



## Purpose of a plan

A watershed management plan incorporates all of the designated and desired uses of a watershed, seeks to determine which are the most threatened, identifies the most critical pollutants and environmental stressors to the watershed and resolves to remedy them.

# Glen Lake Crystal River

## Watershed Management Plan

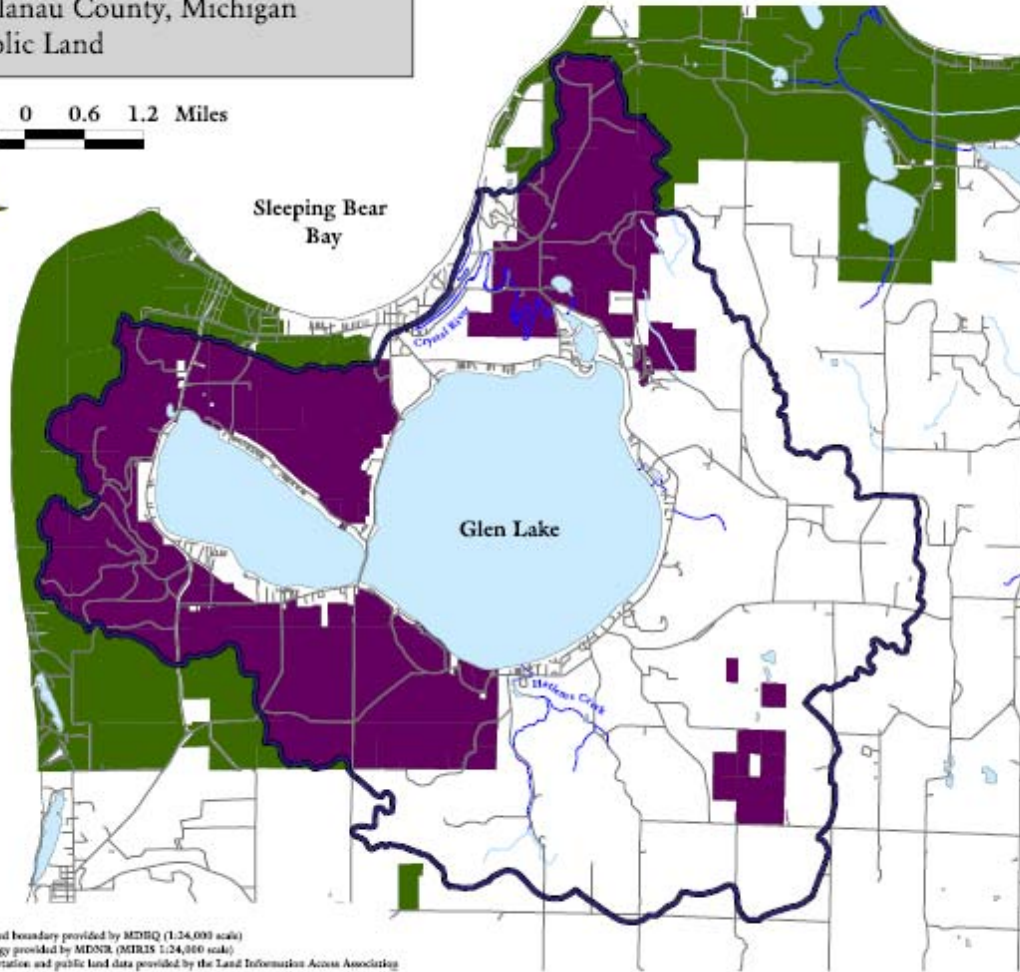


January 2003



Glen Lake/Crystal River Watershed  
Leelanau County, Michigan  
Public Land

0.6 0 0.6 1.2 Miles



Legend

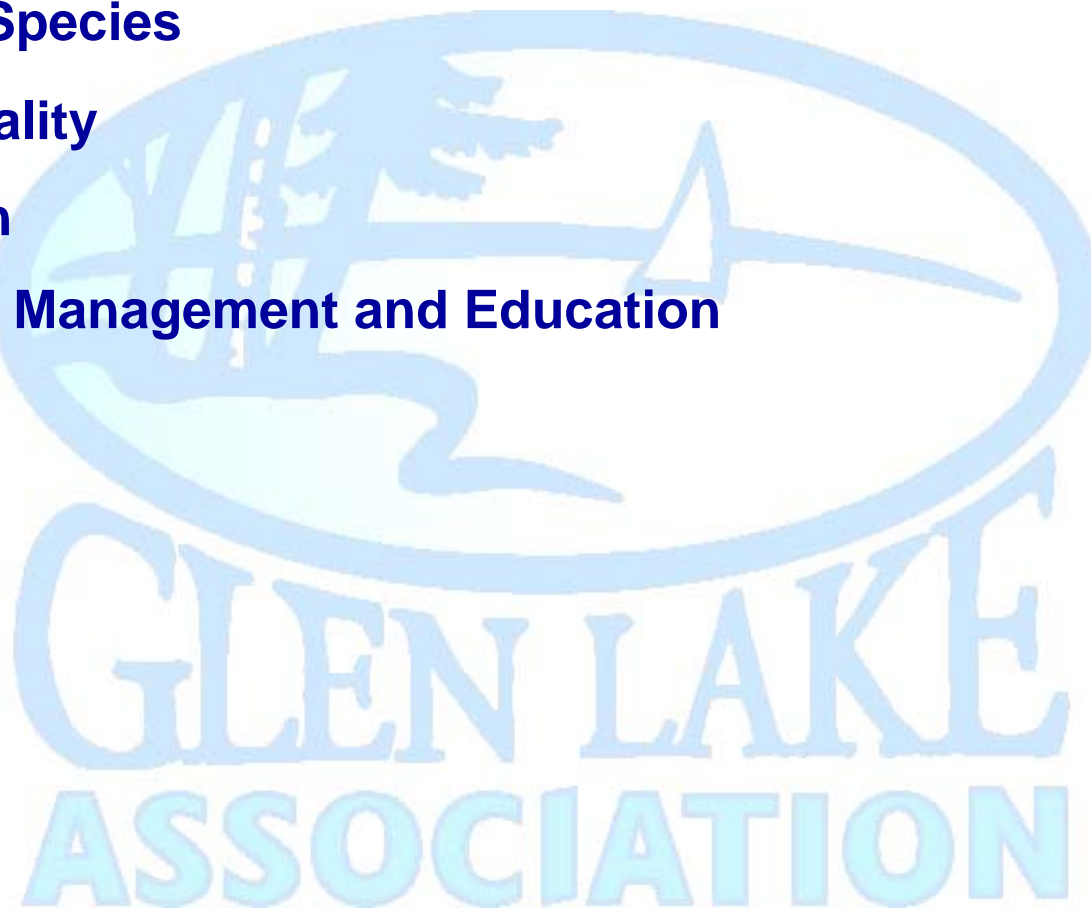
- GLCR Watershed
- Road
- Stream**
  - Drains and Intermit. Streams
  - Rivers and Streams
- Lake
- Public Land in Watershed
- Public Land

Source:  
Watershed boundary provided by MDDQ (1:24,000 scale)  
Hydrology provided by MDNR (MIRIS 1:24,000 scale)  
Transportation and public land data provided by the Land Information Access Association

## Glen Lake Association Programs

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- Hatlem Creek Watershed
- Invasive Species
- Water Quality
- Water Itch
- Shoreline Management and Education



# Hatlem Creek



The Rainbow Trout are back!

