

# Commonwealth Biomonitoring, Inc.

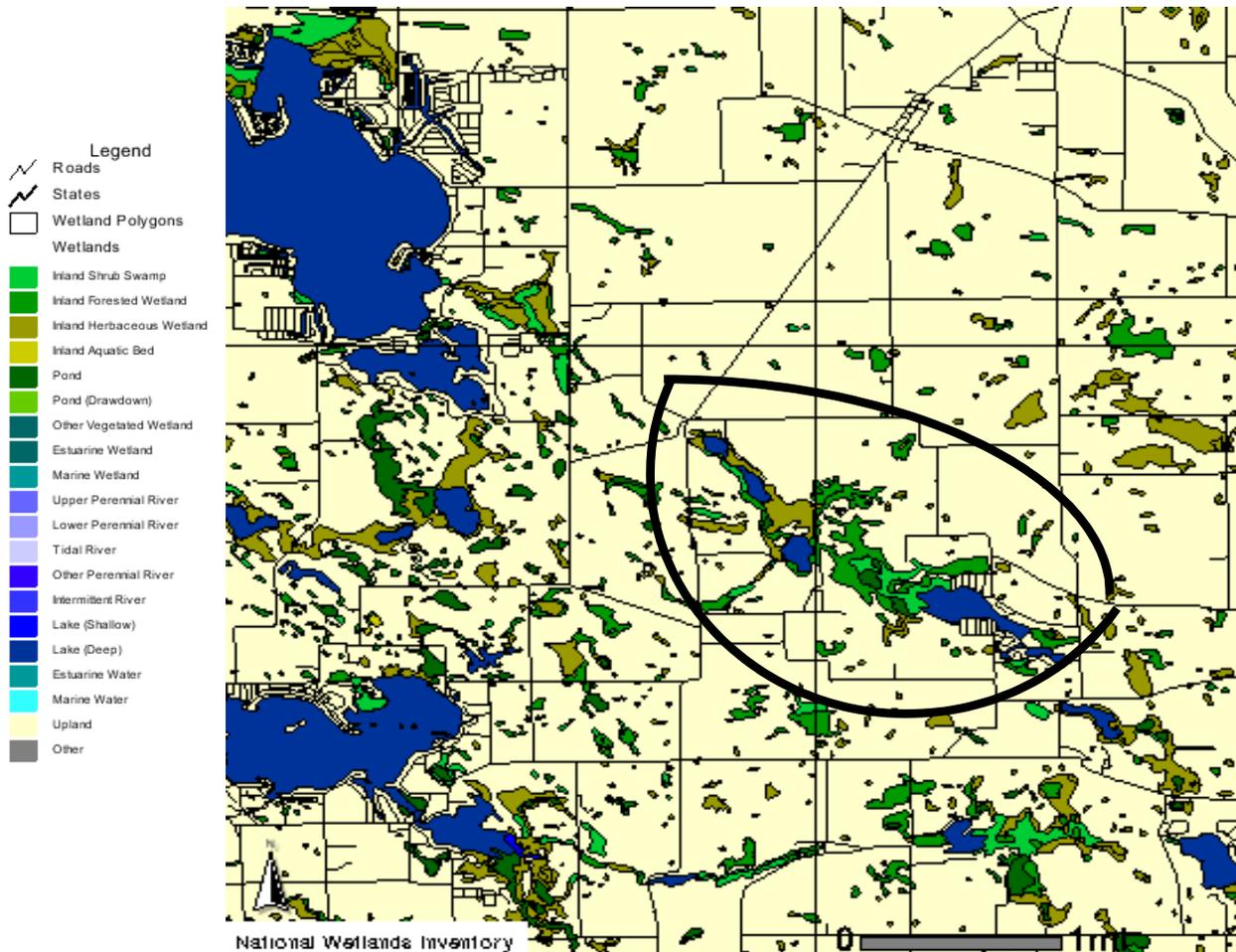
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## Biological Survey Turkey Creek Watershed Kosciusko County, Indiana

We conducted a biological survey of fish, mussels, and aquatic plants in the Turkey Creek watershed upstream from Lake Wawasee on September 18, 2003. Notes on mussel and plant specimens present were made from Knapp Lake to the inlet to Lake Wawasee. Fish collections were made by electrofishing the swifter channel areas between Hindman and Gordy Lakes.

