

2008 Great Lakes Summer Student Fellow Positions

1. Aquatic Ecologist, Burrowing mayfly population dynamics and ecology – Mentors: Don Schloesser (dschloesser@usgs.gov) and Margi Chriscinske (mchriscinske@usgs.gov). This fellow will assist researchers on a multi-year project that assesses burrowing mayfly populations at sampling stations in the western basin of Lake Erie and in Lake St Clair. The fellow will work with the mentors to determine a suitable independent project falling within the scope of the ongoing study. This position will primarily involve sample processing in the lab, but there will be a field component as well. Data gathered by the fellow will be used in analyzing *Hexagenia* population dynamics and health in the lakes sampled. *For this position, the following skills would be appreciated, but are not mandatory: ability to spend extended periods of time working at a dissecting microscope or magnifying light, familiarity with the fundamentals of invertebrate taxonomy, experience with field work on small boats in open waters.* This position is based at the USGS Great Lakes Science Center in Ann Arbor, MI, and will require occasional day travel to Lake Erie and Lake St Clair.

2. Aquatic ecologist, Cladoceran ecology- Mentor: Steve Pothoven (Steve.Pothoven@noaa.gov). This fellowship will primarily involve evaluating the abundance and life history traits of predatory cladocerans, especially *Bythotrephes longimanus*, for Lake Huron and Michigan. Primary work will be laboratory based using microscopes and image analysis systems. Some opportunities for field work on Lake Michigan will be available as well. **This position is located at the NOAA Lake Michigan Field Station in Muskegon, MI.**

3. Aquatic Ecologist, Fish feeding ecology – Mentors: Chuck Madenjian (cmadenjian@usgs.gov), Bo Bunnell (dbunnell@usgs.gov), and Jeff Holuszko (jholuszko@usgs.gov). This fellow will assist with field sampling for native piscivores aboard a large research vessel, determine the diets of lake trout (*Salvelinus namaycush*) and burbot (*Lota lota*) in Lakes Huron and Michigan, enter the diet data into a computer database, analyze the diet data, and prepare a report on the findings. Laboratory training on processing of piscivore stomachs will be provided. This work will contribute toward larger projects on the rehabilitation of lake trout in Lakes Michigan and Huron, which are important components of the Deepwater Science program of the USGS Great Lakes Science Center (GLSC). This position is located at the USGS-GLSC in Ann Arbor, MI, but will involve some field work on Lake Huron or Lake Michigan.

4. Aquatic Ecologist, Harmful Algal Blooms- Mentors: Juli Dyble (Juli.Dyble@noaa.gov) and Donna Kashian (Donna.Kashian@noaa.gov). Human exposure to the algal toxin microcystin occurs through drinking water and recreational contact in waters experiencing *Microcystis* blooms, but dietary exposure may be another route not widely investigated. The main goal of this project is to address the potential for human exposure to algal toxins through fish by conducting laboratory experiments to investigate the kinetics of microcystin accumulation in yellow perch. The summer fellow will help conduct dosing experiments, be responsible for maintaining yellow perch in the lab, measure microcystin concentrations in fish tissue and relate this data to toxin concentrations in wild-caught fish. This position is located at NOAA-GLERL in Ann Arbor, Michigan.

5. Aquatic Ecologist, Larval Yellow Perch Ecology – Mentors: Doran Mason (NOAA-GLERL; Doran.Mason@noaa.gov) and Stuart Ludsin (The Ohio State University; ludsin.1@osu.edu). **Two (2)** positions are available to provide technical assistance on a field and laboratory-based research project that is exploring the effects of tributary-derived inputs of nutrients and sediments on larval yellow perch abundance, feeding, growth, condition (health), and recruitment to the fishery in western Lake Erie. The fellows primary responsibilities will be to collect field data during late April through July, including sampling for larval yellow perch, zooplankton (larval fish prey), and potential predators of larval yellow perch. When not in the field, the fellows will process larval fish samples in the laboratory. As part of this opportunity, fellows will 1) learn a variety of field-sampling techniques, 2) learn how to identify larval fish, and 3) help test hypotheses concerning the effects of tributary inputs on larval fish ecology. *For these two positions, some knowledge of aquatic ecology and experience conducting aquatic field research is desired, but not essential.* Both positions will be located at NOAA-GLERL in Ann Arbor, MI and will involve extended periods out in the field on Lake Erie.

