

Jessica O'Connell

Department of Marine Science
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Education

- 2012 Oklahoma State University, Stillwater, OK 74074. Ph.D. Dissertation title: *Influences on plant species distributions and soil organic carbon in playa catchments of the High Plains*; GIS certificate; Mentor: Loren Smith
- 2006 Louisiana State University, Renewable Natural Resources, Baton Rouge, LA 70803. M.S. Thesis title: *Coastal marsh restoration using terraces: effects on waterbird habitat in Louisiana's Chenier Plain*; Mentor: Andy Nyman
- 2003 Sonoma State University, 1801 East Cotati Ave, Rohnert Park, CA 94928
B.A. in Biology. *Emphasis in Ecology and Evolution*

Postgraduate Professional Experience

- 2020-present Assistant Professor. Department of Marine Science, University of Texas at Austin, Marine Science Institute, Port Aransas, TX
- 2019-2020 Assistant Research Scientist. Department of Marine Sciences, University of Georgia, Athens, GA
- 2014-2019 Postdoctoral researcher. Department of Marine Sciences, University of Georgia, Athens, GA. With: Merryl Alber, Deepak Mishra. *Emphasis in coastal plant productivity and phenology modeling*
- 2012-2013 Postdoctoral researcher. Department of Environmental Sciences, Policy and Management, University of California, Berkeley, in collaboration with USGS. With: Maggi Kelly (UC Berkeley) and Kristin Byrd (USGS). *Emphasis in remote sensing models of coastal plant productivity*

Research Grants

- 2020-2021 Automating the measurement of annual wetland ponding in the Prairie Pothole Region. PI: Kaylan Kemink (Ducks Unlimited); Co-PI: **Jessica L. O'Connell** (UGA). Prairie Pothole Joint Venture, Internal funding call through Ducks Unlimited. **\$25,000**
- 2017-2020 A tidal and species based MODIS GPP product for estimating marsh blue carbon across the Southeastern United States. PI: Deepak R. Mishra (UGA), CO-PIs: **Jessica L. O'Connell** and David L. Cotton (UGA). NASA Roses Carbon Cycle. **\$994,963**
- 2016-2018 A novel hybrid approach for mapping belowground productivity and carbon sequestration potential within Georgia salt marshes. PI: Deepak R. Mishra (UGA), CO-PIs: **Jessica L. O'Connell**, Merryl Alber (UGA) and Kristin B. Byrd (USGS). Georgia Sea Grant. **\$212,808**
- 2009-2010 Interaction of prairie wetlands, grasslands, and croplands with soil organic carbon and vegetation communities. PI: Loren Smith (Oklahoma State), CO-PI: O'Connell, Jessica. German Academic Exchange Service- DAAD Rise in North America. **\$1,680**

As Collaborator

2019-2025 LTER: Georgia Coastal Ecosystems – IV, PI: Merryll Alber, CO-PI: Steven C. Pennings. NSF OCE Long-term Ecological Research proposal. Funded.

