

Biology Alumni



Dr. Kelsey Glennon at the Drakensberg, South Africa.

Dr. Kelsey L. Glennon, Senior Lecturer, School of Animal, Plant & Environmental Sciences, University of the Witwatersrand Johannesburg, South Africa

I'm an Evolutionary Biologist interested in processes that generate new species and maintain trait variation within populations. I use a combination of field work, population & molecular genetics, and greenhouse experiments to address my research questions. Through my research, I've been fortunate to work both across the Eastern Seaboard of the US and across South Africa. Now, I spend most of my summers in the Drakensberg of South Africa or hiking in the Melville Koppies with my daughter & my husband.

I'm a New Jersey girl, born and bred. In 2005, I earned my Bachelor of Science in Biology from Salisbury University and did undergraduate research on plant polyploidy and population genetics with Kim Hunter. I went on to finish my PhD in 2010 at the George Washington University. I was an NSF Bioinformatics Postdoc at Syracuse University until 2012, co-advised by Mark Ritchie and Kari Seagraves. I started my time at Wits as a Carnegie Postdoctoral Fellow with the Global Change and Sustainability Research Institute and the School of Animal Plant & Environmental Sciences in 2012. I joined the School of Animal, Plant & Environmental Sciences at Wits in 2015 as a Lecturer (it's a long ways from Asbury Park!).



Venter, S., **Glennon, K.L.**, Witkowski, E.T.F., Baum, D., Cron, G.V., Tivakudze, R., Karimi, N. 2017. Baobabs (*Adansonia digitata* L.) are self-incompatible and 'male' trees can produce fruit if hand-pollinated. *South African Journal of Botany* 109 (2017) 263–268





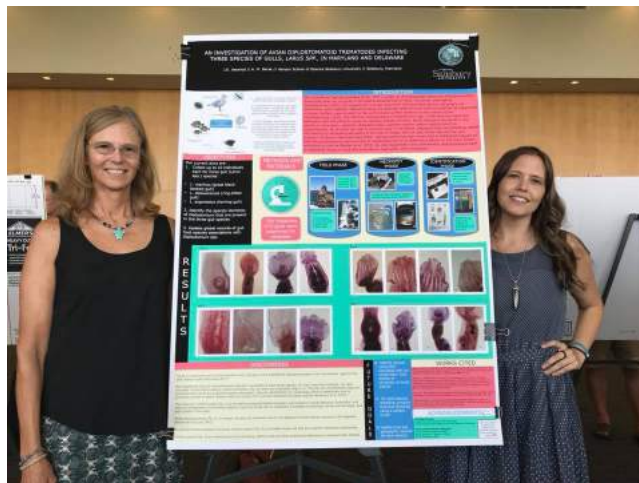
Biology alumna **Kristen Fowler** has taken a position at Longwood Gardens (<https://longwoodgardens.org>) in Kennett Square PA as Propagator / Grower. Longwood Gardens has over 1077 acres of gardens, meadows and woodlands, plus an extensive greenhouse complex. Pierre S. Dupont created what would become Longwood Gardens in the early 20th century. Congratulations to Kristen from her friends here in Biology!



Marissa Moran (far right, with Dr. Barse) graduated with her M.Sc. in Applied Biology and has accepted a job in Boulder, Colorado as a research associate with ArcherDX (<https://archerdx.com>), a biotech company that develops assays, primers, and software for cancer research.



Jennifer Veenhof (far right, with Dr. Barse) recently graduated with her BS in Biology, has accepted a position as a Research Technician at Horn Point Laboratory. Jennifer will be working on a research project funded by the Bailey Wildlife Foundation with Dr. Elizabeth North, Dr. Greg Silsbe and Ms. Julie Tromatter (another SU alum). The ultimate goal of this research is to utilize certain algal species' abilities to precipitate calcium carbonate to create carbon-negative habitat for corals and other marine animals.



Cool Classes!

Biol 413/513 – Entomology



Students in Entomology (BIOL 413/513) sampling edible insects as part of a lecture on entomophagy (the practice of eating insects by humans). Yum!

