography*. 66(1): 123-140 <https://doi.org/10.1002/lno.11592>
6. **Besterman, A.F.**, S. Karpanty, M.L. Pace. 2020. Impact of exotic macroalga on shorebirds varies with foraging specialization and spatial scale. *PLoS ONE*. 15(4): e0231337. <https://doi.org/10.1371/journal.pone.0231337> [Featured in Collection on Biodiversity Conservation]
5. Wilkinson, G.W., **A.F. Besterman**, C. Buelo, J. Gephart, M.L. Pace. 2018. A synthesis of modern organic carbon burial rates in coastal and inland ecosystems. *Scientific Reports*. Vol 8, Article Number: 15736. <https://doi.org/10.1038/s41598-018-34126-y>
4. **Besterman, A.F.** & Pace, M.L. 2018. Do macroalgal canopies impact microphytobenthos on mudflats? Evidence from a meta-analysis, comparative survey, and large-scale manipulation. *Estuaries and Coasts* 41:2304-2316. <https://doi.org/10.1007/s12237-018-0418-3>

### Book Chapters

3. Deemy, J.B., Tyler, K.N., Besterman, A.F., Takagi, K.K. (2022) Nutrient cycling. In: Dalu, T., Wasserman, R.J., (eds). *Fundamentals of Tropical Freshwater Wetlands: From Ecology to Conservation Management*. Elsevier, Cambridge. Pp. 133-161. DOI: <https://doi.org/10.1016/B978-0-12-822362-8.00017-7>
2. Emery, K.A., J.A. Gephart, G.M. Wilkinson, **A.F. Besterman**, M.L. Pace. 2016. Exploring trophic cascades in lake food webs with a spreadsheet model. Ed. Loren B. Byrne. *Learner-Centered Teaching Activities for Environmental and Sustainability Studies*. Springer International Publishing. 111-115. DOI: [https://doi.org/10.1007/978-3-319-28543-6\\_13](https://doi.org/10.1007/978-3-319-28543-6_13)

### Peer-reviewed Reports

1. Contributing author: NYDF Assessment Partners. 2019. Chapter 3: Goal 5, Protecting and Restoring Forests: A Story of Large Commitments yet Limited Progress. New York Declaration on Forests Five-Year Assessment Report. Climate Focus (coordinator and editor). pp 31-35. Accessible at [forestdeclaration.org](https://forestdeclaration.org).

### PUBLISHED OPEN ACCESS DATASETS

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- Besterman A. 2018. Bird observations on the tidal flats of the Virginia Coast Reserve, 2016-2018. EDI. <https://doi.org/10.6073/pasta/a2dc5bda5321d3231238e39680b976ba>
- Besterman A. 2016. Invertebrates on the tidal flats of the Virginia Coast, May 2016. EDI. <https://doi.org/10.6073/pasta/f86c1d4ad24e3f60d0a4577c0099629a>
- Besterman A. 2018. Geomorphic characteristics and algal cover for 36 tidal mudflats on the Virginia Coast. EDI. <https://doi.org/10.6073/pasta/9ce05eadfa3817a816fb1e2bc9ad496e>
- Besterman A. 2018. Algal cover and biomass on the mudflats of the Virginia Coast, 2015, 2016 and 2018. EDI. <https://doi.org/10.6073/pasta/db73ca73d974b39709e9ea48f859fa5f>.
- Besterman A. 2017. Benthic Chlorophyll and Macroalgae on an Experimentally-manipulated Tidal Flat on the Virginia Coast, 2016-2017. EDI. <https://doi.org/10.6073/pasta/2498aa2a5a744a55f19ca14e4ee851f9>

### TEACHING

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- Teacher-reviewed, classroom tested lesson plan- 483 downloads: **Besterman, Alice**. How Green Is It? Learning Light and Electromagnetic Spectrum Properties by Measuring Algae. *Virginia Scientists & Educators Alliance (VA SEA)*, a collaboration of the Chesapeake Bay National Estuarine Research Reserve in Virginia and the Marine Advisory Program, Virginia Institute of Marine Science, College of William & Mary. Virginia Institute of Marine Science. <https://doi.org/10.21220/V5GB2X>