Publications

15. **O'Connell, JL**, Alber M, Pennings SC. 2019. Microspatial differences in soil temperature cause phenology change on par with long-term climate warming in salt marshes. *Ecosystems*. <https://doi.org/10.1007/s10021-019-00418-1>
14. Alber, M, **O'Connell, JL**. 2019. Elevation drives gradients in surface soil temperature within salt marshes. *Geophysical Research Letters* 46: 5313-5322.
13. Tao, J., Mishra, D R, Cotten, D L, **O'Connell, JL**, Leclerc, M, Nahrawi, HB, Zheng, G, Pahari, R. 2018. A comparison between the MODIS product (MOD17A2) and a tide-robust empirical GPP model evaluated in a Georgia wetland. *Remote Sensing*, 10(11), 1831.
12. **O'Connell, JL**, Mishra DR, Cotten DL, Wang L, Alber M. 2017. The Tidal Marsh Inundation Index (TMII): An inundation filter to flag flooded pixels and improve MODIS tidal marsh vegetation time-series analysis. *Remote Sensing of Environment* 201:34-46.
11. **O'Connell, JL**, Alber, M. 2016. A smart classifier for extracting environmental data from digital image time-series: applications for PhenoCam data in a tidal salt marsh. *Environmental Modelling and Software* 84: 134-9.
10. **O'Connell, JL**, Daniel, DW, McMurry, ST, Smith, LM, 2016. Soil organic carbon in playas and adjacent prairies, cropland, and Conservation Reserve Program land of the High Plains, USA. *Soil and Tillage Research* 156: 16-24.
9. **O'Connell, JL**, Byrd, KB, Kelly, M, 2015. A hybrid model for mapping relative differences in belowground biomass and root: shoot ratios using spectral reflectance, foliar N and plant biophysical data within coastal marsh. *Remote Sensing* 7: 16480-16503.
8. Mishra DR, Ghosh S, Hladik C, **O'Connell, JL**, Cho HJ. 2015. Wetland mapping methods and techniques using multi-sensor, multi-resolution remote sensing: Successes and Challenges. In: *Remote Sensing of Water Resources, Disasters, and Urban Studies*. Editor: Thenkabail PS. Taylor and Francis Group, Boca Raton FL, USA.
7. Byrd KB, **O'Connell, JL**, Di Tommaso S, Kelly M. 2014. Evaluation of sensor types and environmental controls on mapping biomass of coastal marsh emergent vegetation. *Remote Sensing of Environment* 149:166-180.
6. **O'Connell, JL**, Byrd KB, Kelly, M. 2014. Remotely-sensed indicators of N-related biomass allocation in *Schoenoplectus acutus*. *PLoS ONE* 9: e90870.
5. **O'Connell, JL**, Johnson, LA, Smith, LM, Haukos, DA, McMurry, ST. 2013. Effects of agricultural tillage and sediment accumulation on emergent plant communities in playa wetlands of the US High Plains. *Journal of Environmental Management* 120:10-17.
4. **O'Connell, JL**, Johnson, LA, Beas, BJ, Smith, LM, Haukos, DA, McMurry, ST. 2013. Predicting dispersal-limitation in plants: Optimizing planting decisions for isolated wetland restoration in agricultural landscapes. *Biological Conservation* 159; 343-354.
3. **O'Connell, JL**, Johnson, LA, Smith, LM, Haukos, DA, McMurry, ST. 2012. Influence of land-use and conservation programs on playa wetland ecosystem services in the U.S. High Plains. *Biological Conservation* 146:108-115.

2. **O’Connell, JL**, Nyman, JA. 2011. Effects of marsh pond terracing on coastal wintering waterbirds before and after Hurricane Rita. *Environmental Management* 48: 975-984.
1. **O’Connell, JL**, Nyman, JA. 2010. Marsh terraces in coastal Louisiana increase marsh edge and densities of waterbirds. *Wetlands* 30:125-135.

