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

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., Wittyngham, 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.

<u>In Preparation</u>

Langston, A.K., Gedan, K.B, Kirwan, M.L. *In preparation*. Vegetation reassembly in retreating coastal forests of the Chesapeake Bay.

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. *In preparation*. Integrating remote sensing with ground-based observations to quantify freeze damage to black mangroves (*Avicennia germinans*) at the landscape scale.

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. *In preparation*. 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.

GRANT AWARDS, DONATIONS, AND FELLOWSHIPS

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)
2013 University of Florida, Graduate School Fellowship ($148,306)

SELECTED CONFERENCE PRESENTATIONS & POSTERS

Langston, A.K., Coleman, D. J., Jung, N.W., Shawler, J.L., Smith, A.J., Williams, B.L., Wittyngham, 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

2022-Present	DRI Research: evaluating vegetation turnover in developing ghost forests along the mid-Atlantic Coast of the US using field data
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: evaluated vegetation turnover in developing ghost forests around Chesapeake Bay using field data
2020-2021	Postdoctoral research: investigated adaptive responses of red cedar (*Juniperus virginiana*) 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

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 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

2021 Organized a tour for scientists from USFWS, USGS and conservation partners highlighting restoration plans at Palisades Ranch, Oro Grande, CA.
2021 Assisted with MDLT volunteer events (trash removal and 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

2021 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

2017 NEON Data Institute: Remote Sensing with Reproducible Workflows workshop, Boulder, CO (Attendee)
2017 MARSFest 2017: Introduction to the Multi Agent Research and Simulation (MARS) Platform for Large Scale Agent Simulation, Gainesville, FL (Attendee)

RELATED PROFESSIONAL SKILLS

Proficient in R, MATLAB, ArcGIS, PC-ORD
Experience using Python, Jupyter Notebooks, GitHub, MARS, NETLOGO