# Besterman Curriculum Vitae

## Teaching Experience

- 2021 **Guest lecturer**, Univ. of Virginia, 'Writing and Critical Inquiry: A Scientific Approach to Artful Communication', Lectured and led discussion for first year students on how to generate and narrow research questions. 2 sessions
- 2014–15, 2019 **Teaching Assistant**, Univ. of Virginia, 'Practical Concepts in the Environmental Sciences', Non-majors course in earth science. 3 semesters
- 2012–13 **Supplemental Instruction Leader**, Virginia Commonwealth University, Introductory Biology.
- 2012 **Teaching Assistant**, Virginia Commonwealth University, 'Panama Avian Field Ecology Course', Split study-abroad and on-campus course.

## Teacher Training

- 2015 **Science into Lesson Plans Graduate Student Workshop**, Virginia Scientists and Educators Alliance (VA SEA) Project, November 5. Training in lesson plan development and best practices in instruction
- 2012–13 **Training as Supplemental Instruction Leader**, Virginia Commonwealth University. Training in how to facilitate group learning in accordance with International Center for Supplemental Instruction at UMKC guidelines.

## MENTORING

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\* = Research credits or degree requirement; † = Wages or stipend

### Undergraduate researchers

- 2022 Hector Delgadillo†, Woods Hole Partnership Education Program Student (10 wks.)
- 2021 Lillie Hoffart\*†, BBC Fall Co-op, Northeastern University (6 mos.)
- 2021 Grace Levins, BBC Summer Intern (Transcript Notation), Union College (100 hours)
- 2021 Melissa Herring\*†, BBC Spring Co-op, Northeastern University (6 mos.)  
Environmental Data Initiative Summer Fellow, BBC (10 wks.)
- 2021 Kara Falvey\*, BBC Winter Co-op, Massachusetts Maritime Academy (120 hours)
- 2017–2018 Rebekah Flick\*†, Independent research, UVA (1 semester)  
Virginia Coast Reserve LTER REU student, UVA (10 wks)
- 2015–2016 Nicholas Braun\*†, Distinguished Majors Program, UVA (2 semesters)  
Virginia Coast Reserve LTER REU student, UVA (10 wks.)

### Undergraduate lab/field assistants

- 2020–2021 Buzzards Bay Coalition  
Julia Holtzer, Malarie Pittsley\*
- 2017–2018 University of Virginia  
Marissa Palmer\*†, Rebekah Flick\*†, Mark Kelly\*†, Aidan Kalua'u\*, Jailing Cait, Nicole Powell\*

### Seasonal field research technicians

- 2020– Buzzards Bay Coalition: 7 wage-technicians completing 10-wk position
- 2016 University of Virginia: 3 wage-technicians completing 6-wk position

### High school interns

- 2020 Buzzards Bay Coalition  
Nico Gentile, Claudie Bellanger

# Besterman Curriculum Vitae

## GRANTS AND FELLOWSHIPS

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### External

[total: \$792,582]

- 2021 **Northeast Climate Adaptation Science Center Grant** (\$371,849)
  - Competitive grant, fellowship awarded after winning
  - Led proposal writing; effective Co-PI as postdoc
- 2020 **Co-PI, Rose Family Foundation** (\$35,000)
- 2020 **Southeast New England Program, Watershed Grants** (\$223,533)
  - Led proposal writing; effective Co-PI as postdoc
- 2018 **Virginia Soc. of Ornithology, J.J. Murray Student Research Award** (\$1,000)
- 2015 **Co-PI, 4-VA, Collaborative Research Grant** (\$23,200)
  - Led proposal writing as graduate student
- 2015 **NSF, Graduate Research Fellowship** (\$138,000)

### Invited Pre-Proposals

- 2020 **Natl. Estuarine Research Reserve System Sci. Collaborative, Catalyst Grant** *\*Full proposal denied*
- 2019 **Woods Hole Sea Grant Program** *\*Full proposal denied but deemed meritorious of support*

