



June 2002 Green Pond Oil Spill Site Monitoring Program News

Prepared by The Eco-Strategies Group
For U.S.EPA Region II Oil Spill Removal Program

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Eco-Strategies Wetlands Experts visit Green Pond

In early June, Dr. Michael Horne and Mr. Craig Bitler visited the Green Pond Oil Spill Site to assess the overall ecological health of the site and make recommendations for further actions. Dr. Horne is a nationally recognized aquatic toxicologist with an expertise on the impact of toxic compounds on wetland species. Mr. Bitler is a nationally recognized expert on control agents for Purple Loosestrife (*Lythrum salicaria*), an invasive species that is threatening so many of the fresh-water wetlands in the northern regions of the US. Mr. Bitler has been involved in the introduction of the *Galerucella* beetles, a herbaceous predator to Purple Loosestrife in its natural habitat,



Green Pond Oil Spill Site October 2001

in many of the Federal waterfowl refuge and management areas in the Northeast and Northwest. At Green Pond Mr. Bitler examined the area where the *Galerucella* beetles had been introduced in June 2001 and noted the herbivory that had already occurred by the adults and noted that the beetles had infested plants outside the original introduction area. This is a very positive indication that the beetles are well established at Green Pond and may be effective on controlling further establishment of Purple Loosestrife.

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Green Pond Site listed on the Cornell registry

Dr. Bernd Blossey of Cornell University is responsible for all the research and background work necessary for introducing the biological control agents for Purple Loosestrife control in North America.

Dr. Blossey now maintains a registry of sites across the US and Canada

where the biological control agents, primarily the *Galerucella* beetles have been introduced against the invasive Purple Loosestrife.

To be on the register requires adhering to sampling and monitoring protocols and submitting the data.

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Special points of interest: Upcoming Issues

- *The Federal Invasive Species Presidential Executive Order*
- *The pre-Revolutionary War graveyard*
- *Status of Oil Recovery Operations at the Green Pond Oil Spill Site*
- *The Pequannock River Coalition*

Vandal Suspects Identified

In the May issue of the Green Pond Oil Spill Site Monitoring Newsletter, we reported that many of wetland shrubs planted in April 1998 had been cut and removed over the winter. We ruled out beavers because the stumps did not have the point so classic for beavers. We had attributed the vandalism to human activity until the Dr. Horne and Mr. Bitler declared that the stumps or

"acutes" were definitely the work of beavers. The experts pointed out that beavers typically gnaw shrubs and smaller trees from the side and thus create a oblique cut not the classic point .

Fortunately,



This unsavory looking creature is considered a suspect for the vandalism at the Green Pond Site

most of the stumps have spouted vigorously and should regain the original stature and biomass within a few seasons therefore replacing or replanting is not considered necessary.

The exact whereabouts of these toothy miscreants has yet to be determined.

Summer Serpent Frequents Green Pond Site: Up Front and Personal by R.J.Nadeau

Every visit, something new and unique catches my eye at the Green Pond site. On the last two visits, I have noticed a silent serpent, a Pilot Black Snake (*Elaphe obsoleta obsoleta*), on the marsh and in front of the Pump Control Station. This snake is the largest snake (well over 6 ft in length) I have seen outside of captivity and it can hardly go unnoticed. My mild-mannered friend exhibited little

concern when I crouched down and inched close enough to get the close-up shot below. Pilot Black Snakes consume a variety of rodents, birds and serve as an



This is the largest snake (well over 6 ft in length) I have ever seen outside of captivity

indicator of the capacity of a healthy ecosystem that can support predators of this size. The Green Pond site has abundant small mammal populations that live under the vegetative mat and feed on the abundant seed bank remaining from the previous season's production.

Lightning Temporarily Shuts Down Oil Recovery Operations

During the evening of June 26th, a squall line with a number of thunderstorm cells passed through northern New Jersey and caused power outages throughout the region. A lightning strike associated with one of these cells struck the Green

Pond site and knocked out the panels controlling the groundwater and oil recovery pumps.

The control panels were removed the following day and shipped back to the manufacturer in Colorado for repairs.

Groundwater pumping and oil recovery operations are expected to resume by the middle of July when the repaired control panels are returned.

