

# RAPHAEL D. FENNIMORE

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## EDUCATION

**Boston University, Marine Science Major, Double Minors in Biology and Earth Sciences** Year of Graduation: May 2009

- One of 21 and 24 students accepted into the graduate-level Boston University Marine Program (BUMP) in Fall 2007 and Fall 2008: completed each with Dean's List honors.

### Research Coursework:

- BI 546 – Marine Megafaunal Ecology (Professor: *Les Kaufman, Ph. D.*) September 2007
- Humpback whale feeding behavior and interspecific relationships (Stellwagen Bank National Marine Sanctuary).
- BI 563 – Chemosensory Biology (Professor: *Jelle Atema, Ph. D.*) October 2007
- Clownfish mate recognition, olfactory versus visual cues (Boston University Marine Lab).
- BI 532 – Ichthyology II (Professor: *Phil Lobel, Ph. D.*) December 2007
- Ichthyologic survey, photographic and observational study (Wee Wee Caye Marine Laboratory, Belize).
- ES 543 – Estuaries and Nearshore Systems (Professor: *Sergio Fagherazzi, Ph. D.*) September 2008
- The effects of physical and ecological processes on marsh and sand dune morphology (Plum Island Sound, MA).
- BI 578 – Marine Geographic Information Systems: GIS (Instructor: *Kerry Lagreux*) October 2008
- A geospatial analysis, using GIS, of whale watch boat speed and guideline compliance (Stellwagen Bank, BU).
- ES 546 – Tropical Oceanography: Applications and Research (Professor: *Richard Murray, Ph. D.*) December 2008
- Relative abundance of diatoms and dinoflagellates in the surface water and the Deep Chlorophyll Maximum of the Caribbean Sea (Cruise track: Saint Croix, USVI to Key West, FL).

### Additional Relevant Coursework:

- Oceanography, Marine Biology\*, Ecology\*, Ichthyology I\*\*, Marine Geology+, Marine Biogeochemistry+, Tropical Oceanography\*\* (Wood's Hole), History of the Earth\*, Sustainability\*\*.
- \*Lab Course (Off Campus Site) +Graduate Level

### Pertinent Extracurricular Activities:

- Elected President of the Marine Science Association of Boston University.
  - Planned and organized marine-oriented student events, such as whale watches and Boston harbor cruises, as well as fund-raising events for future club activities.
  - Invited and coordinated with guest scientists for lectures and discussions about their research.
  - Partnered with the Stellwagen Bank National Marine Sanctuary for joint public and private projects.
- Co-founded and served as President of the Scientific SCUBA Divers of Boston University.

## RESEARCH EXPERIENCE

### Research Intern (Advisor: Randi Rotjan, Ph. D.)

*New England Aquarium, Edgerton Research Laboratory* (Boston, MA) January 2009 – Present

- Helped to develop and refine a protocol for eluting fish stress hormones from ambient water via the coupling of an Enzyme-Linked Immunosorbent Assay (ELISA) with Solid Phase Extraction (SPE).
- Performed and analyzed results of acoustic stress experiments on Lumpfish, *Cyclopterus lumpus*, and Winter Flounder, *Pseudopleuronectes americanus*, to better understand the physiological effects of environmental stressors.
- Trained incoming interns on ELISA and SPE procedures, as well as lab policies and practices.
- Selected as Volunteer of the Month out of over 750 volunteers at the New England Aquarium in October 2009.

### Marine Mammal Intern (Advisor: David Wiley, Ph. D.)

*National Oceanic and Atmospheric Administration, Stellwagen Bank National Marine Sanctuary* (Scituate, MA) May 2008 – September 2008

- Primarily performed projects pertaining to the conservation and ecological understanding of large whales.
- Member of the 2008 Stellwagen Bank Humpback Tagging Cruise, during which 15 whales were tagged.
- Conducted research into the correlation between internal waves hitting the Bank and whale feeding distribution.
- Assisted in oceanographic instrumentation deployment and retrieval, as well as data collection and discernment.

### Undergraduate Independent Research (Advisor: Les Kaufman, Ph. D.)

*Boston University, Department of Biology* (Boston, MA) May 2008 – October 2008

- Used single- and multi-beam SONAR, captured live samples and gathered, uploaded and interpreted CTD data all in order to construct an accurate picture of the water column variables so as to better understand the spatial ecology of the Sand Lance *Ammodytes dubius* and its relationship with various zooplankton.
- Analyzed stomach and gut contents and prepared, ran and interpreted tissue stable isotope analyses ( $C_{12}/C_{13}$ ,  $N_{14}/N_{15}$ ).

## PRESENTATIONS

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<b>Sand Lance Trophic Ecology in the Stellwagen Bank National Marine Sanctuary</b> <i>Boston Undergraduate Research Symposium</i> – Harvard University, Cambridge, MA	April 11 <sup>th</sup> , 2009 Poster Presentation
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<b>Sand Lance Trophic Ecology in the Stellwagen Bank National Marine Sanctuary</b> <i>Northeast Undergraduate Research and Development Symposium</i> – University of New England, Biddeford, ME	March 27 <sup>th</sup> , 2009 Talk
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<b>Understanding the Spatial Ecology of Adult <i>Ammodytes dubius</i> and Their Relationship with Select Zooplankton</b> <i>11<sup>th</sup> Annual Boston University Undergraduate Research Symposium</i>	Oct. 17 <sup>th</sup> , 2009 Poster Presentation
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<b>Operation and Deployment of the SBE-19 plus CTD and Subsequent Data Analysis Techniques</b> Boston University, BI 546: Marine Megafaunal Ecology (Professor: <i>Les Kaufman</i> , Ph.D.)	September 9 <sup>th</sup> , 2009 Guest Lecturer
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## SKILLS, AWARDS AND CERTIFICATIONS

**Skills/Attributes:**

Lab: DNA extraction, PCR, SDS-PAGE, solid phase extraction, ELISA, stable isotope analysis, spectrophotometry, plasmid transformation, light microscopy, water quality analyses, fish husbandry, and lab sterilization.

Field: Specimen collection, data logging, instrumentation programming/operating, CTD, BioSonics, hydrophones, underwater speakers, behavioral observation and a very sharp eye.

Other: Sailing instructor: comfortable on boats of all sizes and proficient in maritime navigation, boat safety, knots, rigging, wind/weather conditions and forecasting and rights-of-way.

**Awards:**

- Recipient of the Rotary International Leadership Scholarship (\$5000), the John H. Lyons Sr. Scholarship (\$10,000), the Joseph Brown Memorial Scholarship (\$12,000), the Warren-Sanders-McNaughton Oceanographic Scholarship (\$1,500) and also named a Rockefeller Scholar, 2008 – 2009.
- Received a Boston University Undergraduate Research Grant award for independent research (stipend - \$4000).
- Named a Boston University President's Host as well as a Dean's Host for the College of Arts and Sciences.
- Two-time America East Academic Honor Roll Scholar (Varsity indoor and outdoor track teams, Boston University).

**Certifications:**

- Open-water SCUBA certified (SSI) since 2006.

## PROFESSIONAL MEMBERSHIPS

- Society for Marine Mammalogy (SMM)
- American Cetacean Society (ACS)
- Society for Conservation Biology (SCB)

## REFERENCES AVAILABLE UPON REQUEST