POSTGRADUATE RESEARCH PROGRAM
NATIONAL EXPOSURE RESEARCH LABORATORY
U.S. ENVIRONMENTAL PROTECTION AGENCY
Cincinnati, Ohio

Integrating Food Web Studies into Monitored Natural Recovery of Contaminated Sites

PROJECT # NERL 2004-04

A research project is available through the Postgraduate Research Program at the U.S. Environmental Protection Agency (EPA), National Exposure Research Laboratory (NERL) in Cincinnati, Ohio. Under the guidance of a research mentor, the participant will gain educational benefits in tool development for ecological monitoring, food web ecology, community ecology, stream ecology, toxicology, statistical analysis of ecological data, and design of ecological studies. Monitored Natural Recovery (MMNR) using natural process to reduce risk of contaminated sediments is a mitigation tool used at various contaminated sites in the United States. Recovery goals for mitigation efforts are often stated as reductions in contaminant levels of target species such as game fish. Pathways of contaminants to target species and cycling of contaminants within impacted food webs are important factors to consider in recovery. However, these factors are poorly understood and are seldom linked to mitigation efforts, particularly in stream ecosystems.

This research is part of an ongoing study of a MNR mitigation of a Superfund site contaminated with polychlorinated biphenyls (PCB's). The research will focus on integrating stable isotope (carbon and nitrogen) and gut analysis of stream organisms to identify pathways of contamination from sediments to higher trophic levels such as fishes. These data will be analyzed along with PCB tissue data model the fate, transport, and persistence of PCB's within the stream system. This research will provide insight on observed interspecific variability in PCB contamination of stream fauna as well as identifying appropriate target species to assess the efficacy of MNR mitigation effort.

This research will lead to the development of novel indicators to assess ecosystems recovery from large-scale contamination. These tools will enhance the ability to gauge the success of remediation efforts and to predict the outcomes of different management scenarios. In addition, the research will identify and explain some biotic processes that confound the results of mitigation efforts.

QUALIFICATIONS: Applicants must have received a bachelor's degree in environmental sciences, ecology, biology, water resources or a closely related discipline within the three years prior to the desired starting date; or completion of all requirements should be expected prior to the starting date. Candidates who have completed all degree requirements prior to the starting date or who wish to perform the research in partial fulfillment of a doctoral program will also be considered. A background in stream ecology studies, gut analysis, and fish and macroinvertebrate taxonomy is desirable. U.S. citizenship or lawful permanent resident status is preferred. The program is open to all qualified individuals without regard to race, sex, religion, color, age, physical or mental disability, national origin, or status as a Vietnam era or disabled veteran.

The participant will be selected based on academic records, recommendations, research interests, compatibility of background and interests with research programs and projects at NERL, and the availability of funds, staff, programs, and equipment. The appointment is full-time for one year and may be renewed upon recommendation of NERL and subject to availability of funds. The participant will receive a monthly stipend based on research area and prior experience. The participant must show proof of health and medical insurance.

The Postgraduate Research Program for NERL is administered by the Oak Ridge Institute for Science and Education. ***Please reference Project # NERL 2004-04 when calling or writing for information.*** For additional information and application materials contact: Postgraduate Research Program/NERL, Attn: Betty Bowling, Science and Engineering Education - MS 36, Oak Ridge Institute for Science and Education, P.O. Box 117, Oak Ridge, Tennessee 37831-0117, Phone: (865) 576-8503 FAX: (865) 241-5219, e-mail: bowlingb@orau.gov.

An application can be found at www.orau.gov/orise/edu/EPA/app-gugrgpd.pdf