

Amy K. Langston, PhD
Curriculum Vitae
amyklangston.com

CURRENT POSITION

2022-Present Assistant Research Professor, Desert Research Institute, Reno, NV

EDUCATION

PhD	Environmental Engineering, University of Florida	2018
MS	Biology, San Francisco State University	2008
BS	Ecology & Systematic Biology, California Polytechnic State University, San Luis Obispo	2002

PUBLICATIONS

- Kaalstad, S., Osland, M.J., Devlin, D.J., Proffitt, C.E., Feher, L.C., Armitage, A.R., Day, R.H., Swanson, K.M., Anderson, G.H., Berger, B., Cebrian, J., Cummins, K.L., Dunton, K.H., Feller, I.C., Fierro-Cabo, A., Flores, E.A., From, A.S., Hughes, A.R., Kaplan, D.A., **Langston, A.K.**, Martinez, B.V., Miller, C.J., Reaver, N.G., Sanspree, C.R., Snyder, C.M., Stetter, A.P., Thompson, J.E., Zamora-Tovar, C. *Accepted*. Comparing the effects of two extreme freeze events (2018 and 2021) on black mangroves (*Avicennia germinans*) near their northern range limit in eastern North America. *Estuaries and Coasts*.
- Martinez, M., Osland, M.J., Grace, J.B., Enwright, N.M., Stagg, C.L., Kaalstad, S., Anderson, G.H., Armitage, A.R., Cebrian, J., Cummins, K.L., Day, R.H., Devlin, D.J., Dunton, K.H., Feher, L.C., Fierro-Cabo, A., Flores, E.A., From, A.S., Hughes, A.R., Kaplan, D.A., **Langston, A.K.**, Martinez, B., Miller, C., Proffitt, C.E., Reaver, N.G., Spanspree, C.R., Snyder, C.M., Stetter, A.P., Swanson, K., Thompson, J.E., Zamora-Tovar, C. 2023. Integrating remote sensing with ground-based observations to quantify freeze damage to black mangroves (*Avicennia germinans*) at the landscape scale. *Ecosystems* <https://doi.org/10.1007/s10021-023-00871-z>.
- Messerschmidt, T., **Langston, A.K.**, Kirwan, M.L. 2021. Asymmetric root distributions reveal press-pulse responses in retreating coastal forests. *Ecology* 102: e03468. DOI: 10.1002/ecy.3468.
- Langston, A.K.**, Coleman, D.J., Jung, N.W., Shawler, J.L., Smith, A.J., Williams, B.L., Wittingham, S.S., Chambers, R.M., Perry, J. E., Kirwan, M.L. 2021. The effect of marsh age on ecosystem function in a rapidly transgressing marsh. *Ecosystems* 1-13. DOI: 10.1007/s10021-021-00652-6.
- Langston, A.K.**, Alexander, C.R., Alber, M., Kirwan M.L. 2021. Beyond 2100: Long-term vulnerability of a salt marsh to sea level rise in Georgia, USA. *Estuarine, Coastal and Shelf Science* 249: 107093. DOI: 10.1016/j.ecss.2020.107093.
- Langston, A.K.** and Kaplan, DA. 2020. Modelling the effects of climate, predation, and dispersal on the poleward range expansion of black mangrove (*Avicennia germinans*). *Ecological Modelling* 434: 109245. DOI: 10.1016/j.ecolmodel.2020.109245.
- Langston, A.K.**, Durán Vinent, O., Herbert, E. R., Kirwan, M.L. 2020. Modeling long-term salt marsh response to sea level rise in the sediment-deficient Plum Island Estuary, MA. *Limnology and Oceanography* 65:2142-2157. DOI: 10.1002/lno.11444.
- Osland, M.J., Day, R.H., Hall, C.T., Feher, L.C., Armitage, A.R., Cebrian, J., Dunton, K.H., Hughes, A.R., Kaplan, D.A., **Langston, A.K.**, Macy, A., Weaver, C.A., Anderson, G.H., Cummins, K., Feller, I.C., Snyder, C.M. 2020. Temperature thresholds for black mangrove (*Avicennia germinans*) freeze damage, mortality, and recovery in North America: refining tipping points for range expansion in a warming climate. *Journal of Ecology* 108: 654-665. DOI: 10.1111/1365-2745.13285.
- Langston, A.K.**, Kaplan, D.A., Putz, F. 2017. A casualty of climate change? Loss of freshwater forest islands on Florida's Gulf Coast. *Global Change Biology* 23: 5383-5397. DOI: 10.1111/gcb.13805.