### Competitive Internal

[total: \$25,000]

- 2018 **UVA Environmental Resilience Institute, Rapid Response Grant** (\$14,000)
- 2018 **UVA Dept. of Environmental Sciences, Moore Graduate Research Award** (\$3,500)
- 2017 **UVA Inst. of the Humanities and Global Cultures, Grad. Collaborative Network** (\$5,000)
- 2015 **UVA Dept. of Environmental Sciences, Exploratory Grad. Research Award** (\$1,500)
- 2011 **VCU Rice Rivers Center, Summer Research Experience Grant** (\$1,000)

## INVITED SEMINARS AND PRESENTATIONS

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### Academic Seminars

- 2022 **Northeast Climate Adaptation Science Center Webinar Series, Sep 14. Virtual.**
- 2021 **Towson University, Nov 18. Towson, Maryland.**
- 2021 **East Carolina University Research in Progress Seminar Series, Sep 27. Virtual.**
- 2021 **Society of Wetland Scientists Webinar Series, Oct 21. Virtual. Accessible:**  
<https://www.youtube.com/watch?v=JHJoabcnAL4>
- 2021 **Water, Wetlands, and Watersheds Seminar Series, H.T. Odum Center for Wetlands, University of Florida, Mar 31. Virtual. Accessible: <https://www.youtube.com/watch?v=a1Lyc2p5u6Q>**

### Public and Ecosystem Manager Engagement

- 2022 **Dartmouth Cultural Center Summer Talk Series, Sep 8. Dartmouth, MA.**
- 2022 **Nonquitt Community Summer Talk Series. Aug 10. Dartmouth, MA.**
- 2021 **Salt Marsh Restoration Walk, Dartmouth Natural Resources Trust. Sep 29. Dartmouth, MA.**
- 2021 **New Bedford Science Café, New Bedford, MA. *\*Canceled due to COVID***
- 2021 **Branford (CT) Rotary Club, May 12. Virtual.**
- 2021 **BBC Leadership Council, Apr 9. Virtual. Keynote address.**
- 2015 **Virginia Coastal Avian Partnership Meeting, Feb 26. Northampton, VA.**

# Besterman Curriculum Vitae

## Conferences

- 2020 Besterman, A.F., R.W. Jakuba, L.A. Deegan, W. Ferguson, D. Brennan. “Developing best practices in runnel project design and planning”. National Coastal and Estuarine Summit. Virtual.
- 2019 Besterman, A.F., S. Karpanty, M.L. Pace. “Impact of exotic macroalga on shorebirds varies with foraging specialization and spatial scale.” Virginia Society of Ornithology Annual Meeting. Pembroke, VA.
- 2018 Panelist. “Science into Educational Curricula”. Virginia Sea Grant Graduate Student Symposium. Richmond, VA.

## CONFERENCE PRESENTATIONS

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\* = undergraduate presenter; † = graduate student presenter

