

Field Studies in Animal Behavior and Conservation Summer 2016

Bahamas Project Dolphin – Workshop on the Water



Masters & PhD students - Psych 717.51 Field Study in Animal Behavior and Conservation
Undergraduates – Psych 195.59

Trip Leaders:

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Course Description & Objectives:

This field course provides students with a unique opportunity to gain research experience in the field by participating in a study of the vocalizations and behavior of wild dolphins. The course has two components: 1) a one-day lecture-workshop held at Hunter College in May prior to the field course, and 2) participation in a 12 day field program in the summer at the Bahamas field site.

The Field Site & Student Participation: The Bahamian wild dolphin population is very acclimated to humans, allowing for the unique opportunity to observe and record animals underwater in their natural habitat. Students will learn field research methods and spend one week assisting in data collection in the Bahamas, helping researchers study the underwater interactions and concurrent vocalizations of bottlenose and spotted dolphins. Observations are made underwater while snorkeling and on the water's surface. Participants must know how to swim and snorkel, but no other special skills are needed. Daily tasks involve recording underwater observations, photographing and identifying individual dolphins, gathering data while in the water, recording environmental data while above water, keeping records of dolphin sightings, entering data, and analyzing photos for identification.

Prerequisites: Must know how to swim and snorkel. For Hunter MA students, approval of the ABC MA concentration coordinator is required to register for this course. Non-matriculated students need the approval of the course instructor. Undergraduate students must have taken Psych 100 – Introduction to Psychology.

Application Requirements:

Those wishing to apply must complete the following requirements:

- Interview and approval from the faculty member(s) teaching the course.
- Swim test - this requires swimming two laps in the Hunter pool (two laps means swimming back and forth the length of the pool twice). This swim test will be given in May, on the day of the pre-trip workshop.
- 3.0 GPA
- A 500 word written statement about why the student wishes to take this course.
- One letter of recommendation from a Hunter College faculty member who has worked with or taught the student within the last 2 years. This letter must attest to the ability of the applicant to work well as a team member and to follow instructions. Due to the nature of this course and that fact that students are in the water, the student must be able to obey authority immediately (faculty or the boat staff) in order to ensure a safe and positive research experience for all.

Course Outline & Requirements: The coursework will be comprised of the following:

- Pre-trip workshop and orientation at Hunter College (May 2014, date and time TBA)
- Field Course (August 13th – 24th)
 - Involvement in daily research activities
 - Daily lectures during the trip
 - 10 - 12 hours spent at field site in Bimini working on data entry and data analysis
- Required readings (to be read before the trip commences). Readings will be distributed as PDF's to participants in advance of field trip.
- Writing assignment – observation logs (to be turned in while out at the field site) and a research proposal (due after returning to the USA).

Grades: Grades will be based on an overall assessment of student involvement and participation (field participation and class presentation) and a written assignment to be submitted. The written assignment and observation logs are worth 30% of the overall grade, and participation and attendance in activities and lectures is worth 70%.

Deadlines:

- Assigned Reading – to be read before the Bahamas trip commences.
- Research Proposal – Tentatively due late August

Daily research activities: Students will take part in onboard ship observations and may (if desired) take part in underwater observations. Students who feel comfortable with photo ID may also assist in taking underwater photo ID pictures. Above water data collection includes recording environmental data, recording details of sightings, and recording behavioral observations. Underwater data collection includes recording details of sightings, and recording behavioral observations. Additional activities include matching photos of dolphins seen to the photo ID catalogue in order to identify the dolphins, and being 'on watch' to look for approaching dolphin groups.



Course Schedule: This is a TENTATIVE LECTURE SCHEDULE, and is subject to modification. You will have some free time on some mornings between breakfast and lectures, or between lectures and afternoon boat trips, to explore the island and snorkel. We will also have additional time on one to two boat trips for snorkeling. Boat survey times and days may be adjusted depending on weather.

Note – this course will be co-taught alongside a course run through Manhattan College, so some lectures will be required, and some will be optional.

Pre-trip Workshop: May, date and time TBA, HN610

- Introductory Lecture (lecture at Hunter College prior to trip commencement):
 - I. Welcome and introduction to field trip
 - II. Intro to Marine Mammal Behavior, Communication, and Cognition
 - III. Orientation to field project: overview of the research, the study site, the study dolphins, methods of data collection, and student roles and responsibilities
 - IV. Trip information – pack list, travel, getting to the boat, forms, emergency contacts

Saturday, August 13th Arrive at field site, check in to hotel rooms.

