

Hardy Lake  
Scott and Jefferson Counties  
Submersed Aquatic Plant Survey

Date of Survey: August 22 and 26, 2008

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Survey Objective: Measure occurrence and abundance of submersed aquatic plants in Hardy Lake (a 741-acre impoundment) under work plan F10D603.

Methods: On August 22 and 26, submersed aquatic vegetation was sampled using Tier II guidelines developed by the Indiana Department of Natural Resources (2007). A GARMIN GPSmap 76 was used to record the location of the 90 aquatic vegetation sample sites. The 2008 sampling sites were located in the same general area as the 2007 sites.

Summary: The Secchi disk reading was 3.3 ft. Unexpectedly, submersed vegetation was nearly absent (Table 1). *Nitella* was collected at one site at 1.5 ft. Filamentous algae were also collected. Floating fragments of Eurasian watermilfoil (an exotic species) were observed, but Eurasian watermilfoil was not collected.

These results are very different than those observed in 2007, when submersed vegetation was found to a maximum depth of 15.0 ft (Lehman and Kowalik 2008). Eurasian watermilfoil dominated the 2007 plant community, was collected at 59% of the sites, and was dense where collected. Coontail was also found frequently throughout the lake in 2007.

The lake-wide absence of submersed vegetation is not due to chemical treatment which has been limited to a few acres near boat ramps and the handicapped fishing pier. Rather, it appears that enough triploid grass carp have been stocked to finally impact submersed vegetation (Table 2).

Due to dry weather, Hardy Lake was 4 to 5 ft below normal pool in fall of 2007. Lower water levels exacerbated the situation by increasing the concentration of grass carp on submersed plants. So, at this time, the most likely explanation for the quick and dramatic disappearance of

submersed vegetation is the combination of the number of grass carp present and feeding on a reduced population of submersed plants due to the dry weather.

Triploid grass carp stockings at Hardy Lake are now on hold. Submersed aquatic vegetation will be surveyed by Division of Fish and Wildlife in 2009 to monitor changes in the submersed plant community.

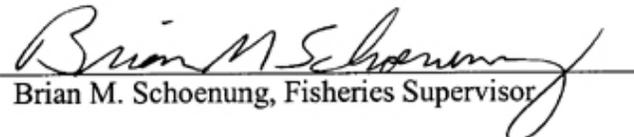
Literature Cited:

Indiana Department of Natural Resources. 2007. Tier II Aquatic Vegetation Survey Protocol. Indianapolis, Indiana. 31 pp.

Lehman, L. L. and C. R. Kowalik. 2008. Hardy Lake Fish Management Report, 2007. Fisheries Section, Indiana Department of Natural Resources, Indianapolis, Indiana. 37 pp.

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Table 1. Occurrence and abundance of submersed aquatic plants in Hardy Lake, 2008.

|                             |                   |                                 |      |                                |      |
|-----------------------------|-------------------|---------------------------------|------|--------------------------------|------|
| <b>Lake:</b>                | Hardy Lake        | <b>Secchi (ft):</b>             | 3.3* | <b>SE Mean Species / Site:</b> | 0.01 |
| <b>Date:</b>                | 8/22/08 & 8/26/08 | <b>Littoral Sites w/Plants:</b> | 1    | <b>Mean Natives / Site:</b>    | 0.01 |
| <b>Littoral Depth (ft):</b> | 1.5               | <b>Number of Species:</b>       | 1    | <b>SE Mean Natives / Site:</b> | 0.01 |
| <b>Littoral Sites:</b>      | 8                 | <b>Max. Species / Site:</b>     | 1    | <b>Species Diversity:</b>      | 0.00 |
| <b>Total Sites:</b>         | 90                | <b>Mean Species / Site:</b>     | 0.01 | <b>Native Diversity:</b>       | 0.00 |

| Species           | Frequency of Occurrence | Score Frequency |     |     |     | Dominance |
|-------------------|-------------------------|-----------------|-----|-----|-----|-----------|
|                   |                         | 0               | 1   | 3   | 5   |           |
| Nitella           | 1.1                     | 98.9            | 1.1 | 0.0 | 0.0 | 0.2       |
| Filamentous algae | 2.2                     |                 |     |     |     |           |

Other species noted:

SUBMERSED: Eurasian watermilfoil\*\*

ROOTED FLOATING: American lotus, Water shield

EMERGENT: American water willow, Arrowhead (*Sagittaria* sp.) Broadleaf cattail, Bulrush sp., Buttonbush, Purple loosestrife\*\*, Spikerush (*Eleocharis* sp.), Squarestem spikerush

\*Secchi on sunny side of boat was 4.2 ft

\*\*Exotic plant

Table 2. Triploid grass carp stocking record by Division of State Parks and Reservoirs for Hardy Lake.

| Year stocked | Number       | Total Length Range (in) | Mean Total Length (in) |
|--------------|--------------|-------------------------|------------------------|
| 1996         | 1,150        | 8 to 11                 | -                      |
| 2000         | 600          | 8 to 12                 | 10                     |
| 2001         | 700          | 8 to 12                 | -                      |
| 2002         | 1,030        | 8 to 12                 | -                      |
| 2004         | 1,000        | ---                     | 10                     |
| 2005         | 1,000        | ---                     | 10                     |
| 2006         | 1,000        | 8 to 12                 | -                      |
| 2007         | 1,000        | 8 to 11                 | -                      |
| 2008         | <u>1,000</u> | 8 to 12                 | -                      |
| Total        | 8,482        |                         |                        |