Langston, A.K., Kaplan, D.A., Angelini, C. 2017. Predation restricts black mangrove (*Avicennia germinans*) colonization at its northern range limit along Florida's Gulf Coast. *Hydrobiologia* 803: 317-331. DOI: 10.1007/s10750-017-3197-0.

In Review

Langston, A.K., Smith, A.J., Gedan, K.B., Kirwan, M.L. *In review*. Climate-driven community reassembly in retreating forest along the mid-Atlantic coast, USA.

GRANT AWARDS, CONTRACTS, AND FELLOWSHIPS

- 2024 US Forest Service, Forest Health Protection Restoration Program (Lead PI) (\$53,599)
- 2023 Nevada Division of State Lands, Lake Tahoe License Plate Program (Lead PI) (\$89,795)
- 2023 Desert Research Institute, Research Immersion Internship Program (approx. \$10,000)
- 2022 Virginia Institute of Marine Science, contract for data analysis (Lead PI) (\$23,970)
- 2021 Bureau of Land Management, Plant Conservation and Restoration Management Grant (\$49,990)
- 2021 California Department of Fish & Wildlife, Environmental Enhancement Fund Grant (\$252,115)
- 2021 California State Parks, Off-Highway Vehicle Restoration Grant (\$217,608)
- 2021 Private donation to create the MDLT Prairie Falcon Conservation Program (\$55,770)
- 2017 UF Wetlands Club, Student Travel Grant Award
- 2016 National Conference on Ecosystem Restoration, Best Student Oral Presentation (\$100)
- 2016 Society of Wetland Scientists, Student Travel Grant Award (\$500)
- 2016 UF Wetlands Club, Student Travel Grant Award
- 2015 University of Florida, Engineering School of Sustainable Infrastructure and Environment, H.T. Odum Fellowship (\$1,500)
- 2015 Society of Wetland Scientists, Student Travel Grant Award (\$500)
- 2015 American Water Resources Association, First Place Student Poster Competition (\$400)
- 2013 University of Florida, Engineering School of Sustainable Infrastructure and Environment, Academic Scholarship (\$3,000)

SELECTED CONFERENCE PRESENTATIONS & POSTERS

- Langston, A.K. 2024. Investigating Ecological Functions of a Montane Meadow in the Lake Tahoe Basin. Sierra Meadows Partnership Annual Meeting, May 29-31, Giant Sequoia National Monument, CA. (Talk)
- Langston, A.K., Smith, A.J., Gedan, K.B., Kirwan, M.L. 2023. Climate-driven community reassembly in retreating coastal forest along the mid-Atlantic coast, USA. Ecological Society of America Annual Meeting, August 2-11, Portland, OR. (Talk)
- Langston, A.K., Coleman, D. J., Jung, N.W., Shawler, J.L., Smith, A.J., Williams, B.L., Wittingham, S.S., Kirwan, M.L. 2020. The effect of marsh age on ecosystem function in a rapidly transgressing marsh. American Geophysical Union Fall Meeting, December 1-17, Virtual. (Talk)
- Langston, A., Herbert, E., Duran Vinent, O., Kirwan, M. 2019. Buying time: elevation capital extends life of marshes in the sediment-deficient Plum Island Estuary, MA. Coastal & Estuarine Research Federation Biennial Meeting, November 3-7, Mobile, AL. (Talk)
- Langston, A., Herbert, E., Duran Vinent, O., Kirwan, M. 2018. Modeling Long-term Salt Marsh Response to Sea Level Rise and Human Impacts in the Sediment-deficient Plum Island Estuary, MA. American Geophysical Union Fall Meeting, December 10-14, Washington, DC. (Poster)
- Langston, A. and D. Kaplan. 2018. Modeling the Effects of Climate Change and Predation on Northward Expansion of Black Mangroves (*Avicennia germinans*) into Temperate Salt Marsh. UF Water Institute Symposium, February 6-7, Gainesville, FL. (Poster)
- Langston, A. and D. Kaplan. 2017. Propagule density threshold for overcoming predation pressure in areas of black mangrove (*Avicennia germinans*) expansion. Society of Wetland Scientists, June 5-8, Puerto Rico. (Talk)
- Langston, A., T. Ankersen, and D. Kaplan. 2017. Natural Resource Adaptation Action Areas: Incorporating sea level rise adaptation into rural coastal community comprehensive planning. UF Levin College of Law 23rd Annual Public Interest Environmental Conference, February 9-11, Gainesville, FL. (Talk)