- 4:45 PM – Arrive in Bimini
- 5:00 PM – Welcome to Bimini Orientation (Hunter/Manhattan)
 - Orientation to life in Bimini
- 6:00 Checkout Snorkel (Hunter)
- 7:00 Research Orientation – evening lecture
 - I. Review of research roles & student responsibilities, general safety, how to conduct one's self while in the water with dolphins.
 - II. Identification of Dolphins – How to tell who's who, ageing and sexing dolphins.
- 7:45 Dinner

Sunday, August 14th

- 8:30 – 9:00 Breakfast
- 9:30 – 10:30 - Lecture: Life history of spotted and bottlenose dolphins (Hunter/Manhattan)
- 10:30 – 11:30 – checkout snorkel - Manhattan
- 11:30 – 12:30 – Lecture: Basics of Neuroscience (Manhattan – required, Hunter – optional)
- 1:00 - Lunch
- 2:00 - Pre-boat orientation
 - I. General Boat Safety
 - II. Introduction to underwater digital still cameras.
- Afternoon: Boat Survey 1.
- Evening - turn in cameras, dinner

Monday, August 15th

- 8:30 – 9:00 – Breakfast
- 10:00 – 11:00 – Lecture & Workshop: Research Methods in Photo ID of Dolphins (Hunter/Manhattan)
- 11:00 – 12:00 – Data Entry and Photo ID Matching
- 12:30 - Lunch
- Afternoon: Boat Survey 2
- Evening: Turn in cameras, dinner
- Dinner Lecture
 - Coral Reef Fishes (Hunter/Manhattan)

<p>Tuesday, August 16th</p> <ul style="list-style-type: none"> • 8:30 – 9:00 – Breakfast • 9:30 – 11:00 – Lecture: Vision (Manhattan – required, Hunter – optional) • 11:15 – 12:00 – Data Collection Project: Photo ID of Coral Reef Fishes • 12:00 – 1:00 – Dolphin Photo ID, Data entry. • 1:00 – 2:00 – Lunch <ul style="list-style-type: none"> • Lunch Lecture: Mangroves • Afternoon: Boat Survey 3. • Evening - Turn in cameras, dinner. • Dinner Lecture: Ethograms, research methods
<p>Wednesday, August 17th</p> <ul style="list-style-type: none"> • 8:00 – 8:30 – breakfast • 9:00 – 10:30 – Morning Lecture: Vision II (Manhattan – required, Hunter – optional) • 12:00 – 1:00 – Photo ID and Data Entry • 1:00 – 2:00 Lunch • Afternoon: Boat Survey 4 • Evening - Turn in cameras, dinner. <ul style="list-style-type: none"> • Lecture – Marine mammal sensory perception (hearing, echolocation, vision).
<p>Thursday, August 18th</p> <ul style="list-style-type: none"> • 8:30 – 9:00 – Breakfast • 9:30 – 11:00 – Lecture: Audition (Manhattan – required, Hunter – optional) • 12:00 – 1:00 Data Analysis • 1:00 – 2: 00 Lunch Lecture - Marine mammal anatomy & physiology, evolution of marine mammals • Boat Survey 5 • Evening: Turn in Cameras, Dinner
<p>Friday, August 19th</p> <ul style="list-style-type: none"> • 8:30 – 9:00 – Breakfast • 9:30 – 11:00 – Communication & Social Behavior • 12:00 – 1:00 Photo ID and Data Entry • 1:00 – 2: 00 Lunch • Boat Survey 6 • Evening: Turn in Cameras, Data Entry, Dinner <ul style="list-style-type: none"> • Lecture - Whistle Use in Bahamas Dolphins – Current Findings
<p>Saturday, August 20th</p> <ul style="list-style-type: none"> • Breakfast • Sharks & Rays Trip*** (Manhattan) • Free time - Hunter • Lunch • 5:00 – 6:30 – Data Analysis • 7:00 – 8:30 - Dinner & Evening Lecture <ul style="list-style-type: none"> • Evening Lecture - Animal Intelligence & Comparative Cognition I
<p>Sunday, July 21st</p> <ul style="list-style-type: none"> • 8:30 – 9:00 – Breakfast • 10:30 – Shark Lab • 11:30 – 1:00 Data Analysis & and Data Entry • 1:00 – 2: 00 Lunch • Boat Survey 7 • Evening: Turn in Cameras, Data Entry, Dinner • Evening Lecture - Animal Intelligence & Comparative Cognition II

