

Bahamian Conservation Biology Summer 2025

*6-credit study abroad field course focused on the ecology,
evolution, and conservation of aquatic ecosystems in The Bahamas*

Directors: Dr. Brian Langerhans, Dr. Nils Peterson

Field Location: Andros Island, The Bahamas

BIO 495 (Ecological and Evolutionary Dimensions of Conservation Biology in the Bahamas, 3 cr.)

FW 445 (Human Dimensions of Conservation Biology in the Bahamas, 3 cr.)

Course Goals:

1. Learn fundamental concepts regarding ecological and evolutionary processes operating within the three primary aquatic ecosystems in The Bahamas
2. Gain experience and familiarity with natural history of Bahamian ecosystems and species identification for taxa such as marine fish, coral, birds, and aquatic and terrestrial plants
3. Evaluate the importance, procedures, and scientific foundations for conservation and management initiatives in The Bahamas
4. Learn field-based research methods and techniques
5. Conduct research project addressing important and unanswered questions, and write scientific paper describing results and implications

Resources: Readings, assignments, relevant links, etc. will be available on the class website at

<http://gambusia.zo.ncsu.edu/bahamas.html>. Check the website frequently for updates and changes.

Answers to general study abroad questions about class credit, rules, and regulations can be found on the SAO website at <http://studyabroad.ncsu.edu>.

Overview: The program comprises two separate 3-credit courses, but is taught as one comprehensive unit. The entire program lasts 10 weeks, including time prior to the trip (outside readings, research proposal), 2 weeks in the field, and time after the trip (data submission, research papers). Activities required before and after the trip can be conducted electronically.

Research Projects: Each student will be assigned to a team of multiple students. The team will conduct one of several potential projects (examples below). All students will learn the basic techniques required for all projects conducted during the course, and all students will work in all ecosystems during the course. However, each team will focus on their project for approximately one week of the time abroad, working intensively to accomplish the project goals. Much of the work required before, during, and after our time on Andros will relate to these specific research projects. While we will aid in the study design and methodology (to facilitate appropriate methods for a successful project), the implementation and eventual success of the projects rest in the hands of each team. Each project investigates a novel research question that has never been addressed before, with the end goal being a quality research paper capable of being published in a peer-reviewed scientific journal. All projects are comparative or experimental studies that test fundamental hypotheses related to the ecology, evolution, and conservation of Bahamian ecosystems. Due to the recent changes in the Bahamian government that has resulted in the cessation of nearly all biological field research in the country, we cannot obtain the appropriate permits to conduct some biological research this year. However, we can still collect certain types of data, and some projects will utilize data previously collected with research permits, providing students with ample opportunity to conduct high-caliber research during this program.

Past project topic examples:

1. Inland Blue Holes: effects of predator presence on aggression behaviors
2. Tidal creeks: effects of human-induced habitat change on diel behavioral patterns
3. Human dimensions: impacts of marine protected areas on Androsians

Project components:

1. Literature Review: a list of readings will be assigned, but you will be expected to find and review (many) additional sources of primary literature related to your topic.
2. Proposal: you will be required to summarize the current state of knowledge regarding your topic, identify intriguing and untested hypotheses regarding your topic, and explain how you will test those hypotheses. (this includes a written proposal and an oral presentation on Andros; see below)
3. Field Research: you will conduct a field research project based on methodology described in your proposal (and subsequent modifications).
4. Data Analysis: you will statistically analyze your data to generate the fundamental results of your project.
5. Write a Scientific Paper: you will write a scientific paper based on your research findings after you return from Andros. (This can start while on Andros and will likely comprise the most time-consuming and challenging component—but with plenty of hard work, you could actually published a paper!)

Tentative Schedule:

- May 7: Assigned readings and project topics posted on course webpage; complete assigned readings; based on the readings and your research interests, rank your project preference
- May 10: Submit your preferred research project by 5pm on Saturday (sooner is better). Project assignment will be based on student preference and project logistics.
- May 12: Project and team assignments posted on the course webpage; extended reading lists for each project posted on course webpage (you are responsible for reading those associated with your assigned project, *and* finding more literature)
- May 12-15: Write research proposal as a team (do not stress about the writing, focus on beginning to work together as a team, build the proposal background and sketch out a possible research plan)
- May 15: Rough draft of research proposal due by 5pm (this can be *rough*)
- May 16: Depart for Andros Island, The Bahamas!
- May 16-21: Receive comments on rough draft, revise proposal as a team based on comments and in light of new information on the island and from instructors
- May 21: Revised research proposal due, team proposal presentations that evening (~10-15 min)
- May 21-29: Conduct projects!
- May 30: Return from Andros Island. Remaining work can be conducted remotely.
- June 3-13: Work on data and paper (e.g. organize data, conduct analyses as necessary, literature review, outline paper)
- June 13: Organized data sets, statistical results, paper outline due
- June 27: Final data sets, statistical results, and first rough draft of paper due
- June 30 – July 7: Work on finalizing all results, structuring and fleshing out paper, citing literature, more literature review, etc.
- July 7: Paper rough draft, tables, and figures due
- July 9-16: Revise paper
- July 16: Final Research Paper Due
- Completion and credits assigned if/when papers have addressed all concerns noted on edited drafts. Last day for submission of final revisions if requested/permitted is July 28.

