

Curriculum Vitae

Adam M. Bynum

Our Lady of the Lake University
San Antonio, TX 78207
(210) 528-6759
abynum@ollusa.com

EDUCATION

Texas A&M University – Corpus Christi, Corpus Christi, TX 2022
M.S Marine Biology
4.00 GPA

University of Dayton, Dayton, OH 2014
B.S. Biology
3.78 GPA
Magna Cum Laude

RESEARCH EXPERIENCE

Research Assistant 2016-2018
Texas A&M University – Corpus Christi (TAMUCC), Corpus Christi, TX
Department of Life Sciences

TEACHING

Instructor of Biology 2022-current
Our Lady of the Lake University, San Antonio, TX
College of Arts and Sciences

Adjunct Professor 2021-2022
Our Lady of the Lake University, San Antonio, TX
College of Arts and Sciences

Adjunct Professor 2021-2022
University of the Incarnate Word, San Antonio, TX
Department of Biology

Teaching Assistant 2015-2018
Texas A&M University – Corpus Christi (TAMUCC), Corpus Christi, TX
Department of Life Sciences

Course Name	Class Code	Semester
General Biology II	BIOL1402	Current
General Biology I	BIOL 1401	Current
General Biology II Lab	BIOL 1402L	Current
General Biology I Lab	BIOL 1401L	Current
Ecology	BIOL 2455	Current
Evolution	BIOL 3465	Current
Evolution Lab	BIOL 3465L	Current
General Human Anatomy & Physiology II	BIOL 1422	Spring 2023
Invertebrate Zoology	BIOL 4480	Summer 2023
Invertebrate Zoology	BIOL 4480L	Summer 2023
Molecular & Cell Biology	BIOL 2430	Fall 2023
Molecular & Cell Biology Lab	BIOL 2430L	Fall 2023

Course Name	Class Code	Semester
General Human Anatomy & Physiology II Lab	BIOL 1422L	Spring 2022
Introduction to Microbiology Lab	BIOL 2474	Spring 2022
Introduction to Life Sciences Lab	BIOL 1400L	Fall 2021 – Spring 2022
General Human Anatomy & Physiology I Lab	BIOL 1421L	Fall 2021
General Biology for Majors II Lab	BIOL 1403	Fall 2021 – Spring 2022
General Biology for Majors I Lab	BIOL 1402	Fall 2021 – Spring 2022
Cell Biology Lab	BIOL 3401	Fall 2018
Principles of Microbiology Lab	BIOL 2420	Spring 2018
Anatomy & Physiology II Lab	BIOL 2402	Fall 2017
Physiology Lab	BIOL 3430	Fall 2017
Genetics Recitation	BIOL 2416	Spring 2017
Genetics Recitation	BIOL 2416	Fall 2016
Genetics Recitation	BIOL 2416	Spring 2016
Cell Biology Lab	BIOL 3401	Fall 2015
Biology I Lab	BIOL 1406	Fall 2015
General Chemistry I Lab	CHM 123L	Fall 2013 – Fall 2014

GUEST LECTURES

Principles of Evolution	BIOL 2371	Spring 2020
Genetics	BIOL 2416	Spring 2016

CURRICULUM DEVELOPEMENT

Invertebrate Zoology	BIOL 4480	Summer 2023
----------------------	-----------	-------------

Created and implanted lectures and labs for Invertebrate Zoology. Lecture topics covered life history, taxonomy, anatomy, and behavior, of various invertebrate clades. Labs were created to allow for live invertebrate study and experimental design.

Evolution	BIOL 3465	Fall 2023
-----------	-----------	-----------

Created and implanted lectures and labs for Evolution. Labs were created to introduce students to population genetic simulation programs. Students designed and ran an experiment based on the simulation program AlleleA1 and presented results to peers.

General Biology I and II	BIOL 1401/1402	Summer-Fall 2023
--------------------------	----------------	------------------

Redesigned lectures and lecture structure for two introductory biology courses at Our Lady of the Lake University. Courses were redesigned after training courses in Universal Design for Learning (UDL) were completed. Courses were redesigned to increase student retention and to optimize learning for all students.

Principles of Evolution	BIOL 2371	Summer 2018
-------------------------	-----------	-------------

Developed labs for Principles of Evolution. Examples of lab topics are phylogenetics, natural selection, and simulating biological models. Each lab followed a specific set of guidelines laid forth by the created learning objectives.

PUBLICATIONS

Selwyn JD, Johnson JE, Downey-Wall AM, Bynum AM, Hamner RM, Hogan JD, & Bird CE (2017) Simulations indicate that scores of lionfish (*Pterois volitans*) were introduced to the Atlantic Ocean. **PeerJ**, 5: e3996.