<p>Monday, July 22th</p> <ul style="list-style-type: none"> • 8:30 – 9:00 – Breakfast • 9:30 – 10:30 Morning Lecture: Noise Effects (Manhattan – required, Hunter – optional) • Sharks & Rays Trip*** (Hunter - optional) • 12:00 – 1:00 Photo ID and Data Entry • 1:00 – 2: 00 Lunch • Free time - Manhattan • Evening: Turn in Cameras, Dinner <ul style="list-style-type: none"> • Discussion: Stewardship, responsible ecotourism, current topics in marine mammal conservation
<p>Tuesday, August 23rd</p> <ul style="list-style-type: none"> • 8:30 – 9:00 – Breakfast • 9:30 – 10:30 Lecture - Conservation • 1:00 – 2:00 – Lunch – presentations of research topics • Boat Survey 8 • Evening – Dinner, presentation of research topics
<p>Wednesday, August 24th</p> <ul style="list-style-type: none"> • 7:00 - 7:30 – Breakfast • 8:30 - Water taxi to airport

***Shark Lab:** The Bimini Biological Field Station, founded in 1990, is a well renowned research facility operated by shark biologist Dr. Samuel H. Gruber. Research looks at array of marine life, especially the Lemon Shark. If possible and schedules allow, we will visit the Bimini shark lab on one morning. It is free to visit, but donations are greatly appreciated and strongly suggested. Water taxi/bus to the shark lab is \$7 each way.

****Healing Hole & Mangrove tour:** This tour will bring you through the mangroves to the healing hole, a freshwater pool containing lithium and said to have healing powers. It was in these mangroves that Martin Luther King wrote his Sanitation Workers Speech. Cost is approximately \$45 – \$60 per person.

*****Sharks, Rays, Sapona:** This will be a half-day boat trip that will stop at three sites. The first stop is Honey Moon Harbor, where friendly wild stingrays come to interact with people. The second stop is a snorkel stop at a shallow reef where Caribbean Reef Sharks make their home. The third stop is the S.S. Sapona, a ship wreck and popular dive site. This concrete ship was used for many things before becoming a snorkel attraction; among other uses, rum runners used it to store rum during the prohibition, and the military used to use it for target practice. Cost for the trip is approximately \$75 per person.

Required readings include but are not limited to:

- Connor, R. C., Wells, R. S., Mann, J., & Read, A. J. (2000). The bottlenose dolphin: Social relationships in a fission-fusion society. In: Mann, J., R. C. Connor, P. L. Tyack, and H. Whitehead, eds. *Cetacean societies: Field studies of dolphins and whales*. The University of Chicago Press, Chicago
- Connor, R. C., Watson-Capps, J. J., Sherwin, W. B., & Krutzen, M. (2011). A new level of complexity in the male alliance networks of Indian Ocean bottlenose dolphins (*Tursiops* sp.). *Biology Letters* 7:623–626
- Herzing, D. L. (1997). The life history of free-ranging Atlantic spotted dolphins (*Stenella frontalis*): Age classes, color phases, and female reproduction. *Marine Mammal Science* 13(4):576-595
- Mann, J. (2000). Unraveling the dynamics of social life: Long-term studies and observational methods. In: J. Mann, R. C. Connor, P. L. Tyack, and H. Whitehead, eds. *Cetacean societies: Field Studies of dolphins and whales*. U. of Chicago Press, Chicago & London.
- Marino, L., R. C. Connor, R. E. Fordyce, L. M. Herman, P. R. Hof, L. Lefebvre, D. Lusseau, B. McCowan, E. A. Nimchinsky, A. A. Pack, L. Rendell, J. S. Reidenberg, D. Reiss, M. D. Uhen, E. Van der Gucht, and H. Whitehead. (2007). Cetaceans have complex brains for complex cognition. *PLoS Biology* 5(5):966-972
- Melillo, K.E., Dudzinski, K. M., & Cornick, L. A. (2009). Interactions between Atlantic spotted (*Stenella frontalis*) and bottlenose (*Tursiops truncatus*) dolphins off Bimini, The Bahamas, 2003-2007. *Aquatic Mammals* 35:281-291
- Reiss, D., & Marino, L. (2001). Mirror self-recognition in the bottlenose dolphin: A case of cognitive convergence. *Proceedings of the National Academy of Sciences of the United States of America* 98(10):5937-5942
- Tyack, P. L. (2008). **Implications for marine mammals of large-scale changes in the marine acoustic environment.** *Journal of Mammalogy*, 89(3):549–558

Optional Readings:

- Altmann, J. (1974) **Observational Study of Behavior: Sampling Methods.** *Behaviour* 49(3):227-267
- Connor, R. C., Smolker, R. A., & Richards, A. F. (1992). **Two levels of alliance formation among male bottlenose dolphins (*Tursiops* sp.).** *Proc. Nati. Acad. Sci. USA* 89:987-990
- Weilgart, L. S. (2007). **The impacts of anthropogenic ocean noise on cetaceans and implications for management.** *Canadian Journal of Zoology* 85(11): 1091-1116

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