Oral Presentations

****invited presentation, ^student presentation, ^^upcoming***

29. ***O’Connell, JL**, Alber, M, Mishra, DR, KB Byrd, KB. 2020. Structural heterogeneity in above vs belowground biomass pools differ for *Spartina alterniflora* monocultures, with consequences for forecasting ecosystem resiliency. Invited to the organized session: “Ecosystem Structural Diversity”. Ecological Society of America (ESA). Virtual meeting.
29. Mishra, DR, Cotten, DL, **O’Connell, JL**, Mao, L, Narron, C, & Hawman, P. 2019. Salt marsh light use efficiency and gross primary productivity in response to environmental conditions. American Geophysical Union (AGU), San Francisco, CA.
28. **O’Connell, JL**, Alber, M. 2019. Elevation drives gradients in surface soil temperature within salt marshes. Coastal and Estuarine Research Federation (CERF), Mobile, AL.
27. ^Narron, CR, Mishra, DR, **O’Connell, JL**, Cotten, DL, Hawman, P and Mao, L. 2019. Assessing tidal wetland above- and belowground net primary production using field and in situ measurements. Coastal and Estuarine Research Federation (CERF), Mobile, AL.
26. ^Hawman, P, Mishra, DR, Cotten, DL, **O’Connell, JL** and Mao, L, Narron, CR. 2019. Salt marsh light use efficiency and gross primary production in response to environmental conditions. Coastal and Estuarine Research Federation (CERF), Mobile, AL.
25. ***O’Connell, JL**. 2019. Patterns of *Spartina alterniflora* phenology and belowground biomass. Departmental Seminar, Dept. of Geosciences, University of Lafayette, Lafayette, LA.
24. ***O’Connell, JL**. 2019. Patterns of *Spartina alterniflora* phenology and belowground biomass. Departmental Seminar, Dept. of Marine Sciences, University of Georgia, Athens, GA.
23. ^Mao, L, Mishra, DR, Cotten, DL, **O’Connell, JL**, Narron CR, Hawman, P. 2019. Analyzing chlorophyll fluorescence in *Juncus roemerianus* by Pulse Amplitude Modulated (PAM) fluorometer at different plant heights. International Geoscience and Remote Sensing Society, Yokohama, Japan.
22. Nyman, JA, **O’Connell, JL**, Sullivan LR, Patton, BA. 2019. Accounting for edge effects; i.e., interspersions, on waterbirds and fish when creating and restoring emergent wetlands across estuarine gradients. Society for Wetland Scientists, Baltimore, MD.
21. ***O’Connell, JL**, Alber, M, Mishra, DR, KB Byrd, KB. 2018. Landsat models of *Spartina alterniflora* belowground biomass in coastal marshes. Invited to the organized session: “Cutting-Edge Remote Sensing Applications in Ecology: Spanning Scales, Sensors, and Ecosystems”. Ecological Society of America (ESA). New Orleans, LA.
20. ***O’Connell, JL**, Alber, M, Mishra, DR, Byrd, KB. 2018. Importance of estimating spatial and temporal variation in *Spartina alterniflora* belowground biomass. Georgia Coastal Research Council, Savannah, GA.