6. Aquatic Ecotoxicologist, Harmful Algal Blooms- Mentors: Donna Kashian (Donna.Kashian@noaa.gov) and Juli Dyble (Juli.Dyble@noaa.gov). This fellow will contribute to a project investigating environmental factors associated with harmful algal blooms in Saginaw Bay, Michigan. This project will include field sample collection, sample analysis in laboratory focusing on measurements of trace metals, *Microcystis* cell densities, microcystin concentrations, and molecular characterization of cyanobacteria. The student will work both with scientists at GLERL and the Department of Environmental Health Sciences, at the University of Michigan. *Some knowledge of flow cytometry, environmental chemistry, environmental microbiology, and/or molecular biology is desired, but not essential.* This position is located at NOAA-GLERL in Ann Arbor, MI.

7. Aquatic Ecotoxicologist, Zooplankton- Mentor: Donna Kashian (dkashian@umich.edu). This fellow will be involved in a project examining long-term changes in daphnid responses to Great Lakes contaminants. The project involves resurrecting historic daphnid populations from sediment core samples collected from Lake Michigan for use in a series of carefully controlled bioassays aimed at determining the pace of evolutionary responses to contaminants. The fellow will be expected to spend the majority of the time in the laboratory but will also have the opportunity to do some field work on a research vessel. *The fellow will be working with contaminants such as DDT and Toxaphene and must be comfortable working with such compounds and be very conscientious and meticulous about their work. Some knowledge of aquatic ecology and analytical chemistry laboratory experience is desired, but not essential.* This position is located at NOAA-GLERL in Ann Arbor, MI.

8. Archaeological Laboratory Technician – Mentor: Jeff Gray (Jeff.Gray@noaa.gov)
The Thunder Bay National Marine Sanctuary is the primary repository for shipwreck artifacts owned by the State of Michigan. The majority of artifacts will be incorporated in proposed exhibits or placed in visible storage areas for public viewing. In preparation for display, the artifacts must be researched and documented through measurements and photographs, and information entered on forms and in a computerized database. Artifacts that require treatment must undergo conservation procedures in the laboratory. Under the supervision of trained staff, the student fellow will be involved in all phases of artifact processing. Student fellows may

assist Sanctuary staff in other duties as required including education and outreach, archaeological field investigations, and historic research. *Photographic and computer skills and attention to detail are recommended for this position.* **This position is located at the Thunder Bay National Marine Sanctuary in Alpena, Michigan.**

9. Communications Specialist, GLERL Outreach and Education- Mentor: Margaret Lansing (Margaret.Lansing@noaa.gov). This fellow will assist in supporting GLERL and the Center of Excellence for Great Lakes and Human Health (CEGLHH) communications and outreach activities including: 1) Developing and writing short summaries of GLERL & CEGLHH research activities for distribution to a diverse constituent audience; 2) Working with GLERL scientists and support staff in responding to constituent requests for GLERL products, services, and expertise; 3) Supporting and organizing GLERL outreach events such as laboratory open houses, tours, tabling events, seminar presentations, and related activities; 4) supporting development of web-based outreach products. *This fellow should have a strong background in Great Lakes or marine science and demonstrated training or experience in journalism and/or communications.* This position is located at NOAA-GLERL in Ann Arbor, MI.

10. Communications Specialist, Maritime education and outreach – Mentor: Jeff Gray (Jeff.Gray@noaa.gov). The Maritime Archaeologist/Educator fellow will assist in development and implementation of the Thunder Bay National Marine Sanctuary's (TBNMS) Great Lakes Maritime Heritage Center (GLMHC) education initiatives. Duties will include, but are not limited to: 1) Assist in developing and implementing GLMHC formal and informal education programs in conjunction with local and regional institutions, and the general public; 2) Work with TBNMS staff in responding to constituent requests for information, products, services, and expertise; 3) Support TBNMS outreach events, such as Thunder Bay Maritime Festival and other community events (may include holidays and weekends); 4) Develop and write summaries of TBNMS field projects and research activities for distribution to a diverse constituent audience; 5) Assist facilitation of distance learning and shipboard education programs; 6) Other duties as assigned. *Computer and writing skills are recommended for this position.* **This position is located at the Thunder Bay National Marine Sanctuary in Alpena, Michigan.**

