CHRISTIAN R. CAMPBELL

CONTACT INFORMATION

941 S PARK RD, APT 108
HOLLYWOOD, FL 33021

(954) 253-0277
christiancampbell2002@gmail.com

EDUCATION

Duke University **May 2024**
B.S., Earth and Ocean Sciences with Distinction. GPA 3.2/4.0 *Durham, NC*

- Thesis: Population genetic structure of three distinct bottlenose dolphin (*Tursiops truncatus*) populations off North Carolina's coast. Advisor: Thomas F. Schultz.
- Minor in computer science.

Relevant Coursework: Marine Ecology, Sensory Biology, Comparative Physiology of Marine Animals, Multivariable Calculus, General Chemistry, Evolving Earth and Life, Data Science

RESEARCH EXPERIENCE

Duke University **Aug 2022 – May 2024**
Advisor: Thomas F. Schultz *Durham, NC*

Nucleotide diversity was calculated in three dolphin populations (inshore, coastal, offshore) in the northwest Atlantic to determine regions of increased selective pressure. We expected that selection around genes regulating hypoxia tolerance and deep diving capability would decrease as populations moved inshore. Using a high-resolution sliding window, we zoomed into 11 candidate genes. Expectedly, the ancestral population was most diverse and displayed spikes in diversity surrounding candidate genes. However, populations closer to shore displayed an independent accumulation of mutations at non-candidate genes, contributing to the growing body of research that inshore populations are diverging in response to unique environmental condition.

- Developed a pipeline to calculate nucleotide diversity in a 5kbp resolution window across the 2.3 billion bp dolphin genome. We visualized this data in a JBrowse genome browser to improve the process of finding regions of importance. Future lab members will be able to examine genetic data, overlay new data types, and easily share findings fully online with research communities.

University of Maryland, Eastern Shore REU **May 2023 – Aug 2023**
Advisor: Chelsea Richardson, Paulinus Chigbu *Princess Anne, MD*

This research tracked the feeding behavior of mesozooplankton in Sinepuxent Bay by measuring concentrations of fatty acid biomarkers derived from phytoplankton. The objective was to trace this energy to seven sources: brown algae, seagrasses, bacteria, diatoms, dinoflagellates, terrestrial plants, and red algae.

- Developed a custom R script to automate filtering fatty acid data to the appropriate source. We've shown that bacteria are a major dietary source for mesozooplankton, suggesting the microbial loop is an important source of production since bacterial communities tend to be moderated by tidally-dominated estuaries like our study site, Sinepuxent Bay.

LAB EXPERIENCE

Research Assistant **Feb 2022 – May 2024**
Noor Lab, Duke University *Durham, NC*

- Prepared fly culture media, cleaned and sterilized glass vials for reuse, and assisted with fly culture maintenance, and general lab tasks.
- Setup crossings by dividing fruit flies by sex using CO2 plates and microscopes.

eDNA Investigator **Aug 2022 – Dec 2022**
Duke University Marine Lab *Beaufort, NC*
- Filtered water from saltwater biofouling on oyster bags and extracted DNA present in 8 phyla after digests. Advisor: Daniel Rittschof.
- Labeled and stored digests and filter papers for future use.

FIELD EXPERIENCE

Volunteer **Aug 2022 – Dec 2022**
Duke Aquafarm *Beaufort, NC*
- Assisted Dr. Tom Schultz with deploying new oyster lines and maintaining current ones. This involved consolidating oyster bags and removing unwanted biofouling and crustaceans.

UNC IMS Longline Shark Survey *Beaufort, NC*
- Assisted Dr. Joel Fodrie and crew with baiting and deploying longlines from fish trawled that morning. Started before sunrise and ended in the afternoon.

R/V Shearwater Sampling trip (77' catamaran) *Beaufort, NC*
- Embarked on a three day overnight trip 45 nautical miles NE of Cape Hatteras surveying and photographing whales and dolphins for future ID.
- Assisted with basic deck operations including tying on/off the boat from the dock, lifting and transporting fenders to the storage room, and standing watch with crew members on shift.

R/V Kirby Smith (28' skiff) *Beaufort, NC*
- Participated in a day trip collecting blubber biopsies from bottlenose dolphins in inshore waters around Beaufort. Operated camera equipment and logged sighting and biopsy data into a Bento database using a tablet.

TECHNICAL SKILLS

Computational:
QGIS, R, Python, Git, UNIX, Bioinformatics (ANGSD, ngsLD, SAMtools, JBrowse)
Wet laboratory:
DNA extraction, dichotomous keys, trawling, benthic sleds, gas-chromatography mass-spectrometry, trailering, coring, grab sampling

REFERENCES

Dr. Tom F. Schultz
Marine Science and Conservation
Duke University Marine Lab
135 Duke Marine Lab Rd
Beaufort, NC 28516
tom.schultz@duke.edu

Dr. Sonke Johnsen
Department of Biology
Duke University
301 Bio Sci Bldg.
Durham, NC 27708
sjohnsen@duke.edu

Dr. Alexander Glass
Earth and Climate Science
Duke University
Grainger Hall, 9 Circuit Drive
Durham, NC 27708
alex.glass@duke.edu