University of Miami, Rosenstiel School of Marine and Atmospheric Science, Bimini Biological Field Station

Tropical Marine Biology (MBF 514) Briefing
January 6-15, 2009
S Bimini Bahamas

Photograph of lemon shark, *Negaprion brevirostris* by Tim Calver

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A. Course Information
1. **Background of the Course**

This course is the result of our desire to provide an authentic field experience for upper level marine biology students. Our years of cumulative experience both as marine biology students and professors has convinced us that traditional biology courses are limited in their ability to present the exquisite beauty, breathtaking diversity and complexity of the natural marine world. As instructors, we have been disappointed by the limitations of typical laboratory courses where a 50-year-old blob of preserved, whitish jelly is presented with the expectation that the student can begin to understand the biology or appreciate the beauty of a sea anemone.

Therefore, we have created this course in an attempt to circumvent the usual limitations of traditional marine biology curricula. Students at Bimini will observe every organism that is discussed in this course in its natural setting, performing its usual behavior and interacting with its natural prey and predators. If a habitat is described in lecture, you will swim there. If an organism is mentioned, you will see it alive and in person. It is our hope this special experience will inspire in you an appreciation for the beauty and biological relationships of the marine world in a way few other courses can.

2. **Objectives of the Course**

This course is designed to teach you about the major habitats of tropical marine waters, including: Sea grass meadows, rocky and sandy shores, coal reefs and mangrove forests. Concurrently, we will discuss many basic and theoretical issues in marine biology, such as zonation vs. succession, the Law of Competitive Exclusion, the origin of eukaryotes, and the evolution of metabolism. In addition, you will become intimately familiar with many of the common inhabitants of the above habitats; and many of the ecological and behavioral and community associations of these creatures. After successfully completing this course, you should be able to understand the community relationship in many tropical, marine habitats.

This is an intense, comprehensive field-course designed for serious students of marine biology. We will be working approximately 14 hours each day in a lecture setting, in the laboratory and in the field. We sincerely hope you will find this course both intellectually stimulating and physically demanding. We also hope that it will also be one of the most enjoyable and stimulating experiences that you will ever have.

3. **Course Syllabus (schedule may change due to weather and tide cycle)**

January 6: Morning – Pack, drive to Fort Lauderdale Executive Airport fly BIA charter to Bimini
Afternoon - Arrive in Bimini Biological Field Station /Orientation
Evening - Lecture (Introduction through Systematics and Biology of Cnidaria)

January 7: Morning -Lecture (Systematics and Biology of Mollusca through Echinodermata)
Afternoon - Seagrass lecture and field trip *Please note that field trip-schedule can change
Evening - Seagrass lab

January 8: Morning - Lecture (Tides and Rocky Shorelines)
Afternoon - Field trip to Rocky Shoreline; Lecture (Systematics and Biology of Fishes)
Evening - Rocky Shore Lab

January 9: Morning - Lecture and Field Trip (*Millepora Community*)
Afternoon - Lecture and Field Trip (Metabolism/Beaches)
Evening - Lab (*Millepora* Community and Sandy Beaches)

**January 10:** Morning - Mangrove Lecture and Field Trip  
Afternoon - Lecture (Coral Reefs: History & Location) and Field Trip (Turtle Rocks Plexaurid Community)  
Evening - Lab (Mangroves and Coral Reefs)

**January 11:** Morning - Lecture (Coral Reefs: Formation - Zonation)  
Afternoon - Field Trip (Turtle Rocks *Palmata* Zone)  
Lecture (Coral Reefs: Ecology)  
Evening - Lab (Coral Reefs); Discussion and review (exams)

**January 12:** Morning - Lecture (Marine Symbiosis); Field Trip (Reef)  
Afternoon - Lecture and Field Trip (Artificial Reefs)  
Evening - Lab (Final identification of specimens)

**January 13:** Morning - Reef fish feeding extravaganza (optional) & free study time  
Afternoon – Free; Study Time  
Evening - *Laboratory Practical Examination*

**January 14:** Morning - *Lecture Examination*  
Afternoon Relax, visit to Alicetown or the beach; clean rooms and start packing.  
Evening - Optional dinner in Alicetown; clubbing at the Compleat Angler

**January 15:** Morning – Strip beds, clean rooms and finish packing; Depart for Civilization

4. **Faculty and Staff**

Dr. Samuel H. Gruber is Professor Emeritus in the Division of Marine Biology and Fisheries of the University of Miami’s Rosenstiel School of Marine and Atmospheric Science. Dr. Gruber is the founder and administrator of the Bimini Biological Field Station, site of this course. Professor Gruber is a behaviorist who directs shark research year round at BBFS and other locations.

Dr. Dan DiResta is Professor in the Department of Biology, University of Miami and coordinator of the undergraduate marine sciences program. Dr DiResta has taught in the Bimini course for many years.

The staff will be composed of a chefs (Marie and Doc Gruber; Kat Gledhill) technicians (Sean Williams) and several teaching assistants (TBA). These individuals will be responsible for your safety comfort and enjoyment during the field course.