### General Observations

The entire area surrounding the channel of Turkey Creek between Knapp Lake and Indian Village Lake consists of wetlands. Many of these are high quality forested wetlands (a category considered to have the highest ecological value by wetland scientists). A "National Wetland Inventory" map of this area is shown below:



The existence of a continuous band of wetlands along the stream channel between Knapp and Indian Village Lakes will make artificial dredging nearly impossible. This is because there will be nowhere nearby to place the dredge spoils without filling a wetland. Wetland filling is prohibited by state and federal regulations unless a permit is obtained and mitigation is planned.

### Habitat Evaluation

Ohio EPA uses a “quantitative habitat evaluation index” to evaluate aquatic habitat. The potential habitat scores developed in the index range from 0 (no value) to 100 (highest habitat value). We examined aquatic habitat in three channels of Turkey Creek between Knapp Lake and Indian Village Lake. Site 1 was between Moss Lake and Hindman Lakes. Site 2 was between Hindman and Gordy Lakes. Site 3 was between Rider and Duely Lakes. Results are shown below.

	<b>Site Number</b>		
	<b>1</b>	<b>2</b>	<b>3</b>
	—	—	—
<b>SUBSTRATE</b>	<b>6</b>	<b>10</b>	<b>10</b>
<b>COVER</b>	<b>9</b>	<b>10</b>	<b>9</b>
<b>CHANNEL</b>	<b>10</b>	<b>12</b>	<b>10</b>
<b>RIPARIAN</b>	<b>15</b>	<b>15</b>	<b>15</b>
<b>POOL/RIFFLE</b>	<b>9</b>	<b>12</b>	<b>10</b>
<b>GRADIENT</b>	<b>4</b>	<b>4</b>	<b>4</b>
<b>DRAINAGE AREA</b>	<b>6</b>	<b>6</b>	<b>6</b>
<b>TOTAL</b>	<b>59</b>	<b>69</b>	<b>64</b>

Aquatic habitat in the Turkey Creek channels falls in the “good” range, especially at site 2 between Hindman and Gordy Lakes. Best features are the natural channel characteristics, a wide and diverse riparian zone, and good cover for fish. Riffles are lacking in all but a few areas and the substrate is mainly sand. Mussels and macroinvertebrate communities will not be very diverse where these substrate characteristics predominate.

## List of Aquatic Species Observed

### I. Plants

Yellow water lily *Nuphar lutea*  
Arrowhead *Sagittaria latifolia*  
Pickerel weed *Pontederia cordata*  
Eurasian watermilfoil *Myriophyllum spicatum*  
Smartweed *Polygonum amphibum*  
Floating leaf pondweed *Potamogeton natans*  
Curly leaf pondweed *P. crispus*  
Sago pondweed *P. pectinatus*  
Flatstem pondweed *P. zosteriformis*  
Coontail *Ceratophyllum demersum*  
Cattail *Typha latifolia*  
Eelgrass *Vallisneria americana*  
American waterwillow *Dianthera americana*  
Red osier dogwood *Cornus stolonifera*  
Swamp rose *Rosa palustris*  
Marsh milkweed *Aselepias incarnata*  
Rice cut-grass *Leersia oryzoides*

### II. Fish - collected by D.C. Electrofishing in Turkey Creek channels

Bluegill <i>Lepomis macrochirus</i>	93
Longear sunfish <i>L. megalotis</i>	2
Redear sunfish <i>L. microlophus</i>	10
Warmouth <i>L. gulosus</i>	2
Hybrid sunfish ( <i>L. megalotis</i> X <i>L. cyanellus</i> )	1
Smallmouth bass <i>Micropterus dolomieu</i>	25
Yellow bullhead <i>Ameiurus natalis</i>	2
Tadpole madtom <i>Noturus gyrinus</i>	1
Channel catfish <i>Ictalurus punctatus</i>	1
Lake chubsucker <i>Erimyzon sucetta</i>	24
Iowa darter <i>Etheostoma exile</i>	3



III. Unionid Mussels - collected by diving or probing channel substrates

*Lampsilis siliquoidea* - fat mucket

*Utterbackia imbecillis* - fragile papershell

*Pyganondon grandis* - giant floater



## Indiana Department of Natural Resources - Heritage Trust Database

Information on critical habitats; unique natural areas; and rare, endangered, and threatened species was obtained from the IDNR Division of Nature Preserves. This group maintains a database of rare plants and animals throughout the state, as part of its Natural Heritage Trust program. A summary of information pertaining to aquatic species is shown below:

- a. Species of Concern in the Lake Wawasee/Syracuse Lake Area
- (1) Highest Level of Concern  
State Endangered Species Present (in danger of extinction)
- |                        |                                  |
|------------------------|----------------------------------|
| Blanding's turtle      | <u>Emydoidea blandingii</u>      |
| Oakes pondweed         | <u>Potamogeton oakesianus</u>    |
| Straight-leaf pondweed | <u>Potamogeton strictifolius</u> |
- (2) Secondary Level of Concern  
State Threatened Species Present (likely to become endangered)
- |                       |                                   |
|-----------------------|-----------------------------------|
| Spotted turtle        | <u>Clemmys guttata</u>            |
| Whorled water milfoil | <u>Myriophyllum verticillatum</u> |
| Redhead grass         | <u>Potamogeton richardsonii</u>   |
- (3) Third Level of Concern  
Rare or "Watch List" Species (may become "threatened")
- |                  |                              |
|------------------|------------------------------|
| Mudpuppy         | <u>Necturus maculosus</u>    |
| Blacknose shiner | <u>Notropis heterolepis</u>  |
| Water bulrush    | <u>Scirpus subterminalis</u> |
- b. Additional Species of Concern in the Upper Turkey Creek Watershed
- (1) Highest Level of Concern  
State Endangered Species Present (in danger of extinction)
- |                     |                               |
|---------------------|-------------------------------|
| Beck water marigold | <u>Bidens beckii</u>          |
| Oakes pondweed      | <u>Potamogeton oakesianus</u> |
| Fries' pondweed     | <u>Potamogeton friesii</u>    |
- (2) Secondary Level of Concern  
State Threatened Species Present (likely to become endangered)
- |                                |                            |
|--------------------------------|----------------------------|
| Eastern massasauga rattlesnake | <u>Sistrurus catenatus</u> |
| Horned bladderwort             | <u>Utricularia cornuta</u> |
- (3) Third Level of Concern  
Rare or "Watch List" Species (may become "threatened")
- |       |                         |
|-------|-------------------------|
| Cisco | <u>Coregonus artedi</u> |
|-------|-------------------------|

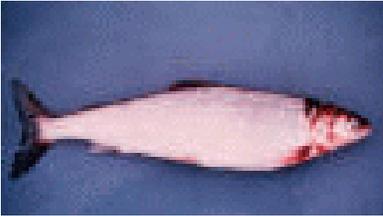
The following list of endangered, threatened, or rare species are known to exist primarily in "clear" water (their survival may depend on keeping suspended solids from silt and algae to a minimum):

Whorled water milfoil	<u>Myriophyllum verticillatum</u>
Redhead grass	<u>Potamogeton richardsonii</u>
Blacknose shiner	<u>Notropis heterolepis</u>

The following list of endangered, threatened, or rare species depend on areas of undisturbed meadow or undergrowth along lake margins:

Blanding's turtle	<u>Emydoidea blandingii</u>
Spotted turtle	<u>Clemmys guttata</u>
Eastern massasauga	<u>Sistrurus catenatus</u>

Cisco



Blanding's turtle



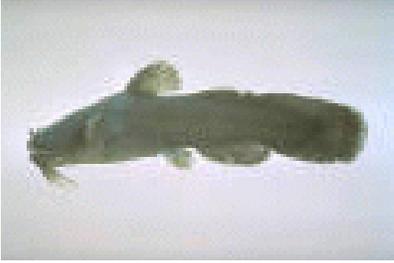
Spotted turtle



### Other Unusual Species Observed

Iowa Darter - Although not legally protected, the Iowa darter is relatively uncommon in Indiana. This small fish, related to perch and walleye, is present only in a few clear glacial lakes in the northern third of the state. It was relatively common in the upper Turkey Creek watershed during our survey.





Tadpole madtom - Another fish not legally protected but somewhat rare in Indiana is the tadpole madtom, a small catfish. This fish is only 2 inches long and is found in clear streams and glacial lakes of northern Indiana. It was relatively common in the upper Turkey Creek watershed during our survey

## **Recommendations**

Preserving the physical integrity of Turkey Creek upstream from Lake Wawasee is an important part of preserving the ecological health of all of the lakes in the watershed. The stream and its associated lakes and wetlands are the home of several rare sensitive aquatic species that depend on good habitat and water quality for their continued existence. Channelization of Turkey Creek would harm the habitat of these animals and should be avoided if possible.