Undergraduate Research Opportunities at VIMS
Spring 2017

1. Impact of an invasive nematode parasite on American eels.
Project Description: I need help ageing American eels. Fish can be aged by processing their otoliths, a small calcium carbonate structure found in their inner eel. This structure grows like a tree, producing rings that equate to years. Otoliths have already been removed, and I need help processing them and ageing them by gluing them to microscope slides and then sanding them flat to better visualize the rings. No specific skills are needed.
Start Date: Position is available ASAP
Contact: Zoemma Warshafsky (VIMS grad student), ztwarshafsky@vims.edu

2. Headwater Wetland Hydrology
Project: This position will involve visiting headwater wetlands to install and maintain groundwater monitoring wells. If interested, the volunteer may also assist with GIS work related to the project. A basic understanding of hydrology is preferred but not required. Experience with ArcGIS is a bonus.
Start date: March, 2017
Contact: Pamela Braff (grad student), phbraff@vims.edu

3. Multiple Research Projects with Marsh Invertebrates
   Can crabs build a salt marsh? We are studying how burrowing crabs such as fiddler crabs may influence the way a marsh grows in the face of rising sea levels.

   TIDE Project: We are looking at the long-term effect of nutrient pollution on salt marsh invertebrates (annelids, small crustaceans, insects).

   BP oil spill effects on marshes: We are looking at the initial impact and potential recovery of marshes using invertebrates and bioindicators.

   Position description
   This is a paid position and persons working in my lab will be asked to sort and identify marsh invertebrates using a microscope; sort, dry, and weigh grass samples; and enter data into spreadsheets. Students will likely work on various projects as needed. As the weather warms, students may be given the opportunity to help with field work. Students will be encouraged, if their schedules allow, to participate in weekly lab meetings.

   Necessary skills: Comfortable using a microscope, familiarity with Excel, patience, excitement for marine ecology - particularly invertebrates.
   Starting date: Position(s) available starting February 1 and available throughout the semester and possibly the summer.
   Contact: Professor David Samuel Johnson, dsjohnson@vims.edu

   Position Description: Will review digital video records from two dive cruises, and record the presence of cephalopods.
   Alvin manned submersible dives in 2003:
   http://oceaneplorer.noaa.gov/explorations/03mountains/welcome.html
   ROV dives in 2004:
Skills needed include the ability to copy videos, save frame grabs, organize observations, and create a spreadsheet (or database) of observations. Determine the presence of squids and octopods but will not need to ID beyond the class level. Will need their own computer with DVD drive.

**Starting Date:** Available immediately and throughout the Spring semester, but I am only at VIMS on Mondays and Fridays.

**Contact:** Professor Michael Vecchione, vecchiom@vims.edu

5. **Aquatic Bacteriology and Virology**

**Project Description:** This position will involve developing skills and providing support in the research of bacteria and viruses that infect fish. Skills in sterile technique, molecular biology, cell biology, microbiology, and/or animal husbandry recommended but not required.

**Start date:** now

**Contact:** Professor Andrew Wargo, arwargo@vims.edu

6. **Salt marsh response to sea level rise**

**Project Description:** We are seeking undergraduate students to assist field work, analyze sediment cores, prepare samples for radiometric dating, and measure plant biomass in an effort to predict the maximum rate of sea level rise that a marsh can survive. No prior experience necessary, although basic familiarity with lab work is helpful. We are also seeking a student to work on a project related to mapping the drowning of low lying coastal regions for which coursework in GIS/Remote sensing experience is necessary.

**Start Date:** Opportunities available all semester.

**Contact:** Professor Matt Kirwan, kirwan@vims.edu

7. **Geochemical controls on abiotic N2 production**

**Project description:** Abiotic N2 production has recently found as a new pathway of fixed N loss. Geochemical control on this new pathway has not been examined. The student will test different chemical conditions to determine the optimal condition of abiotic N2 production.

**Date:** Anytime

**Contact:** Professor BK Song, songb@vims.edu

8. **Two Opportunities**

**Project Descriptions:**

One project is working on oyster bed community dynamics for restoration efforts in Chesapeake Bay. Duties would include help processing oyster samples, sieving and rinsing samples, sorting and identifying benthic invertebrates, and processing samples for biomass.

The other project is working in the Invertebrate Collection that I manage as well. I need help getting specimen data digitized. This would involve entering data in Excel spreadsheets. Also, helping me maintain the collection by filling vials with ethanol and adding specimens to the collection.

**Start Date:** These are ongoing projects and I can use help anytime. I am very flexible with undergrads schedules.

**Contact:** Jennifer Dreyer (Research Manager), jcdrey@vims.edu
9. General research assistance within the CHSD (Coastal Hydrodynamics & Sediment Dynamics)
Lab (www.vims.edu/chsd)

Project Description: Lab volunteer to help with tasks like filtering, drying, and weighing of sediment samples and performing grain size analyses. The most important skills are enthusiasm and attention to detail. We are particularly interested in geology majors who might later consider a more formal research project within our lab for their senior thesis.

Start Date: Flexible dates throughout spring semester 2017 and beyond.

Contact: Professor Carl Friedrichs, Carl.Friedrichs@vims.edu