B. **Logistical Information**

1. **Rendezvous**

We will depart for Bimini on January 6, 2009 from Fort Lauderdale Executive Airport. Departure time at Bimini Island Air (954 938 8991) will be about noon on the first day of class. You should arrive at the Fort Lauderdale Executive Airport one hour before noon for the 25-min. flight over the Gulf Stream to Bimini. Contact Dr. Gruber (305-274-0628) for specific details regarding our flight.

2. **Daily Schedule**
Everyone will arise at 7:30 AM for breakfast to be served by our staff. Lectures are held from 8-10 AM. Then the class travels (by foot, boat or truck) to the particular habitat discussed that morning in lecture. In the field, students will be guided by the staff but are responsible for collecting and observing common species as well as joining field lectures. Students return to BBFS for lunch around noon. A second lecture is given from 1-3 PM. Then class will travels to a new habitat and repeat the morning’s field activities. The group returns to BBFS for a hot meal between 5 and 6 PM. Dinner will be held from 6:30 -7:30 PM. All students, in pairs and on a rotating basis, will participate in cleaning the dining hall and dishes. Class will resume at 8:00 PM. The evening usually comprises a laboratory period with time for identification of specimens collected that day. There may be occasional lectures at this time as required. The formal laboratory period ends around 10 PM. Students then are free to study quietly and independently or in groups.

3. Study Area

Class is held at the Bimini Biological Field Station on the island of South Bimini, Bahamas. The Biminis are located about 85 km east of Miami and are about 12 km long. Approximately 1,200 people live on North Bimini. South Bimini, the site of BBFS, is relatively isolated and with seasonal vacation homes for mostly Americans.

Culturally, Bimini is a typical, relatively undeveloped West Indian island with all the associated charms (e.g., foods, clothing, architecture). Sunburn and insect bites are the main physical hazards.

4. Accommodations

We will all be staying at the Bimini Biological Field Station. BBFS is converted from a wooden frame duplex. It has five bedrooms (four persons per room in bunk beds), two bathrooms with showers, a small kitchen area, a dining hall, a lecture hall, and a deck. BBFS has central air-conditioning, indoor plumbing, and reliable power.

Two cisterns, filled by wells supply brackish wash water and store captured rainwater. A desalinator supplies drinking water.

5. Food

The staff will prepare all meals. As mentioned, all students will participate in dining room clean up on a rotating basis. The menu is a pleasant mixture of typical American meals (e.g., spaghetti, chicken) and Bahamian treats (e.g., conch chowder, souce chicken). Vegetarian meals (ovo-lacto) are accommodated. The staff will strive to provide healthy, nutritious and adequate amounts of food, which will be needed considering the physical exertions of the students during field trips!

6. Physical Conditioning

Physical and psychological demands of the course are similar to those experienced when one spends a very active day at the beach, ten days in a row. Sunburn, insects, and salt water and cold are the greatest physical challenges. Students should be able to snorkel and beach-walk several hours each day. Otherwise, no special exercise or preparedness is necessary.
7. Medical Advice

There are no particular health precautions or necessary immunizations. Medical facilities on the island are limited. In an extreme emergency, people can be airlifted to Miami for treatment. Due to the isolated nature of the study site, students with chronic health problems, such as heart conditions, allergies or sun intolerance should consult their physicians before registering. Inexpensive travel insurance is readily available and good idea. You will be required to sign a waiver of liability to join the class.

8. Field Communications

There is a pay telephone at BBFS and we have continuous radio contact with Dr. Gruber’s office in Miami. Email is available at a small cost. Telephone cards can be purchased in Alicetown and USA Direct Dial through AT&T, Sprint, MCI is available. There is no post office on South Bimini. Students can buy and mail postcards on North Bimini during their visit on the last day. In emergencies, with luck students can receive faxes via the Big Game Club (242-347-3391) or Sue and Joy’s Boutique (attention Percy: 242-347-2115).

9. Course Supplies

There is a luggage weight limit of 40 pounds. All students should arrive with the following items:
- PROOF OF CITIZENSHIP (only valid passport or certified birth certificate for US citizens)
- Notebook and writing utensils
- Dive mask, fins and snorkel
- Bathing suits
- Towels
- Footwear for wet and muddy or rocky beach walks
- Wet suit (the water is COLD in January)
- Sweatshirt or light jacket for cool, damp evenings, (especially in January)
- Rain gear if desired (field trips are never canceled!)
- Sunscreen
- Insect repellent
- Motion sickness pills (if you are prone to seasickness)
- Personal medication
- MONEY-- About $150 is essential, if you wish to spend money in town.
- clothing

All bed linens and small towels are provided.

**Important**: You will be restricted to 40 lb. in soft luggage. DO NOT bring more than 40 lb. to the airport. Overweight will be charged at $1.00/pound

If you have any additional questions regarding logistics, please fax or call Dr. Gruber at 305-274-06288 or email sgruber@rsmas.miami.edu. If you have any questions regarding the content of the course, please email Dr. Gruber at sgruber@rsmas.miami.edu or contact Dr. DiResta in the Marine Science Department on main campus at diresta@miami.edu.

Sincerely Yours,
Samuel H. Gruber
Professor Emeritus