BIOL 399 – International Field Studies: Coral Reef Biology in Honduras



The BIOL 399 class at "Cara Cara" dive site, meaning *face to face*

The Coral Reef Biology winter course was taught for the 18th time in January 2019! As usual, our class of 13 students, myself and a TA went to Anthony's Key Resort, home of the Roatan Institute for Marine Sciences (RIMS), for two weeks, Jan 5 to Jan 19, 2019. Students attended daily lectures on various topics related to this unique ecosystem, including corals and reefs, sponges, mangroves, sea turtles, and factors affecting their health. We dove 2 to 3 times per day with the expert guidance of Roatan residents, Captains Richard and Leo, and Dive Masters Alson, Marvin and John. We dove with 12-15 Caribbean Reef sharks, *Carcharhinus perezii*, that were 2 to 3 meters in length. These apex predators are a sign of a healthy reef. Students learned about activities of nocturnal and diurnal fishes and went on two dives during the crepuscular (twilight) period to witness these behaviors with their own eyes, such as parrotfishes wrapped in a mucus blanket in the dark or feigning death in the sand. Students learned about cetacean diversity, and in particular about bottlenose dolphins, *Tursiops truncatus*. There were lectures in and out of the water on dolphin anatomy, physiology and behavior, as well as on the care, training and research being conducted on the resident bottlenose dolphins at RIMS. Visiting scientist Dr. Kathleen Dudzinski, Founder and Director of the Dolphin Communication Project, spoke to us about her research on dolphin's use of tactile, acoustic and behavioral signals for communication. Students' remarked how insightful it was to hear these lectures and then participate in a 30 minute free-swim with about 30 resident dolphins and observe behavioral traits that they had just learned about. We learned about threats to reefs and about efforts going on at RIMS to help combat this. RIMS scientist, Jennifer Keck is involved in long term monitoring and most recently, in coral aquaculture. Students learned about efforts to rear staghorn and elkhorn (*Acropora* spp.) fragments on underwater "trees." This year, we were able to sponsor one of these trees, which will have a permanent tag on it to identify Salisbury University as its donor. Students thoroughly enjoyed diving on these trees and assisting with their maintenance. Students' educational experience culminated with a research project, where they collected data on a chosen topic and presented their results. All in all, the trip was a huge success! Experiential learning is the best!

BIOL 399 – Winter 2019



Nicole Hammond (right), Sheridan Sargent and others, getting ready for the shark dive at Cara Cara dive site.



Teaching Assistant Marissa Moran, swimming with a grouper



Wreck Dive - The BIOL 399 class at the stern of EL AGUILA



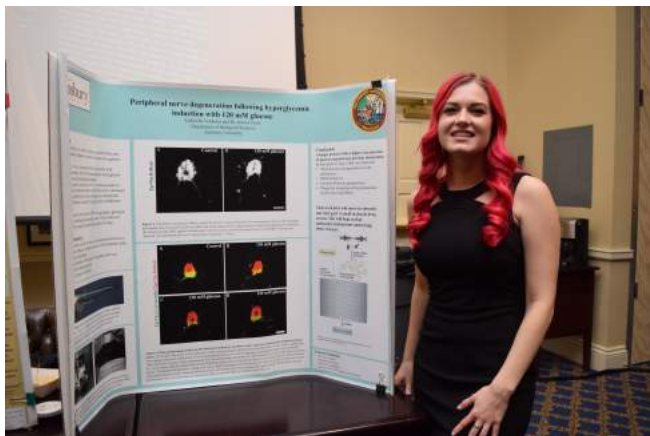
Kara Ogburn (left) and Shannon Chambers are ready for the shark dive!

Undergraduate Research

Posters on the Bay

Seventeen SU students shared their undergraduate research with members of the Maryland General Assembly during "Posters on the Bay.", sponsored by OURCA and Graduate Studies and Research, January 18, 2019. Topics ranged from 17th century witch trials to peripheral nerve degeneration." View video:

<https://youtu.be/886LWkg-eRY>



Gabi Voithofer (Advisor: Dr. Jessica Clark)



Jessica Pierce, right (Advisor: Dr. Jessica Clark), talking with Salisbury University Provost Dr. Karen Olmstead, left



Karsin Bachran (Advisors Drs. Tami Ransom and Eric Liebgold)



Sepehr Rahimi, left (entrepreneurship competitor)

New Graduate Students



Garrett Hansen (Advisor: Christiana Bradley)

Cobia, or *Rachycentron canadum* are pelagic, migratory fish found in tropical and subtropical waters across the world, except for the eastern Pacific. Cobia are a fast growing and rapidly maturing species capable of batch spawning with high fecundity. Due to their rapid growth rates and batch fecundity, cobia are seen as potential aquaculture candidates in North America and East Asia. However, as strong pelagic predators, cobia are susceptible to the bioaccumulation of mercury in a pelagic food web. This study aims to elucidate the potential for cobia aquaculture operations to harvest and market cobia with mercury levels below the consumption advisories set by the EPA and the FDA of 0.3 ppm and 0.5-1.5 ppm, respectively. Cobia reared in aquaculture operations are typically harvested after one year of growth, and therefore may not be subject to the same bioaccumulation processes as wild-caught cobia.