Grading:

- Research Proposal: 20%
- Fieldwork Participation, Responsibility, Collegiality (professor evaluation): 20%
- Fieldwork Participation, Responsibility, Collegiality (peer evaluation): 20%
- Data Organization and Submission, Research Paper Rough Draft: 20%
- Research Paper: 20%

Preliminary list of some major trip activities other than research projects:

- Orientation
- Swim “test” / snorkel practice
- Lectures and discussions in field “classroom” prior to visiting field sites
- Visit inland blue holes, underwater observations, abiotic data-collection techniques, underwater survey methods, fish collection methods, evaluate effects of certain ecological drivers in explaining major phenotypic patterns across sites
- Visit tidal creeks, above-water fish density survey methods, underwater community survey methods, assess some impacts of human-induced fragmentation on these systems
- Visit coral reefs, marine blue holes, and large tidal creeks via boat, underwater community survey methods, fish and coral identification, assess effects of anthropogenic disturbance on these systems
- Visit cultural localities and learn local histories from residents
- Experience Bahamian natural history, culture, and cuisine throughout trip
- Each team gives presentation of their research plan to class

Academic Integrity:

Students are required to comply with the university policy on academic integrity found in the Code of Student Conduct found at

http://www.ncsu.edu/policies/student_services/student_discipline/POL11.35.1.php

Academic Honesty:

See http://www.ncsu.edu/policies/student_services/student_discipline/POL11.35.1.php for a detailed explanation of academic honesty.

Honor Pledge:

It is the instructor's understanding and expectation that the submission of any assignment means that the student neither gave nor receive unauthorized aid on that exam or assignment. Giving or receiving unauthorized aid may result in an F for this course as well as more severe disciplinary penalties.

Electronically-Hosted Course Components:

Students may be required to disclose personally identifiable information to other students in the course, via electronic tools like email or web-postings, where relevant to the course. Examples include online discussions of class topics, and posting of student coursework. All students are expected to respect the privacy of each other by not sharing or using such information outside the course.

Accommodations for Disabilities:

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, student must register with the Disability Services

Office (<http://www.ncsu.edu/dso>) located at 1900 Student Health Center, Campus Box 7509, 919-515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation at http://www.ncsu.edu/policies/academic_affairs/courses_undergrad/REG02.20.1.php.

Non-Discrimination Policy:

NC State University provides equality of opportunity in education and employment for all students and employees. Accordingly, NC State affirms its commitment to maintain a work environment for all employees and an academic environment for all students that is free from all forms of discrimination. Discrimination based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation is a violation of state and federal law and/or NC State University policy and will not be tolerated. Harassment of any person (either in the form of quid pro quo or creation of a hostile environment) based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation also is a violation of state and federal law and/or NC State University policy and will not be tolerated. Retaliation against any person who complains about discrimination is also prohibited. NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at http://www.ncsu.edu/policies/campus_environ or http://www.ncsu.edu/equal_op. Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity (OEO) at 919-515-3148.

Health and Well-Being Resources

These are difficult times, and academic and personal stress are natural results. Everyone is encouraged to [take care of themselves](#) and their peers. If you need additional support, there are many resources on campus to help you:

- Counseling Center ([NCSU Counseling Center](#))
- Health Center ([Health Services | Student](#))
- If the personal behavior of a classmate concerns or worries you, either for the classmate's well-being or yours, we encourage you to report this behavior to the NC State CARES team: ([Share a Concern](#)).
- If you or someone you know are experiencing food, housing or financial insecurity, please see the Pack Essentials Program ([Pack Essentials](#)).

Diversity Statement

Diversity of student experiences and perspectives is essential to the deepening of knowledge in a course. I consider it part of my responsibility as an instructor to address the learning needs of all students in this course. It is also the responsibility of all students to exhibit professional courtesy and respect for all members of the class. The course materials and discussions are intended to be respectful of social identities. Any suggestions that you have about other ways to incorporate diverse experiences in the course materials or discussions are welcome.

If you prefer to be called a different name and/or if your preferred pronouns are different than what are indicated on the class roster, please let me know. If there is a conflict between class assignments and your religious observances, please let me know as soon as possible so that we can work together to make arrangements.

Students are responsible for reviewing the NC State University Policies, Rules, and Regulations (PRRs) which pertain to their course rights and responsibilities, including those referenced both below and above in this syllabus:

Equal Opportunity and Non-Discrimination Policy Statement

<https://policies.ncsu.edu/policy/pol-04-25-05>

with additional references at <https://oied.ncsu.edu/divweb/policies/>

Code of Student Conduct

<https://policies.ncsu.edu/policy/pol-11-35-01>