

# **Report for 2004DE45B: Undergraduate Internship: Biological Control of Purple Loosestrife at Flat Pond: Reclaiming a Freshwater Pond near the C&D Canal**

- Water Resources Research Institute Reports:
  - Hough-Goldstein, Judith, and Jason Graham, 2005, Biological Control of Purple Loosestrife at Flat Pond: Reclaiming a Freshwater Pond near the C&D Canal, Delaware Water Resources Center, University of Delaware, Newark, Delaware, 9 Pages.
- Conference Proceedings:
  - Hough-Goldstein, Judith, 2004, Biological Control of Invasive Weeds, in Joint Meeting of the Entomological Society of Pennsylvania and the American Entomological Society, Oct. 20, 2004, University of Delaware.
- Other Publications:
  - Boyd, Amy, ed., Fall 2004, Delaware Water Resources Center WATER NEWS Vol. 5 Issue 1 "DWRC 2004 Internship Update: Beneficial Insect Control For Wetland Restoration", <http://ag.udel.edu/dwrc/newsletters/Fall2004-P4-8.pdf>, p. 7.
  - Baldwin, Susan Morse, ed., 2005, University of Delaware Messenger Vol. 13 No. 2, "Connections to the Colleges: Chewing through a problem"
  - Baldwin, Susan Morse, ed., Dec. 2004, University of Delaware College of Agriculture and Natural Resources Horizons "Loosestrife Menace to Local Pond Combatted With Bio-control", <http://ag.udel.edu/Horizons/Dec04/LoosestrifeMenace.htm>.

Report Follows

## Undergraduate Internship Project #5 of 9 for FY04

In FY04, the *Delaware Water Resources Center and University of Delaware College of Agriculture and Natural Resources* co-sponsored two internships together, both advised by Dr. Judith Hough-Goldstein of the *UD* Department of Entomology and Wildlife Ecology, dealing with purple loosestrife, an invasive plant clogging Delaware freshwater ponds.

Jason Graham is studying the “Biological Control of Purple Loosestrife at Flat Pond: Reclaiming a Freshwater Pond near the C&D Canal.”

“I learned this is the type of work I would like to do after graduate school. It was an exciting opportunity to use fieldwork and scientific research to make a positive difference in the control of an invasive species.” -- Jason Graham

### Abstract:

Within the past several decades purple loosestrife (*Lythrum salicaria*), have invaded and degraded freshwater habitats across North America. These plants are establishing a strong presence along the Chesapeake and Delaware Canal bordering Delaware and Maryland.

A nearby pond (“Flat Pond”) was infested with purple loosestrife, and determined to be beyond labor intensive means of control. As a perennial plant which produces thousands of seeds, efforts to control purple loosestrife by chemical or mechanical means have proven ineffective in the past.

The Del Bay Retriever Club with its partner the University of Delaware and the support of the Delaware Division of Fish and Wildlife and the U.S. Corps of Engineers sought to reduce, if not eliminate, the presence of purple loosestrife at Flat Pond by use of two species of *Galerucella*, *pusilla* and *calmieri* –which are purple loosestrife specific herbivorous beetles.

A similar study was conducted by Jamie Poole, another student intern for the Delaware Water Resources Center at Barrow’s Run, part of Ashland Nature Center during the same time frame.

Forty-three ten-foot PVC pipe poles  $\frac{3}{4}$  inch diameter and 4 PVC connectors  $\frac{3}{4}$  inch diameter were purchased. The poles were cut to designate twenty square-meter quadrats at Flat Pond and to create two square meter quadrat markers to be placed over the marking poles for each quadrat. The final average height of the designators (two per each quadrat in diagonal corners) was approximately 6.5 feet above the soil.

On June 7<sup>th</sup> 2004, At Flat Pond, five quadrats were chosen on the west side of the pond for release while five quadrats were chosen on the east side of the pond for a control site. The monitoring sessions were conducted in the morning (between 9:00 AM and 11:30 AM) once a week throughout the summer. The true release point was at Quadrat 1 on the western side of Flat Pond, in the center of Quadrats 2 and 4. Each quadrat was placed ten meters away from each other with the furthest “release-side” quadrats 20 meters away from Quadrat 1.

5,000 beetles were received from the Phillip Alampi Beneficial Insect Laboratory, New Jersey Department of Agriculture. On June 10<sup>th</sup>, 2004 under the direction of Dr. Judith-Hough Goldstein, of the Entomology and Wildlife Ecology

Department at University of Delaware, the beetles were released at Flat Pond. The site was monitored for signs of damage and to count the beetles in their various life stages.

The methods followed for monitoring were taken from Bernd Blossey's Purple Loosestrife Monitoring Protocol found at: [http:// www.invasiveplants.net](http://www.invasiveplants.net). Form 2: Purple Loosestrife Biocontrol Monitoring (Spring) was taken from the above website and used for the Flat Pond site. At the end of the Summer, an additional survey was conducted using Form 3: Purple Loosestrife Biocontrol Monitoring (Fall) found on the same website.