Denise Manole (Advisor: Dana Price)

Ants in general play an important role in the ecosystem, as some are ecosystem engineers, herbivores, detritovores, seed dispersers, and prey to other organisms. Currently there are 73 species of ants (Hymenoptera) reported from Maryland's eastern shore, yet very little is known about their feeding preferences and relationships they share within the food web. I will use paired transects of 100 m on Assateague Island, Worcester Co., Maryland to examine the ant biodiversity. I will use pitfall traps set every 10 m to collect ants in the forest and dunes habitats. I will also use hand collection methods for stable isotope analyses; stable isotope analysis will allow me to analyze the nutritional ecology of ants on the Island and to determine their role in the food web. My research will provide valuable diversity information for Assateague Island, as well as baseline data of the feeding preferences of ground feeding ants.

The Defense Rests – Verdict Graduation!



Kelsey Flowers (above left) successfully defended her thesis in December, which was titled “Characteristics contributing to the diversification of the somatosensory system across a family of waterfowl (Family: Anatidae)” Kelsey examined the beak anatomy of waterfowl, which included ducks, geese and swans, to determine how their beak is adapted to a specific foraging ecology. Working with student hunters at SU, she collected heads from 33 species of waterfowl, about 150 heads in total. Using histological techniques, Kelsey processed the brains to determine the size of regions that process information from the beak and also the trigeminal nerve to determine how much information is moving between the beak and brain. She also visited the University of Washington’s Friday Harbor Laboratory to scan the beaks using micro-CT imaging, which allowed her to examine the location and number of sensory cells (mechanoreceptors) within the beaks. Her results showed that waterfowl beaks varied depending on their foraging ecology. Dabbling ducks, such as mallards, had by far the largest and most sensitive beak, with the most beak sensory cells, nerve fibers and neurons dedicated to processing this information. At the other extreme were the grazers, with smaller beaks and less sensory cells. Overall, she showed that differences found in the anatomy of waterfowl beaks matched each species specific foraging behavior and prey type. Kelsey is currently on the job hunt and looking to work for the Department of Natural Resources or similar wildlife management organizations.

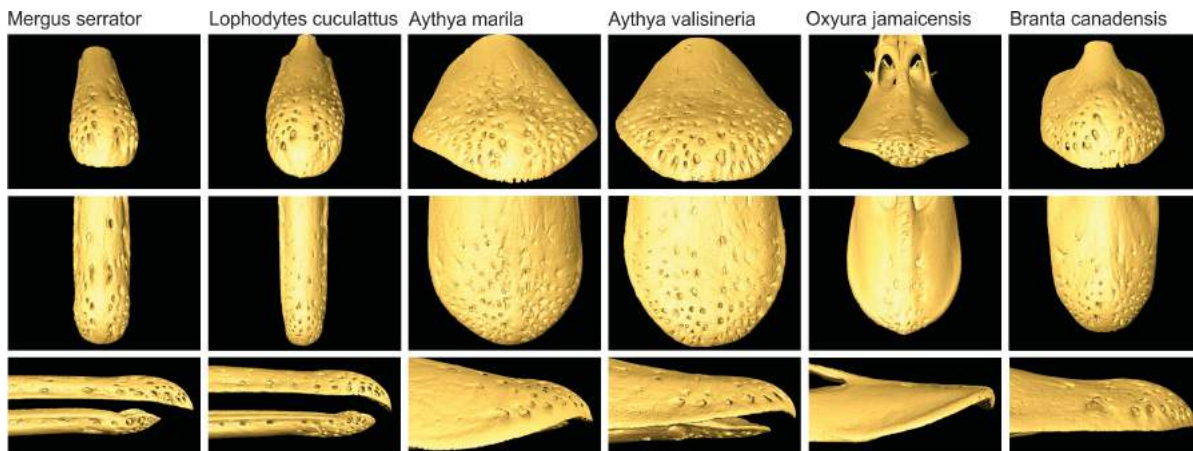


Figure shows 3D reconstructions of the beaks of some waterfowl species. Beak sensory cells are located in the pits that can be seen on the models.