State Entomologist Visits Green Pond Oil Spill Site

On June 18th, State Entomologist Tom Scudder and his assistant visited the Green Pond Oil Spill site to check on the status of the 3000 *Galerella* beetles that he introduced to the site last year to serve as a biological control agent on the invasive plant, Purple Loosestrife (*Lythrum salicaria*). Here you see State Entomologist Tom Scudder pointing out *Galerella* larvae feeding on Purple Loose-

strife terminal shoots to Dr. Royal J. Nadeau. The larvae have voracious appetites for the fast growing soft tissues of the terminal shoots which ulti-

terminal shoots which ultimately would become the flowering structures of the plant without the larvae.



Gallercella beetle larvae feeding on Purple Loosestrife leaves

Experts Visit Green Pond Oil Spill Site continued....

Upon completion of their assessments, Dr. Horne and Mr. Bitler each filed reports which include recommendations summarized below:

Dr. Michael Horne: Upland portion of site is dotted with highly invasive garlic mustard (*Alliaria petiole*) and Japanese barberry (*Berberis thunbergii*). Biological control methods are being developed for garlic mustard and could possibly be employed at

the Green Pond Site. However, mechanical removal and spraying is also highly effective and might be considered for effective control.

Beaver damage should be monitored with future control options considered.

Craig Bitler: Some beetles, leaf damage from feeding and deposited eggs were observed. In addition to established plants, many new plants have germi-

nated from seed. Once available another 3000 beetles should be released on site to help towards gaining more control of the Loosestrife population. Releasing some beetles on plants one-half mile upstream and downstream would help in minimizing the potential for Loosestrife seed contribution from off site.

Green Pond Soils Sampled for Oil Contamination

A critical element of the Green Pond Oil Spill Site Monitoring Program is sampling the wetland soils for residual petroleum contamination from the original and subsequent "spooage" events that have occurred.

Surface soils are collected from fifteen established sampling

points in the spring and autumn to document changes in the oil concentration and characterization.

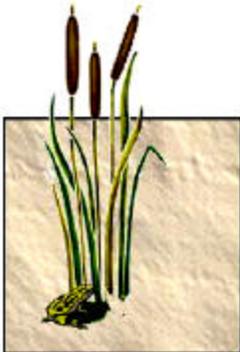
The sampling was performed by Chris Gussman and George Molnar from the Environmental Response Team's REAC contract.

John Syslo, a REAC chemist specializing in petroleum analysis, will analyze the samples to determine the concentration and possible changes in the composition of petroleum compounds from the weathering process taking place in the marsh.

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History of the Green Pond Oil Spill Site

From circa 1880-1920, a crude oil pumping station occupied the site; part of the first major pipeline in the United States that connected the oil fields of Western N YIPA to refineries in Bayonne, NJ. At each pump station, oil flowed into 35,000 gal tanks and then was pumped into the next downstream portion of the pipeline.

Over the course of operation, oil leaked and remained in the subsurface formations. In 1996, oil was observed in the nearby Pequannock River which flows into the Charlotteburg Reservoir, a water supply for the City of Newark, NJ located in the Highlands Region of Northwest New Jersey.

The Oil Spill Section of the EPA's Region II Emergency Removal Program was notified and thereby initiated a surface cleanup followed by a still on-going subsurface oil recovery /removal operations

Green Pond Site listedcontinued

The guidelines were developed to help monitor the progress of the biological weed control program against purple loosestrife (*Lythrum salicaria*). The standardization of the data collection will facilitate comparison of data obtained by different investigators/land managers in different regions across North America. The final goal is establish a database where results from different regions can be collected, stored and made available through Cornell University Department of Natural Resources

Web site (www.dnr.cornelledu/bcontrol/weeds).

Some of the most critical parameters requested for data collection include (1) Site and Vegetation Map (2) Insect release history (3) Biological Control Agent Abundance (4) Plant Performance. During the Fall survey, additional information is requested in addition to Insect Abundance and Plant Performance. These include Inflorescence Measurements (flowering structures), Cover of other plant species and present and other

herbivores and predators.

All these data can be used to determine the effectiveness of biological control agents on purple loosestrife over a long period of time and the effect on the ecology of the impacted areas e.g. recovery of native wetland plant communities and associated ecological services.