19. ***O'Connell, JL.** Estimating tidal wetland resilience through plant productivity modeling. 2018. Departmental Seminar, Dept. of Biology, University of Central Florida, Orlando, FL.
18. ^Narron, C.R., Mishra, DR, **O'Connell, JL**, Cotten, DL. 2018. Estimating belowground biomass and root:shoot ratios of Gulf coast salt marshes using remote sensing and biophysical data. American Association of Geographers (AAG), New Orleans, LA.
17. ^Hawman, P., Mishra, DR, **O'Connell, JL**, Cotten, DL. 2018. Fine-tuning WDRVI for Salt Marsh Species Using Proximal Remote Sensing. American Association of Geographers (AAG), New Orleans, LA.
16. ***O'Connell, JL**, Alber, M, Mishra, DR, Byrd, KB. 2017. Remote sensing of *Spartina alterniflora* belowground biomass. Georgia Sea Grant Research Symposium. Athens, GA.
15. **O'Connell, JL**, Alber, M, Mishra, DR, Byrd, KB. 2017. Estimating patterns in *Spartina alterniflora* belowground biomass within salt marshes. American Geophysical Union (AGU). New Orleans, LA.
14. Forbrich, I, Nahrawi, HB, Leclerc, MY, **O'Connell, JL**, Mishra, DR, Fogarty, MC, Edson, JB, Vázquez-Lule, AD, Vargas, R, Giblin, AE, Alber, M. 2017. Variation in salt marsh CO₂ fluxes across a latitudinal gradient along the US Atlantic coast. American Geophysical Union (AGU). New Orleans, LA.
13. ***O'Connell, JL.** Coastal marsh plant productivity: implications for coastal resilience. 2017 Departmental Seminar. Department of Biology. Virginia Commonwealth University, Richmond, VA.
12. **O'Connell, JL**, Alber, M, Pennings, SC. 2017. Spatial and temporal variation in phenology in a Georgia salt marsh. Coastal and Estuarine Research Federation (CERF). Providence, RI.
11. Alber, M, **O'Connell, JL**, Sheldon, J. 2017. The application of early warning signals to brackish marshes. Coastal and Estuarine Research Federation (CERF). Providence, RI.
10. Forbrich, I, Nahrawi, HB, Leclerc, MY, **O'Connell, JL**, Mishra, DR, Giblin, AE, Alber, M, Vázquez-Lule, AD, Vargas, R, Fogarty, MC, Edson, JB. 2017. Variation in salt marsh CO₂ fluxes across a latitudinal gradient along the US Atlantic coast. Coastal and Estuarine Research Federation (CERF). Providence, RI.
9. **O'Connell, JL**, Alber, M, Mishra, DR. 2015. Remote sensing of *Spartina alterniflora* belowground biomass within salt marshes. Coastal and Estuarine Research Federation (CERF). Portland, OR.
8. **O'Connell, JL**, Byrd, KB, Kelly M. 2013. Remotely-sensed indicators of N-related biomass allocation in *Schoenoplectus acutus*. Ecological Society of America. Minneapolis, MN.
7. ***O'Connell, JL.** 2011. Plant species distributions and soil organic carbon in playas of the High Plains. Departmental Seminar, Texas A&M at Galveston, Galveston, TX.
6. ***O'Connell, JL**, Johnson, LA, Smith, LM, Haukos, DA, McMurry, ST. 2011. Land management effects on plant communities of playas. Rainwater Basin Joint Venture/Playa Lakes Joint Venture Research Symposium/Waterbird Society Conference. Grand Island, NE.
5. **O'Connell, JL**, Johnson, LA, Smith, LM, Haukos, DA, McMurry, ST. 2011. Influence of land-use on playas across the U.S. High Plains: Restoration may be mediated by plant traits. US-IALE Symposium, Portland, OR.

4. **O'Connell, JL**, Johnson, LA, Smith, LM, Haukos, DA, McMurry, ST. 2010. Land use effects on plants and services in High Plains playas. Society of Wetland Scientists. Salt Lake City, UT.
3. ***O'Connell, JL**, Nyman, JA. 2006. Waterbird use of terraced vs. unterraced ponds in coastal Louisiana. Earthen Terraces Symposium: Status of the Technique. Baton Rouge, LA.
2. **O'Connell, JL**, Nyman, JA. 2006. Coastal marsh restoration using terraces: Effects on waterbird habitat in Louisiana's Chenier Plain. North American Ornithological Society. Veracruz, MX.
1. **O'Connell, JL**, JA Nyman, JA. 2006. Effects of pond terracing on waterbirds, nekton, SAV and water quality in coastal marshes in Louisiana. The Ecological Society. Memphis, TN.