Our Faculty

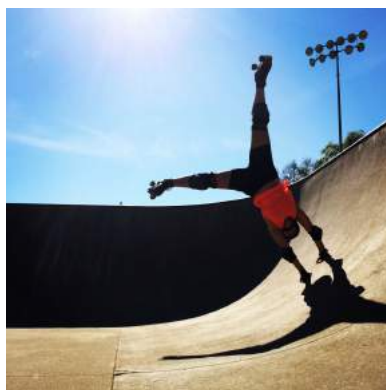
Dr. Anna Jo Auerbach – Our New Biology Education Professor



I'm **Anna Jo Auerbach (AJ)**. I was born in Georgia and have spent time living all over the state. My research has focused on active learning use among biology faculty in the midst of a Vision and Change curriculum reform. I then began breaking down effective active-learning by interviewing experts in the field of biology to determine what kinds of knowledge they possess and use in order to make instructional decisions in the classroom.

At Salisbury University, I am interested in zooming in a bit more to focus on equity (one facet of active-learning knowledge) to determine if there are needs of students with social, sensory, or communication considerations that could be better met in the active-learning classroom. I'm very passionate about this topic as I am autistic (I say it like that for myself because it permeates every part of my identity. For others, I put person first. Feel free to ask me any questions!). More importantly, our student body is expected to change in the coming years with more students experiencing anxiety and depression and our teaching strategies may need to be adjusted.

When I'm not on campus I'm either with my pets or somewhere roller skating. I have a puppy dog (Puddin) and two cats (Pops and Sunshine). Puddin loves going for walks, chewing sticks, trail running, and the dog park. The cats prefer to stay indoors and judge the world safely from their windows. I love skating! I will skate outside, at roller rinks, skate parks, and when playing roller derby (the best sport in the world). I transferred to the team here, the Salisbury Rollergirls. This will be my 9th season playing and our first home bout is March 23rd, come check it out!



National Science Foundation Grant Received (Drs. Ryan Taylor and Kimberly Hunter Lab)



Title: IOS: Collaborative Research: RUI: Cognitive Overload versus Enhanced Performance: Is more information always better? (\$831,168 – Four year grant).

This is a collaboration between Salisbury University, University of Texas, and the Smithsonian Tropical Research Institute.

Toward Understanding the Interplay of Environmental Stressors, Infectious Disease, and Human Health
– Dr. Jennifer Nyland



I was invited to participate in a workshop convened by the National Academies of Sciences, Engineering and Medicine in Washington DC: Toward Understanding the Interplay of Environmental Stressors, Infectious Disease, and Human Health. Following plenary talks from the directors of the National Institutes of Environmental Health Sciences (Dr. Linda Birnbaum) and the Aspen Institute (Dr. Robert Newman), scientists were tasked with taking a deep dive into their research and the current emerging evidence for the role of environmental factors on human health. My talk: “Mercury and Immune Modulation: Is the Inflammasome the Key?” was presented to about 100 attendees and webcast (and recorded) for many more participants on January 15th 2019. Following the four invited talks, the presenters answered questions in a panel discussion format.

Tidewater Chapter of the American Fisheries Society Meeting held at SU

Dr. Brad Stevens (UMES) and **Dr. Ann Barse** (SU) co-hosted the 33rd Annual Tidewater Chapter of the American Fisheries Society meeting at Salisbury University, Feb. 7-9, 2019. Fisheries professionals and students from universities and various federal and state agencies, and private organizations from Maryland, Virginia and North Carolina gathered to share their latest discoveries in marine-estuarine fisheries biology. We started off with a Thursday evening poster session, and oral presentations took place all day Friday and on Saturday morning in the Assembly Hall on the 4th floor of the Guerrieri Academic Commons building. Dr. Stevens also organized an enjoyable banquet at Evolution Craft Brewery & Public House where we dined on perfectly prepared mahi mahi, their famous fried brussels sprouts and other fare. Thanks are due to Dr. Mike Scott for the generous support from the Henson School of Science which helped make this a very successful meeting. Thanks also to all from SU who volunteered to help moderate sessions, serve as timekeepers, set up and clean up for the poster session, man the registration tables etc.: Dr. Christina Bradley, graduate students Garret Hansen, and Anthony Labarck, Jr., undergraduates Sarah Lundfelt and Allison Nalesnik and alum Jennifer Veenhof. Check out the chapter website <http://www.tidewater-afs.org/AFSTidewater/Home.html> for information about next year's meeting in Virginia!