- Langston, A., D. Kaplan, and C. Angelini. 2017. Biotic and abiotic controls on the northern range expansion of black mangroves (*Avicennia germinans*). UF/IFAS Nature Coast Biological Station Big Bend Science Symposium, February 1-3, Cedar Key, FL. (Talk)
- Langston, A., T. Ankersen, and D. Kaplan. 2017. Preparing For the Future: Integrating Science into Rural Coastal Community Comprehensive Planning. UF/IFAS Nature Coast Biological Station Big Bend Science Symposium, February 1-3, Cedar Key, FL. (Poster)
- Langston, A. and D. Kaplan. 2016. Planning for the future: climate change-induced reassembly trajectories along the Big Bend coast of Florida. Society of Ecological Restoration, Southeast Chapter Annual Symposium October 18-21, Quincy, FL. (Talk)
- Langston, A. and D. Kaplan. 2016. Top-down ecological controls limit climate change induced expansion of black mangroves (*Avicennia germinans*). Ecological Society of America Annual Meeting, August 7-12, Fort Lauderdale, FL. (Talk)
- Langston, A. and D. Kaplan. 2016. Investigating top-down and bottom-up influences on black mangrove (*Avicennia germinans*) encroachment in forested freshwater islands along the Big Bend coast of Florida. 4th Mangrove & Macrobenthos Meeting, July 18-22, St. Augustine, FL. (Poster and Lightning Talk)
- Langston, A. and D. Kaplan. 2016. Patterns of coastal forest decline and expansion along the Big Bend coast of Florida. Society of Wetland Scientists Annual Meeting, May 31-June 4, Corpus Christi, TX. (Talk)
- Langston, A., T. Ankersen, and D. Kaplan. 2016. Natural Resource Adaptation Action Areas: A planning framework for restoration. National Conference on Ecosystem Restoration, April 18-22, Coral Springs, FL. (Talk) *Awarded Best Student Oral Presentation
- Langston, A. and D. Kaplan. 2016. Investigating top-down and bottom-up influences on black mangrove (*Avicennia germinans*) encroachment in forested freshwater islands along the Big Bend coast of Florida. UF/IFAS Nature Coast Biological Station Big Bend Science Symposium, January 28-29, Cedar Key, FL. (Talk)
- Langston, A. and D. Kaplan. 2015. A casualty of climate change: long-term vegetation trends in a patchy coastal wetland. Society of Wetland Scientists Annual Meeting, May 31-June 4, Providence, RI. (Talk)
- Langston, A. and D. Kaplan. 2015. A Casualty of Climate Change: Long-term Vegetation Trends in a Patchy Coastal Wetland. American Water Resources Association: Annual Southwest Florida Water Resources Conference, February 6, Fort Myers, FL. (Poster) *Awarded 1st Place in Student Poster Competition
- Langston, A., D. Kaplan, T. Ankersen, N. Barshel, S. Fida, and G. Davidson. 2014. Using blue infrastructure, adaptation science, and education-based tourism to drive a sustainable economy in a rural coastal community. National Oceanic and Atmospheric Administration Coastal Services Center Social Coast Forum, February 18-20, Charleston, SC. (Talk)

RESEARCH PROJECTS

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| 2024-Present | DRI Research: monitoring whitebark pine (<i>Pinus albicaulis</i>) to capture long-term trends of white pine blister rust and mountain pine beetle activity in the Warner Mountains, Modoc National Forest |
| 2023-Present | DRI Research: evaluating baseline ecosystem functions of Spooner Meadow, a montane meadow in the Lake Tahoe Basin, NV, to inform restoration actions |
| 2022-Present | DRI Research: creating a GUI to measure dust concentration with multiple instruments and developing a soils geodatabase for DRI's Integrated Terrain Analysis Program |
| 2020-Present | Postdoctoral and DRI Research: investigating changes in coastal forest structure and composition in response to sea-level rise along the mid-Atlantic, USA |
| 2021-2022 | MDLT project: developed a Prairie Falcon Conservation Program, which included leading a working group of experts charged with reducing threats to eyries in the Mojave Desert |
| 2021-2022 | MDLT project: developed post-fire restoration strategies to promote Joshua tree recruitment and control non-native plant species following a 2020 wildfire in a Joshua tree woodland |
| 2021-2022 | MDLT project: developed restoration design and monitoring program for 5 perennial desert spring sites in Kern County, CA |
| 2020-2021 | Postdoctoral research: investigated adaptive responses of red cedar (<i>Juniperus virginiana</i>) to press-pulse disturbances (sea level rise and coastal storms) using field data |
| 2019-2021 | Postdoctoral research: evaluated the effects of salt marsh migration on ecosystem function when marsh replaces coastal forests using field and GIS data |