Poster Presentations

8. **O'Connell, JL**, Alber, M, Mishra, DR, KB Byrd, KB. 2019. Spatiotemporal variation in site-wide *Spartina alterniflora* belowground biomass may provide an early warning of tidal marsh vulnerability to sea level rise. American Geophysical Union (AGU). San Fransisco, CA.
7. **O'Connell, JL**, Alber, M, Mishra, DR, Byrd, KB. 2018. Remote sensing of *Spartina alterniflora* belowground biomass in Georgia salt marshes. Long Term Ecological Research (LTER) Network: All Scientists Meeting. Pacific Grove, CA.
6. Alber, M, **O'Connell, JL**, Pennings, SC. 2018. Phenological variation in a *Spartina alterniflora* marsh. Long Term Ecological Research (LTER) Network: All Scientists Meeting. Pacific Grove, CA.
5. ^Hawman, P, Mishra, DR, Cotten, DL, **O'Connell, JL**, Narron CR, Mao, L. 2018. Effects of cloud cover on light use efficiency in salt marsh species. American Geophysical Union, Washington D.C.
4. ^Narron, CR, **O'Connell, JL**, Mishra, DR, Cotten, DL. 2018. Reparameterization of the Tidal Marsh Inundation Index (TMII) to Improve Landsat Vegetation Time-Series in Georgia and Gulf Coast Tidal Marshes. American Geophysical Union, Washington D.C.
3. ^Mao, L, Mishra, DR, Cotten, DL, **O'Connell, JL**, Narron CR, Hawman, P. 2018. Measuring Chlorophyll Fluorescence in a *Juncus roemerianus* Dominated Marsh using a Pulse Amplitude Modulated (PAM) Fluorometer. American Geophysical Union, Washington D.C.
2. **O'Connell, JL**, Cotten, DL, Mishra, DR, Alber, M, and L Wang. 2016. An inundation filter and procedure to improve MODIS time-series analysis within tidal marshes. Southeastern Estuarine Research Society (SEERS). Jekyll Island, GA.
1. Cannaday, C, Gossman, B, **O'Connell, JL**, Nyman, JA, Le Peyre, M. 2005. Effects of terraces on vegetation, nekton, and waterbirds. CREST Symposium: Progress in understanding coastal land loss and restoration in Louisiana. Lafayette, LA.

Teaching

Co-Instructor; ^^Upcoming

- ^^2021 MNS 352E: Marine Conservation Biology. 3 credit hrs. University of Texas, Spring Semester. Undergraduate course, introducing marine conservation from a systems perspective. Final grade is derived from an individual capstone field project that students design and implement.
- 2019 GEOG 4460/6460: Field and Lab Methods in Remote Sensing. 3 credit hrs. University of Georgia; Fall Semester. Upper division course with enrollment of upper level undergraduates and graduate students. This course teaches remote sensing field techniques, experimental design, and data processing in R. Final grade is derived from an individual capstone field project that students design and implement.

Mentoring

Current M.S., Ph.D. Guiding Committees

- Caroline Narron Taught field skills, research skills, scientific writing, R coding, grant writing, statistical skills, geospatial modeling, scientific presentations; Ph.D. student, UGA, Geography.
- Lishen Mao Taught field skills, research skills, scientific writing, grant writing, scientific presentations; Ph.D. student, UGA, Geography
- Peter Hawman Taught field skills, research skills, scientific writing, R coding, grant writing, statistical skills, geospatial modeling, scientific presentations; Ph.D. student, UGA, Geography

Service

Outreach

- 2017 Women in Science Summer Camp, UGA Marine Extension, Skidaway Island, GA. Taught marsh ecology and remote sensing to middle school girls
- 2016,2017 Guest Scientist, Summer Schoolyard Program for High School Teachers, GCE-LTER, Sapelo Island, GA,
- 2016 Island Scientists Summer Camp, UGA Marine Extension, Skidaway Island, GA. Taught remote sensing science to middle school children
- 2010 OSU Upward Bound. Mentored high school students who were potential first-generation college students with interests in biology careers

Volunteer

- 2020 Athens Land Trust/Athen-Clarke County Sustainability Office/Northeast Georgia Invasive Plants Council: rock and shoals habitat restoration
- 2019 Conference Student Presentation Judge. Coastal Estuarine Research Federation (CERF)
- 2014-2018 South Carolina Native Plant Society: native plant rescues and native plant sales to benefit conservation easement purchases
- 2016 South Carolina Botanical Garden: Invasive plant removal in the Piedmont Prairie Natural Heritage Garden
- 2013 Habitat for Humanity, Clemson, SC
- 2008-2009 Blue Thumb Volunteer: Oklahoma Conservation Commission (OCC)'s water quality monitoring and education outreach program, Stillwater, OK.
- 2008-2009 Graduate and Professional Student Government Representative, OSU, Stillwater, OK.
- 2007 New Orleans Society for Conservation Biology, New Orleans, LA.

2001-2002 Sonoma County Bird Rescue Center, Santa Rosa, CA.

Professional Associations

Coastal & Estuarine Research Federation

American Geophysical Union

Ecological Society of America