Publications

Briand CH and Folkoff ME. 2019. Integrating multiple sources to reconstruct the pre- and early postcolonial forests of the Chesapeake: 1588–1838. *Human Ecology*. <https://doi.org/10.1007/s10745-019-0058-7>

Rocker A*, Howell J*, Voithofer G* and **Clark J**. Acute effects of hyperglycemia on the peripheral nervous system in zebrafish (*Danio Rerio*) following nitroreductase-mediated β -cell ablation. *American Journal of Physiology: Regulatory Integrative and Comparative*. *Accepted*

Holmgren CA, **Hunter KL**, and Betancourt JL. 2019. Creosote bush (*Larrea tridentata*) ploidy history along its diploid-tetraploid boundary in southeastern Arizona-southwestern New Mexico, USA. *Journal of Arid Environments*.

Cronin A, Ryan MJ, Page RA, **Hunter KL** and **Taylor RC**. Environmental heterogeneity alters mate choice behavior for multimodal signals. *Behavioral Ecology and Sociobiology*. *Accepted*

Garcia MJ, *Cronin A, *Bowling T, *Bushera H, **Hunter KL** and **Taylor RC**. 2019. Dueling frogs: do male green treefrogs (*Hyla cinerea*) eavesdrop on and assess nearby calling competitors. *Behavioral Ecology and Sociobiology*, 73:21.

Ryan MJ, Page RA, **Hunter KL** and **Taylor RC**. 2019. 'Crazy Love': Non-linearity and irrationality in mate choice. *Animal Behaviour*, 147:189-198.

Publications – continued

Temkin AM, Bowers RR, Ulmer CA, Penta K, Bowden JA, **Nyland JF**, Baatz JE and Spyropoulos DD. 2019. Increased adiposity, inflammation, metabolic disruption and dyslipidemia in adult male offspring of DOSS treated C57BL/6 dams. Scientific Reports. 9: 1530. doi: 10.1038/s41598-018-38383-9.

Simons P and **Price DL**. 2019. New State Record for Deltotchilum gibbosum (Fabricius) (Coleoptera: Scarabaeidae) in Maryland, USA. The Coleopterists Bulletin 73(1): 1-2.

Taylor RC, Akre K, Wilczynski W & MJ Ryan. 2018. Behavioral and neural auditory thresholds in a frog. Current Zoology. <https://doi.org/10.1093/cz/zoy089>

*denotes undergraduate co-author

SU's Giving Day Save the Date – April 2, 2019

On SU's Giving Day, Tuesday April 2, student and alumni gifts will be matched 1:1 up to \$50 to the same area of campus. There is no limit to how many gifts will be matched! Only student and alumni gifts.

\$10 becomes \$20

\$25 becomes \$50

\$50 becomes \$100

Mark your calendars and remember to designate your gift to Biology Student Travel and/or Biology Seminar Series. Thanks so much!!!



Last year's Giving Day funds will support my attendance at the American Society of Biochemistry and Molecular Biology conference in Orlando, FL. I will present my research for the first time in a national setting, gain experience, and connect with leading researchers in the field. Donations also supported the Biology Seminar Series, which allows students an inside look at different realms of the scientific world. Thank you to all who gave to help support these valuable experiences.

– **Peter Kim**
Biology (Pre-Med) Major

<https://www.salisbury.edu/alumni/giving-and-support/giving-programs/giving-day/index.aspx>

STEM Mini Career Fair

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STEM Mini Career Fair for all the STEM majors seeking a job or an internship. The big difference between this and the networking night event is the attendees are employers and have jobs and internships to offer our students.

Date: April 4th, 2019

Time: 5-7 PM

Location: -Assembly Hall, Academic Commons

Food: Refreshments for students and employers – cookies and drinks

Employers Attending

AECOM, Aerotek, Amick Farms, LLC, Anderson Engineering & Design, LLC (AED), Assateague State Park, Baywater Farms, Capgemini Government Solutions, City of Salisbury, Delaware Department of Transportation, JASCO Incorporated, M.R. Ducks, M4Reactor, Maryland Park Service, Mountaire Farms, Inc., NASA Goddard Space Flight Center (GSFC) at Wallops Flight Facility (WFF), NASA WFF, OCR Services, Inc., Protenergy Natural Foods, Inc. A TreeHouse Foods Company, Qlarant, Salisbury Zoo, ScribeAmerica, Triumvirate Environmental, US Fish and Wildlife Service, Virginia Space Flight Academy, Whiting-Turner Contracting

Alumni Connection



SU BIOLOGY ALUMNI

Stay Connected !

We want to hear from you! Please let us know where you are living and what you are doing! We would love to hear from you. In the future we plan to have an Alumni Connection section in our newsletter.

Send information to: Sandra Ramses, Program Management Specialist

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Your Editorial Team

Drs. Chris Briand (editor) & Philip Anderson (co-editor).

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Featured Charity



<https://www.ftpf.org>