- 2022 “Early responses to runnels in two Buzzards Bay marshes.” Talk. New England Estuarine Research Society. (Hybrid — Salem, MA).
- 2022 †Sullivan, H. “The impact of runnels as a hydrologic adaptation strategy on temperature drivers of salt marsh carbon decomposition.” Talk. New England Estuarine Research Society. (Hybrid — Salem, MA).
- 2021 †Sullivan, H. “The impact of runnelling as a hydrologic adaptation strategy on salt marsh carbon decomposition.” Summary Talk. Coastal and Estuarine Research Federation 26<sup>th</sup> Biennial Conference. (Virtual)
- 2021 \*Hoffart, L. “Establishing baseline conditions for rapidly degrading marshes across a southern New England watershed.” Summary Talk. Coastal and Estuarine Research Federation 26<sup>th</sup> Biennial Conference. (Virtual).
- 2021 “‘Runnelling’ toward climate adaptation: Can interior drowning be reversed?.” Anchor Talk\*. Coastal and Estuarine Research Federation 26<sup>th</sup> Biennial Conference. (Virtual).
- **Selected for long-form Anchor Talk in special session**
- 2021 \*Herring, M. “Monitoring changes in *Spartina alterniflora* growth across a southern New England watershed.” Talk. New England Estuarine Research Society & Atlantic Estuarine Research Society Spring Meeting. (Virtual)
- 2019 “Predicting benthic macroalgal abundance in shallow coastal bays from hydrodynamics and geomorphology. Talk. Coastal and Estuarine Research Federation 25<sup>th</sup> Biennial Conference (Mobile, AL)
- 2019 “Geomorphology exerts bottom-up control on intertidal flat biomass.” Talk. Assoc. Sciences of Limnology & Oceanography (San Juan, PR)
- 2018 “Do macroalgal mats limit microphytobenthos on mudflats?” Oral Presentation. Ecological Society of America Annual Meeting (New Orleans, LA)
- 2018 “Do macroalgal mats limit microphytobenthos on mudflats?” Oral Presentation. Atlantic Estuarine Research Society Meeting, (Rehobeth Beach, DE)
- 2017 “Comparing modern carbon burial in aquatic ecosystems.” Poster. Assoc Sciences of Limnology and Oceanography (Honolulu, HI.)
- 2012 “Female age and caterpillar frass abundance correlate with annual fecundity in the Prothonotary Warbler (*Protonotaria citrea*).” Poster. Ecological Society of America Mid-Atlantic Conference (Blacksburg, VA)

# Besterman Curriculum Vitae

## SCIENTIFIC SERVICE

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<b>Governing Board</b>	<b>Secretary 2021-2023</b> , Coastal and Estuarine Research Federation Governing Board
<b>Workshops and Symposia</b>	<b>Keynote speaker introduction</b> . Northeast Climate Adaptation Science Center Symposium. Virtual. October 2021. <b>Moderator</b> . Biological Thresholds in the Context of Climate Adaptation, Northeast Climate Adaptation Science Center, Virtual, October 2020. <b>Organizer and speaker</b> . Evaluating Runnels for Salt Marsh Adaptation, Woodwell Climate Research Center, Falmouth, MA, March 2020. Accessible: <a href="https://tinyurl.com/saryhkn">https://tinyurl.com/saryhkn</a> .
<b>Working Groups</b>	<b>Report co-author</b> . Salt Marsh Work Group, Massachusetts Ecosystem Climate Adaptation Network, University of Massachusetts Amherst, ongoing. <b>Co-lead</b> . “Ecological Methods Lab”, Graduate Collaborative Network, Institute of the Humanities and Global Culture, University of Virginia. 2017-2018
<b>Institutional Service</b>	<b>Participant</b> . DEIJ Committee, Buzzards Bay Coalition, ongoing. <b>Participant</b> . Science Advisory Committee, Buzzards Bay Coalition, ongoing. <b>Reviewer and panelist</b> . NSF GRFP writing workshops, Office of Graduate and Postdoctoral Affairs, University of Virginia, 2015-2018. <b>Co-Chair</b> . Department of Environmental Sciences Graduate Student Association, University of Virginia. 2015-2017. <ul style="list-style-type: none"><li>• 2015-2016: Association co-chair, organized 3 departmental annual events, helped organize weekly socials, facilitated communication between faculty and graduate students, organized graduate opinions on for faculty hiring</li><li>• 2017: Co-organizer of graduate research symposium.</li></ul> <b>Organizer</b> . Department of Environmental Sciences Policy Lunch Discussions. University of Virginia, 2016-2018

