

2019 Cooperative Summer Field Training Program

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| ● Project Title: | Deep SEARCH: Deep sea exploration to advance research on coral, canyon, and cold-seep habitats |
| ● Project Scientists: | Amanda W.J. Demopoulos |
| ● USGS Center: | Wetland and Aquatic Research Center |
| ● Location: | Gainesville, FL |

Project Description:

Background Information:

The USGS has a long-term commitment to assisting BOEM with their information needs in outer continental shelf (OCS) regions. BOEM is concerned with preserving and protecting hard-bottom communities, including deep-sea corals and chemosynthetic habitats, as the need for oil and gas exploration, and wind energy increases on the U.S. Atlantic shelf and slope. USGS research on faunal community analysis, distribution, and population connectivity, and associated environmental data will provide information needed for refining habitat suitability models for the region.

Objectives:

- Explore, characterize, and monitor benthic communities and associated food webs, from microbes to fishes
- Describe the oceanographic, geological, and geochemical conditions associated with seafloor and sub-seafloor environments including multi-scale characterization via mapping and geophysics, hazards and marine resource assessment

Intern Tasks:

The intern will be involved in processing a subset of the samples collected in the field. Specifically, the intern will:

1. Sort, quantify, and identify marine invertebrates from sediments collected in the deep-sea.
2. Compare data from study sites with existing data from the literature
3. Process and analyze stable isotope data to develop preliminary food-web diagrams
4. Write a brief summary report, including calculations of densities and diversity, and basic statistical comparisons of the communities found in these environments and stable isotope results.

Expected Outcomes:

This work will enhance our understanding of the diversity and community composition of deep-sea habitats. There is a high potential for new species discoveries given the paucity of information available for these environments. In addition, by establishing focused studies at several locations, we will be able to characterize invertebrate communities prior to anthropogenic disturbance. These communities can then be compared to sites already disturbed by humans, leading to better understanding of disturbance impacts on vulnerable deep-sea ecosystems. The intern will learn a variety of research techniques that can be applied to different scientific endeavors both in the field and laboratory. He/she will learn how to collect and process samples for invertebrate identification and stable isotopes, identify marine invertebrates, develop and test hypotheses, analyze data and summarize research results. These basic skills are among those required to conduct scientific investigations and for preparing manuscripts and reports. In addition, the techniques used in this research are the same as those applied to environmental damage assessments conducted in marine and freshwater environments. Thus, the intern will develop a skill set that may be used in future work for the government and consulting agencies, including environmental assessments and understanding disturbance impacts to marine environments.

Details for Matching:

Type of Project: Lab Work, Office Work

Project Discipline: Ecology, Isotope geochemistry

Project Start Date: Wed May 01 2019 00:00:00 GMT-0400 (EDT)

Project Duration: 3-6 months, with the possibility of extension

Level of Physical Demand: Level 8-3: The work requires considerable and strenuous physical exertion such as frequent climbing of tall ladders, lifting heavy objects over 50 pounds, crouching or crawling in restricted areas, and defending oneself or others against physical attack.

GIS Training: ESA

Special Skills and Interests: For this position, it is recommended that the student is pursuing or has completed a degree in Biology, Marine Sciences, or Zoology. Demonstrated course completion in invertebrate zoology is also recommended. Experience with basic statistical analysis and Microsoft Excel is required. Interest and knowledge of marine invertebrates and community ecology is desirable, general interest in marine science is recommended, as are good communication skills.