

## **SCOPE OF WORK**

### **Freshwater Mussel Survey in Oldham Pond (Hanson and Pembroke, MA)**

Biodrawversity LLC proposes a freshwater mussel survey in Oldham Pond (Hanson and Pembroke, MA) to document the status, distribution and habitat of the tidewater mucket (*Leptodea ochracea*) and eastern pondmussel (*Ligumia nasuta*). Both are Species of Special Concern in Massachusetts. The Massachusetts Natural Heritage and Endangered Species Program is requiring a freshwater mussel survey to assist with environmental review of proposed invasive species management and algal control by chemical means.

#### **Methods**

- Biodrawversity LLC will attain a Scientific Collection Permit from the Massachusetts Natural Heritage and Endangered Species Program.
- Mussels will be surveyed by snorkeling in shallow water and SCUBA diving in deep water.
- If water clarity permits it, surveyors will conduct 30-minute timed searches will be conducted within 5x5 meter plots, following methods of Nedeau *et al.* (2008). Paired plots—including a deep water (5-15 feet) and shallow water (2-4 feet) plot—will be established at six locations around the perimeter of the pond. Additionally, two plots will be established toward the center of the pond. In total, 14 plots will be surveyed.
- If water clarity does not permit careful searching within confined plots, then unconfined 30-minute searches will be conducted in a similar manner as described above. Data will be treated as a catch-per-unit-effort (CPUE) without consideration of area. Conditions that may force the use of unconfined qualitative searches include high turbidity, silty substrate that is easily resuspended, and dense aquatic vegetation.
- The following information will be recorded for each plot or timed search:
  - Number, length, and shell condition of each eastern pondmussel and tidewater mucket
  - Presence and relative abundance of all other mussel species
  - Depth, substrate, slope, and aquatic plant diversity and abundance
  - Location of the centerpoint of each plot, or approximate search area, using GPS
- In addition to the plots or timed searches, surveyors will check the shoreline for shell middens and note their locations, record the length of any eastern pondmussels or tidewater muckets in the middens.
- Spatial data will be overlaid onto 1:5000 digital orthophotos to depict pond-wide patterns in mussel diversity and abundance. Using field notes, photographs, and orthophotos, the condition of the shoreline and shallow areas will be described.
- The report will include an abstract, introduction, study site, results, discussion, photographs, and maps. Maps will show the lake-wide distribution and densities of freshwater mussels, with emphasis on the eastern pondmussel and tidewater mucket.
- We propose two days of fieldwork.

#### **Timeline**

Fieldwork will be completed sometime during August 2009, and a report will be submitted within two weeks of the fieldwork.

#### **Cost**

The cost for this project is \$4,800.00. Biodrawversity anticipates two days of fieldwork, necessary equipment and travel expenses, and time to prepare a report.

#### **Literature**

Nedeau, E.J., P. Low, and S. Johnson. 2008. *Status, Habitat, and Conservation of Freshwater Mussels in Nine Coastal Plain Ponds of Southeastern Massachusetts*. Report submitted to the Massachusetts Natural Heritage and Endangered Species Program.