- 2018-2020 Postdoctoral research: modeled long-term responses of salt marshes in MA and GA to sea level rise using a landscape-scale, spatially explicit salt marsh accretion model
- 2017-2018 PhD research: modeled black mangrove range expansion under scenarios of climatic, biotic, and dispersal controls using a stage-based population model
- 2017 Mentor project with UF undergrad: investigated effects of snail grazing on red and black mangrove encroachment into salt marsh using field and greenhouse experimentation
- 2015-2017 PhD research: examined predation pressure on poleward range expansion of black mangroves using field experimentation
- 2014-2019 Mangrove Migration Network: investigated effects of changing temperature regime on mangrove migration along southeastern US (collaboration with USGS)
- 2014-2017 PhD research: investigated coastal freshwater forest reassembly trajectories in response to sea level rise using field data and regional environmental data
- 2013-2014 SLR Adaptation in Yankeetown, FL: prepared a Sea Level Rise Adaptation Action Plan and established a 17-acre Natural Resource Adaptation Action Area (collaboration with UF Levin College of Law Conservation Clinic)
- 2004-2008 Master's thesis: "Population dynamics of *Cameraria sempervirensella* (Lepidoptera: Gracillariidae) in the Sierra Nevada"
- 2003-2005 CALFED Integrated Regional Wetland Monitoring Pilot Project in San Francisco Bay-Delta (collaboration with SFSU, University of San Francisco, UC Berkeley)
- 2002-2003 Environmental Monitoring and Assessment Program (EMAP) for San Francisco Bay Area wetlands (collaboration with SFSU and San Francisco Estuary Institute)

WORK EXPERIENCE (NON-TEACHING)

- 2021-2022 Director of Restoration and Research, Mojave Desert Land Trust, Joshua Tree, CA
- 2018-2021 Postdoctoral Research Associate, Virginia Institute of Marine Science, William & Mary, Gloucester Point, VA
- 2013-2018 Graduate Research Assistant, University of Florida, Gainesville, FL
- 2011-2013 Senior wetland scientist, URS Corporation, Oakland, CA
- 2005-2010 Wetland ecologist and botanist, WRA, Inc., San Rafael, CA
- 2003-2004 Seasonal biological technician, National Park Service, Pt. Reyes National Seashore, CA
- 2001-2002 Seasonal biological technician, U.S. Forest Service, Modoc National Forest, CA

TEACHING EXPERIENCE

University of Florida, Gainesville, FL

- Ecological Engineering Lecture (Graduate Teaching Assistant, Spring Terms 2016-2017)
- Ecological Engineering Lab (Graduate Teaching Assistant, Spring 2015)
- Applied Ecology (Graduate Teaching Assistant, Spring 2014)

Holy Names University, Oakland, CA

- Fundamentals of Physiology (Adjunct Instructor, Spring & Fall 2005)

San Francisco State University, San Francisco, CA

- Plant Taxonomy (Graduate Teaching Assistant, Spring 2005)
- Introductory Biology II Lab (Graduate Teaching Assistant, Fall 2003 & 2004, Spring 2004)
- Human Biology Lab (Graduate Teaching Assistant, Spring 2003)
- General Microbiology Lab (Graduate Teaching Assistant, Fall 2002, Spring 2003)

California Polytechnic State University, San Luis Obispo, CA

- Introductory Statistics (Undergraduate Teaching Assistant, Fall 2000, Spring 2001)
- Statistics: Survey and Sampling Techniques (Undergraduate Teaching Assistant, Fall 2001)

PROFESSIONAL & ACADEMIC SERVICE

- 2023-Present DRI Early Career Development Planning Committee, member
- 2023 DRI Faculty Search Committee, member
- 2022 DRI Jonathan O Davis Fellowship Review Committee, member