## ENGAGEMENT AND OUTREACH

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<b>Policy Audiences</b>	<b>University of Virginia Delegation</b> . Association of Ecosystem Research Centers Congressional Briefing Day, October 8, 2014
<b>Ecosystem Management Audiences</b>	<b>Host/organizer</b> . Led tours of restoration experimental sites, facilitated discussion among managers, scientists, regulators. <ul style="list-style-type: none"><li>• Climate adaptation meeting. Dartmouth, MA, May 25, 2021. (20 attendees).</li><li>• Mosquito control and wetland restoration meeting. Fairhaven, MA, May 4, 2021. (10 attendees).</li><li>• Allen’s Pond management meeting. Dartmouth, MA, Oct 26, 2020. (8 attendees).</li></ul> <b>Lightning Talk</b> . “Evaluating salt marsh adaptive management to sea level rise using runnels”. Salt Marsh Work Group, Massachusetts Ecosystem Adaptation Network, Virtual, April 7, 2021.
<b>Public Audiences</b>	<b>Creator</b> . BlackinSTEM Bibliography of papers in Coastal, Marine, and Wetland Science. Accessible: <a href="https://tinyurl.com/ywcc4h6w">https://tinyurl.com/ywcc4h6w</a>

## Besterman Curriculum Vitae

*\*Created during the #ShutDownSTEM strike in June 2020. Continually updated.*

**Interviewee.** “Studying a new technique to save threatened salt marshes”. Buzzards Bay Coalition. Video, Accessible: <https://www.youtube.com/watch?v=miswWA4MD24>

**Climate/Environment Guest.** “New Method to Save Salt Marshes Piloted in Buzzards Bay”. Report for America. WCAI: Cape, Coast, and Islands NPR Station. November 17, 2020. Radio. Accessible: <https://www.capeandislands.org/post/new-method-save-salt-marshes-piloted-buzzards-bay#stream/0>

**Guest speaker.** Skype-A-Scientist, Virtual, April 2020. \*During COVID-19 pandemic connected with 3 families with students at-home.

### Science Education Audiences

**Expo presenter.** “How Green Is It? Learning Light and Electromagnetic Spectrum Properties by Measuring Algae.”. VA SEA Lesson Plan Expo and Teacher Open House. April 2, 2017. Attended by 100 K-12 teachers.

**Teacher-reviewed lesson plan.** “How Green Is It? Learning Light and Electromagnetic Spectrum Properties by Measuring Algae.” *Virginia Scientists & Educators Alliance (VA SEA)*. Virginia Institute of Marine Science. <https://doi.org/10.21220/V5GB2X>

## PROFESSIONAL DEVELOPMENT

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<b>Memberships</b>	American Ornithological Society, Association for the Sciences of Limnology and Oceanography, Coastal and Estuarine Research Federation, Atlantic Estuarine Research Society, New England Estuarine Research Society, Ecological Society of America
<b>Journal Reviewer</b>	Biological Invasions, Wetlands, Oecologia, Limnology and Oceanography, Estuaries and Coasts, Marine Ecology Progress Series, Marine and Freshwater Research
<b>Continuing Education and Training</b>	<p><b>NE CASC Fellows Program</b>, University of Massachusetts Amherst, 2021–2022</p> <p><b>Seminar</b>, Indigenous Knowledge and Climate Adaptation Science Seminar (GEO497K), University of Massachusetts Amherst, Feb 4–Apr 15, 2021</p> <p><b>Cultural DEIJ Training Workshop Series</b>, The Avarna Group at Woodwell Climate Research Center, Feb 24–May 3, 2021</p> <p><b>Visiting Student</b>, Gulf Coast Seafood Lab, Food and Drug Administration, Dauphin Island, AL. Oct 15–Nov 2, 2018</p> <ul style="list-style-type: none"><li>• Trained in molecular and microbiological techniques</li></ul> <p><b>Visiting Student</b>, Virginia Polytechnic and State University, VA, May 14-30, 2017</p> <ul style="list-style-type: none"><li>• Assisted with annual shorebird migration surveys to gain knowledge of best research methods</li></ul> <p><b>Short course</b>, Fundamentals of Ecosystem Ecology, Cary Institute of Ecosystem Studies, Millbrook, New York, Jan 4–15, 2015</p> <p><b>Workshop</b>, Communicating Science to Decision-Makers and the Media: A Workshop for Ecosystem Scientists. Association for Ecosystem Research Centers, Washington D.C., Oct 8, 2014.</p>