11. Communications Specialist, NOAA Ecosystem Restoration- Mentors: Cynthia Sellinger (Cynthia.Sellinger@noaa.gov) and Lynne Chaimowitz (Lynne.Chaimowitz@noaa.gov). NOAA has many restoration activities in the Great Lakes. However, since the formation of the Great Lakes Regional Collaboration Team and after conducting stakeholder needs assessments it was determined that the Great Lakes needs a focal point and leader for coordinating Great Lakes ecosystem initiatives. The main goal of this project is to compile all ongoing projects within the five NOAA line offices, to provide points of contact to engage in the new formation of the Great Lakes Center for Ecosystem Restoration, and create outreach and educational materials for NOAA employees regarding the new center. The fellow will also assist in creating the infrastructure for a science-based approach to ecosystem restoration in the Great Lakes. This position is located at NOAA-GLERL in Ann Arbor, MI.

12. Communications Specialist, Policy and legislative affairs- Mentor: Marc Gaden (marc@glfc.org). This fellow will work with the Great Lakes Fishery Commission's Communications Officer and Legislative Liaison to formulate communication messages and

products (e.g., newsletters, annual reports, news releases, brochures, issue documents, etc.), in support of the commission's mandate. The commission communicates with the media, legislators, government agencies, the general public, and other audiences. *Strong writing skills are essential. Course work in policy and/or communications or related field is helpful.* This position is located at the Great Lakes Fishery Commission in Ann Arbor, MI.

13. Data Analyst, Climate models- Mentors: Carlo DeMarchi (Carlo.DeMarchi@noaa.gov) and Brent Lofgren (Brent.Lofgren@noaa.gov). This project focuses on statistical downscaling of precipitation. The fellow will assist in developing, running, and analyzing the results of a set of algorithms to create meteorological time series that are based on coarse-scale (40-250 km) models, but statistically match observations on finer-scale grids. Input models include regional climate models and general circulation models both in reanalysis mode and in multi-decadal climate outlook mode. *The candidate should have a good knowledge of statistics and possibly of geo-statistics. It is also desirable that the applicant have experience in using a Unix/Linux operating system, in graphical systems such as NCAR Graphics or IDL, and in using data in netCDF format.* This position is located at NOAA-GLERL in Ann Arbor, MI.

14. Data analyst, Coastal circulation- Mentor: David Schwab (David.Schwab@noaa.gov). This fellow will assist GLERL scientists in comparisons of current meter data, drifter trajectories, and aerial photography with far-field transport and dispersion of the Grand River plume. *Required skills include familiarity with IDL and Fortran computer programming languages, particularly as applied to hydrodynamic models of coastal circulation, and experience in analyzing geophysical data sets.* This position is located at NOAA-GLERL in Ann Arbor, MI.

15. Data analyst, Near-field dispersion- Mentor: David Schwab (David.Schwab@noaa.gov). This fellow will assist GLERL scientists in the analysis of the physical and water quality data from the upstream environment in the Grand River. The purpose will be to develop models describing the near-field dispersion of the Grand River around the outlet of the river into Lake Michigan. *Required skills include familiarity with Matlab and experience with near-field dispersion models, both in the laboratory and in the field.* This position is located at NOAA-GLERL in Ann Arbor, MI.

16. Engineer, Marine instrumentation- Mentor: Steve Ruberg (Steve.Ruberg@noaa.gov). This intern will assist the engineering staff in marine environmental instrumentation development, assist technical staff in scientific instrumentation preparation for field deployments and participate in field work aboard laboratory research vessels. Potential projects include deployment and maintenance of real-time coastal observation buoys and wireless observation network systems and the integration of towed underwater instrumentation. *Engineering and Computer Science undergraduate and graduate students will meet the requirements for this position.* This position is located at NOAA-GLERL in Ann Arbor, MI, with a start date of 12-May.

17. Fisheries Manager- Mentor: John Dettmers (jdettmers@glfc.org). This fellow will work with the Great Lakes Fishery Commission's fishery management program. Duties include review and improvement of an existing commercial fishing database, review and improvement of the fishery management component of the commission's website, and other projects related to

the management of the shared Great Lakes fishery. *Knowledge of fishery biology, management, and databases, as well as attention to detail, and interpersonal skills critical.* This position is located at the Great Lakes Fishery Commission in Ann Arbor, MI.

