

Restoration news bites:

- ◆ Trainee **Michael Gallisdorfer** published a paper with several co-authors in the *Journal of Hydro-environment Research* titled “Physical-scale model designs for engineered log jams in rivers.”
- ◆ Trainees **Michael Habberfield** & **Stacey Blersch** had a paper titled “Rapid geomorphic and habitat stream assessment techniques inform restoration differently based on levels of stream disturbance” accepted for publication in *Journal of the American Water Resources Association*.
- ◆ **Dr. Alan Rabideau**, ERIE Program Director, has been appointed as the Research and Economic Development Leadership Fellow for UB’s newly launched [RENEW \(Research & Education in eNergy, Environment and Water\) Institute](#).
- ◆ Trainees **Jonathan Pleban** & **Jonathan Malzone** recently presented on their dissertation research at the American Geophysical Union Meeting.
- ◆ Trainee **Stacia Wegst-Uhrich** presented her research “Overcoming challenges associated with the analysis of Cadmium uptake in *Chara australis*” at the Society of Environmental Toxicology & Chemistry North American Conference.
- ◆ Trainee **Joshua Wallace** was awarded 3rd place for his poster presentation at the American Chemical Society’s National Meeting.

ERIE IGERT Trainee Research Spotlight: An Integrated Approach to Restoration of the Eastern Hellbender



A juvenile hellbender captured during a survey last summer – a rare find! Photo: Robin Foster

This article comes from Robin Foster, ERIE IGERT Trainee and Ph.D. Candidate in the Evolution, Ecology, & Behavior Program.

The hellbender (*Cryptobranchus alleganiensis*) is a unique species of North American salamander that has been disappearing at an alarming rate throughout much of its range. ERIE IGERT Trainee Robin Foster has spent the past two summers literally “leaving no stone unturned” as she has searched the rivers and streams of the Upper Susquehanna watershed for this elusive creature. Hellbenders spend their lives beneath large rocks on the stream bottom, making them a difficult animal to observe.

Restoration efforts for this species are underway in several states, including New York. Egg masses have been collected from the wild and reared in captivity. The animals are released back to their streams of origin when they are large enough to presumably avoid predation. However, there is a considerable lack of understanding regarding both the causes of hellbender decline and the historical abundance of hellbender populations. Without this information, it is difficult to set goals for restoration efforts, and to assess their ultimate effectiveness.

Foster’s research aims to fill in these gaps through a unique approach combining traditional field methods with historical ecology, species distribution modeling, and environmental DNA analysis. Last summer, she coordinated surveys of 150 miles of stream habitat in the Susquehanna watershed to assess areas that were identified using a suitability model. Any potential hellbender sites located will be searched by hand, a process that began last summer. In addition, water samples will be collected and analyzed for the presence of hellbender DNA. These efforts will help to clarify the current distribution and abundance of hellbenders in New York State, and to determine the extent of their decline as compared to historical accounts.



ERIE IGERT trainee Robin Foster holds a hellbender that has just been tagged. Photo: Emily Boivin

Donations to Assist in ERIE Student Research Needed

Please consider donating to the **Ecosystem Restoration Scholarship Fund**. Your tax-deductible gift will support summer student research in ecosystem restoration in the Great Lakes & western New York Region.

Your support is greatly appreciated. Donations are accepted [online](#). Thank you!



Participants gain field experience in quantifying stream flow with UB's Dr. Chris Lowry. Photos: Douglas Lambert



Learning about invasive species with Paul Fuhrmann (Ecology & Environment) & Helen Domske (NY Sea Grant).

Environmental Restoration Summer Workshops

This summer we have an expanded selection of summer workshops that cover restoration topics in stream, groundwater, and riparian systems. Workshop topics for 2014 include: *stream restoration design; pumping test design & analysis; stream restoration assessment & monitoring; surface water & groundwater interactions; aquatic & terrestrial invasive species management; assessment & optimal design of groundwater restoration systems; groundwater model development with the Analytic Element Method; riparian area ecology, restoration, & management; assessment tools to evaluate stream restoration measures; bioengineering & redirective stream stabilization; and streambank stability analysis & modeling.* The workshops combine classroom, field, and lab experiences and are taught by scientists and practitioners from western New York and around the country.

We will continue to offer the professional certificate option. A professional **Certificate in Environmental Restoration** will be awarded to participants who complete 15 days of summer workshops. The Certificate does not provide academic credit or transcript notation, but is a professional program tracked by continuing education credits (CEUs). Additionally, continuing education credits for Professional Engineers (PE) will be available.

Registration is open and we ask that you please register as early as possible to help avoid workshop cancellations. All offerings are dependent upon sufficient enrollment.

For more information and to register, please visit our [workshop webpage](#).

ERIE IGERT Trainee Internship Spotlight: Effects of Common Herbicides on Devil Crayfish

This article comes from Joshua Wallace, ERIE IGERT Trainee and Ph.D. Candidate in the Chemistry Department.

ERIE IGERT Trainee Joshua Wallace has been working with Betsy Trometer, the senior fisheries biologist at the Basom, NY office of the U.S. Fish and Wildlife Service (USFWS), to complete a field assessment of the effect of common herbicides on *C. diogenes* (devil crayfish). The devil crayfish is a state-listed species with only two documented populations in Western New York. Historic and current herbicide use surrounding the population found on the Air Force Reserve Station near Niagara Falls, NY has included 2,4-D and Prowl. Both substances have been used in proximity to the burrows constructed by the crayfish and have been shown to be mutagenic to many organisms.



Sampling field site. Photo: Joshua Wallace



Devil crayfish burrow at research site. Photo: Joshua Wallace

Josh, along with the USFWS, has been working to assess the presence of 2,4-D, Prowl, and similar compounds in the burrows and the surrounding water and soil using mass spectrometry. This work has been on-going since May 2012 and 2,4-D and several similar compounds, including its metabolites 2,4-dichlorophenol, have been detected in the burrows, water, and soil while Prowl was determined to not localize in the burrow or aquatic habitats. Analysis and extraction methods continue to be developed for a suite of legacy and novel herbicides.

We hope you enjoyed this issue of the ERIE Newsletter. Please share with others who may be interested. If you have any suggestions, comments, or concerns, please contact Amy Bartlett, Program Coordinator, at amyb@buffalo.edu.

You can find more ERIE news and information at www.erie.buffalo.edu