PRESENTATIONS

3 Minute Thesis Competition , Corpus Christi, TX	2017
Modeling Genetic Diversity in Non-Equilibrium Populations	
Marine Graduate Student Organization Student Symposium , Corpus Christi, TX	2016
Modeling Genetic Diversity in Non-Equilibrium Populations	
COS Research Conference , San Antonio, TX	2016
Modeling Genetic Diversity in Non-Equilibrium Populations	
Texas A&M Systems Marine Biology Retreat , Corpus Christi, TX	2016
Modeling Genetic Diversity in Non-Equilibrium Populations	

THESIS

Behavior of Popular Indices of Genetic Diversity in Simulated Expanding Populations

We report the effects of mutation rate (μ), initial population size (N_{e0}), and final population size (N_{e1}) on the accumulation of genetic diversity in expanding populations using a Wright-Fisher forward time model built with SLiM2. Using a 300 bp sequence to simulate modern genome-wide surveys of genetic variation (RAD), a range of naturally occurring mutation rates, and population sizes, multiple models were created to cover a broad portion of parameter space, and six commonly reported measures of genetic diversity were analyzed.

RESEARCH EXPERIENCE

<i>Population Genetic Modeling</i> Corpus Christi, TX	2015-2021
Began Master's research project examining how genetic diversity behaves in non-equilibrium conditions. Forward time and coalescent genetic simulations were created, run, and analyzed on the local high-performance cluster (HPC).	
<i>Research Project Development</i> Dayton, OH	2013
Assisted in starting and developing a research project concerning the local aquatic life and the impact of removing low dams found within the local watershed. Scouted research sites, created a first draft of a research proposal, and contacted several community leaders to provide support and insight.	
<i>Macroinvertebrate Sampling of Local Watershed</i> Dayton, OH	2013
Created a aquatic macroinvertebrate key for the Rivers Institute to use during summer programs. Taught colleagues how to use the key and how to teach sampling to K through 12 students. Led multiple sampling and identification programs.	
<i>Forensic Applications of Decomposition Biology</i> Dayton, OH	2011
Identified various species of blow flies that were collected at field sites where decaying pigs were placed. Input results into a database for later analysis.	

GRANTS AWARDED**TOTAL: \$5,002,500**

USDA NextGen Program – Texas FAST (co-program director) Texas Experiential Learning and Scholarship program for Food and Agricultural Science Training	\$5,000,000	2023
Texas SeaGrant 40 hours of personalized bioinformatic analysis	\$2,000	2017
Texas A&M University Corpus Christi Parents Council Funds to travel to a national conference	\$500	2016

COMPUTERS, PROGRAMMING, AND SCRIPTING**Languages**

Proficient: Bash and R

Software

Proficient: SLiM2, Fastsimcoal2, Arlequin, GNU Parallel, SSH, Microsoft Office Suite

Scripts Developed

Genetic Diversity Prediction Tool, PhiPhinder.r	2020
Genetic Diversity Analysis Pipeline in R	2019
SLiM VCF Output Multiallelic Site Merger	2018
SLiM Input to Arlequin Analysis Pipeline	2017
Fastsimcoal Input to Analyzed Arlequin Results Pipeline	2016

OUTREACH

SACNAS, Member 2017-2019
National member of the Society for the Advancement of Chicanos/Hispanics and Native Americans in Science.

FIRST Tech Challenge Robotics Competition, Corpus Christi, Texas 2016-2017
Referee for the FIRST Tech Challenge. Enforced rules and tracked points for middle and high school student participants.

SACNAS Officer, Corpus Christi, Texas 2016-17
In charge of attending mandatory university meetings and relaying information to the local SACNAS chapter. Mentored an undergraduate to take over the officer position.

Kaho'olawe Island Reserve Commission, Volunteer 2016
Surveyed threatened sea life populations and assisted in various research projects on the restricted access island of Kaho'olawe, Hawaii

Maui Sampling Volunteer, Maui, HI 2016
Assisted in sampling and surveying *Cellana sp.* in Maui, HI. Assisted local community leaders and members. Collected data was used to determine the viability of rest areas in a culturally significant species.

Discussion with Community Leaders, Maui, HI 2016
Involved in discussion with local community members and leaders in the creation of rest areas for a culturally significant species. Saw the creation of a balance between science and culture.

- [South Texas Amphibian and Reptile Society \(STAR\)](#) Member 2015-present
Engaged in community education and outreach involving amphibians, reptiles, and insects.
- [Rivermobile](#) Tour Guide 2013-2014
The Rivermobile is a mobile learning studio that travels to schools, museums, and other local hotspots. Gave guided tours to K through 12 students as well as local community leaders. Tours consisted of the history, ecology, and conservation of the Great Miami River watershed.
- [Outdoor Engagement Portal](#), Dayton,OH 2013-2014
Helped develop and create a website for the University of Dayton to encourage students to leave campus and experience the surrounding area and city.
- Water and Kayak Safety**, Trotwood,OH 2013-2014
Lead other college students in teaching Trotwood Madison High School students how to kayak and basic water safety skills. Classes included students with low socioeconomic status and/or special needs.
- [River Steward](#) Member, Dayton, OH 2011-2014
Accepted into a 3-year program which focuses on leadership and community outreach. Members attempt to reconnect the people of Dayton, Ohio with their natural resources and rivers. I was certified by the American Canoe Association as a level one instructor. I oversaw leading kayaking trips as well as safety. Kayaking trips consisted of 8-25 members, each with varying levels of comfort around water and kayaks. Kayaking trips were focused on the ecology of the river and surrounding wildlife.