- 2022 Guest Lecturer, Restoration Ecology undergraduate course at George Washington University, Washington, DC; lecture titled “Restoration and Conservation in the Mojave Desert”
- 2021 Guest Lecturer, Natural Resource Ecology & Habitat Management undergraduate course at Cal Poly, San Luis Obispo; lecture titled “Ecology in Action: Restoration and Conservation in the Mojave Desert”
- 2021 Co-chair of conference session, “Transgression and other climate-driven shifts in coastal landscapes”, Coastal & Estuarine Research Federation Biennial Meeting, November 2
- 2017-2020 Peer reviewer for Agronomy, Ecological Engineering, Ecological Modelling, Environmental Research Letters, Estuaries and Coasts, Estuarine, Coastal and Shelf Science, Journal of Ecology, Marine Ecological Progress Series, Mississippi-Alabama Sea Grant Consortium, Torrey Botanical Society
- 2017 Mentor to undergraduate intern, UF/IFAS Nature Coast Biological Station summer internship program
- 2017 Member of the Editorial Board, UF *Journal of Undergraduate Research*
- 2016 Event Panelist, UF Engineering School of Sustainable Infrastructure and Environment (ESSIE) Mentoring Program for Undergraduates
- 2014-2015 Member, UF Engineering Graduate Student Council

COMMUNITY INVOLVEMENT

- 2024 Led data-collecting activities at Spooner Meadow, NV, with middle school students attending the Great Basin Outdoor School
- 2022 Developed a stewardship activity for middle school students participating in a Naturalists-at-Large program to learn about the effects of wildfire on Joshua trees in the Mojave Desert, Joshua Tree, CA.
- 2021 Organized a tour for scientists from USFWS, USGS and conservation partners highlighting restoration plans at Palisades Ranch, October 18, Oro Grande, CA.
- 2021 Helped organize MDLT volunteer events (trash removal, desert tortoise monitoring), Joshua Tree, CA.
- 2019 Presenter at Coastal SEES Charettes discussing model results for the Plum Island Estuary, (May 6, Newburyport, MA) and Georgia Coastal Ecosystems marsh (October 28, Brunswick, GA).
- 2017 Volunteer for WiSE Girls Spring Science Camp for 6th and 7th grade girls, Gainesville, FL.
- 2017 Speaker for Friends of the Withlacoochee Gulf Preserve Talk Series: Effects of Climate Change and Crabs on Mangrove Colonization Along the Nature Coast. March 17, Yankeetown, FL.
- 2016 Field Trip Leader for Florida Fish & Wildlife Conservation Commission Climate Change Workshop, Withlacoochee Gulf Preserve, Yankeetown, FL.
- 2015 Speaker for Alachua Conservation Trust Fall Speaker Series: A Casualty of Climate Change: Long-Term Vegetation Trends in a Patchy Coastal Wetland. October 15, Gainesville, FL.
- 2014 Organizer for citizen-science bioblitz at the Withlacoochee Gulf Preserve, March 15-16, Yankeetown, FL.

MEDIA COVERAGE

- 2020 Everything’s Changing Podcast interview (January 21, 2021)
- 2017 New Republic magazine feature “States of Denial” (October 5, 2017)
- 2016 UF Explore Magazine feature “Big Bend Laboratory” (Summer 2017)
- 2015-2016 Florida Museum of Natural History featured exhibit “Our Changing Climate: Sea Level Rise”

RELATED PROFESSIONAL TRAINING

- 2023 DRI: Leadership Development Workshop, Reno, NV (Attendee)
- 2022 DRI: Grant Writing Workshop, Reno, NV (Attendee)
- 2017 NEON Data Institute: Remote Sensing with Reproducible Workflows Workshop, Boulder, CO (Attendee)
- 2017 UF MARSFest 2017: Introduction to the Multi Agent Research and Simulation (MARS) Platform for Large Scale Agent Simulation, Gainesville, FL (Attendee)
- 2015 Penn State Short-course: Multivariate Community Analysis using PC-ORD, Edmonton, Canada (Attendee)

RELATED PROFESSIONAL SKILLS

Proficient in R, MATLAB, ArcGIS, PC-ORD

Experience using Python, Google Earth Engine, GitHub, MARS, NETLOGO