18. Hydrologic Modeler, Climate change- Mentor: Brent Lofgren (Brent.Lofgren@noaa.gov). This project focuses on energy budget-based modeling of evapotranspiration. The fellow will work on running and analyzing experimental versions of a hydrologic model of the Great Lakes drainage basin to evaluate its usefulness for assessing the impacts of climate change. *It is desirable that the applicant have experience in some combination of the following: Fortran, Unix scripting, and Microsoft Excel.* This position is located at NOAA-GLERL in Ann Arbor, MI.

19. Hydrologic Modeler, Water quality- Mentors: Carlo DeMarchi (Carlo.DeMarchi@noaa.gov) and Tom Croley (Tom.Croley@noaa.gov). This project focuses on the calibration and validation of the DLBRM, a watershed hydrology and water quality model under development at the NOAA Great Lakes Environmental Research Laboratory. This fellow will assist in calibrating and validating DLBRM simulation of temperature, sediments, and nutrients for watersheds in Michigan (Kalamazoo River, Grand River, and Muskegon River) and Ohio (Maumee River). *The candidate should have a good knowledge of water quality processes in rivers and of numerical modeling. Knowledge of a programming language, especially FORTRAN, is highly desirable.* This position is located at NOAA-GLERL in Ann Arbor, MI.

20. Physical Modeler,- Mentor: Brent Lofgren (Brent.Lofgren@noaa.gov). This fellow will assist in analyzing the output of numerical modeling simulations of the climate in the Great Lakes region using the Coupled Hydrosphere-Atmosphere Research Model (CHARM). *It is desirable that the applicant have experience in some combination of the following: Fortran, Unix scripting, GrADS, and NCAR Graphics.* This position is located at NOAA-GLERL in Ann Arbor, MI.

21. Physical Oceanographer- Mentor: Nathan Hawley (Nathan.Hawley@noaa.gov). This fellow will examine physical data (winds, water temperatures, and current velocities) collected in Lake Erie during the last several years to quantify mixing in the water column and its effects on oxygen concentrations and sediment transport in the lake. There may be an opportunity to do a limited amount of field work. *A background and/or interest in physical oceanography or geology is desirable. This fellow should have at least one year of calculus and have at least some background in statistics. Knowledge of standard time series techniques, including filtering, power spectra, and cross-correlation analysis, and experience using MATLAB will be extremely useful.* This position is located at NOAA-GLERL in Ann Arbor, Michigan.

22. Sea Lamprey Manager- Mentor: Mike Siefkes (msiefkes@glfc.org). This fellow will provide support for the Great Lakes Fishery Commission's sea lamprey control program. Duties include providing general administrative assistance to the program managers, project data entry and analysis support for one or more research projects. Possible assignments may include sea lamprey production modeling, St. Marys River decision analysis, treatment effectiveness studies, or sea lamprey barrier-GIS project studies. This position will potentially include some field experience working with assessment crews on data collection. Consideration will be given to

carrying out independent study related to course or thesis work. *A background in biology and quantitative and analytical skills are essential; an interest in natural resources or invasive species management is helpful.* This position is located at the Great Lakes Fishery Commission in Ann Arbor, MI.

23. Wetland Ecologist/GIS Specialist, Coastal Wetland Habitat Rehabilitation – Mentor:

Kurt Kowalski (kkowalski@usgs.gov). This fellow will interpret color-infrared aerial photographs and use geographic information systems (GIS) to create vegetation maps required for ongoing research studies focused on developing new strategies for coastal wetland habitat rehabilitation in the Great Lakes. A mirror stereoscope will be used to delineate boundaries of major wetland plant assemblages in a wetland complex, and those lines will be digitized, edited, and georeferenced using ESRI's ArcGIS software. The fellow will have the opportunity to visit the study site to ground truth the air photos and participate in other field-based activities. Depending on the interests and skills of the fellow, additional GIS or field-based activities (e.g., plant sampling, hydrologic data collection) may be available. *This position requires academic or practical experience interpreting air photos and manipulating vector data and geodatabases in ArcMap. Additional experience conducting aquatic field research is desired but not essential.* This position is located at the USGS Great Lakes Science Center in Ann Arbor, MI and may involve day trips to coastal wetlands in western Lake Erie.