# Hatlem Creek

## MDEQ MiCorps Volunteer Stream Monitoring Grant received

- \$6474 granted to fund oversight, training, and equipment
- Grant administrator, John Hayes
- Directed by Rob Karner and John Hayes
- 3 reaches to be surveyed      Fall 2006      Spring 2007
  - \* Macroinvertebrates (Bugs & Critters)
  - \* Habitat assessment (Can Critters be healthy there?)
- Outcome will help establish future action plans for improvements

## **MDEQ Aquatic Invasive Species Grant received from Office of the Great Lakes**

- \$1500 granted to fund

  - \* New shed, sign, and kiosk at DNR Invasive  
Species Station

  - \* Invasive species workshop

- In cooperation with MDNR, Inland Seas Education

Association, and volunteers from Glen Lake Association

- Project is complete



## 2006 Invasive Species Committee Annual Report – August 12, 2006

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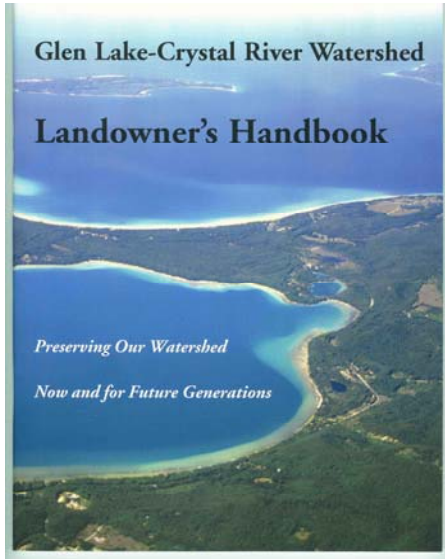
### Glen Lake Association Shed Construction Volunteers

May 22, 2006

Bill Freeman  
John Davey  
Mike Hasselbeck  
Carl McBride

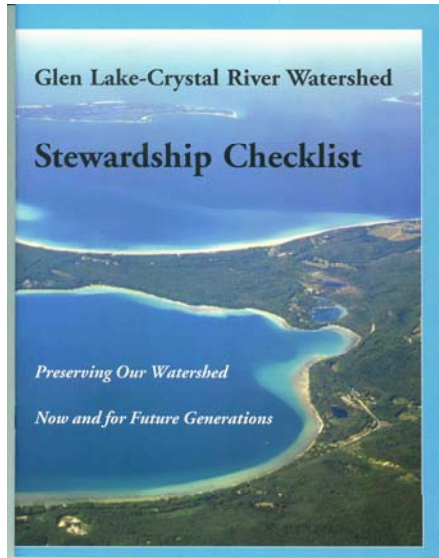


# Water Quality Education



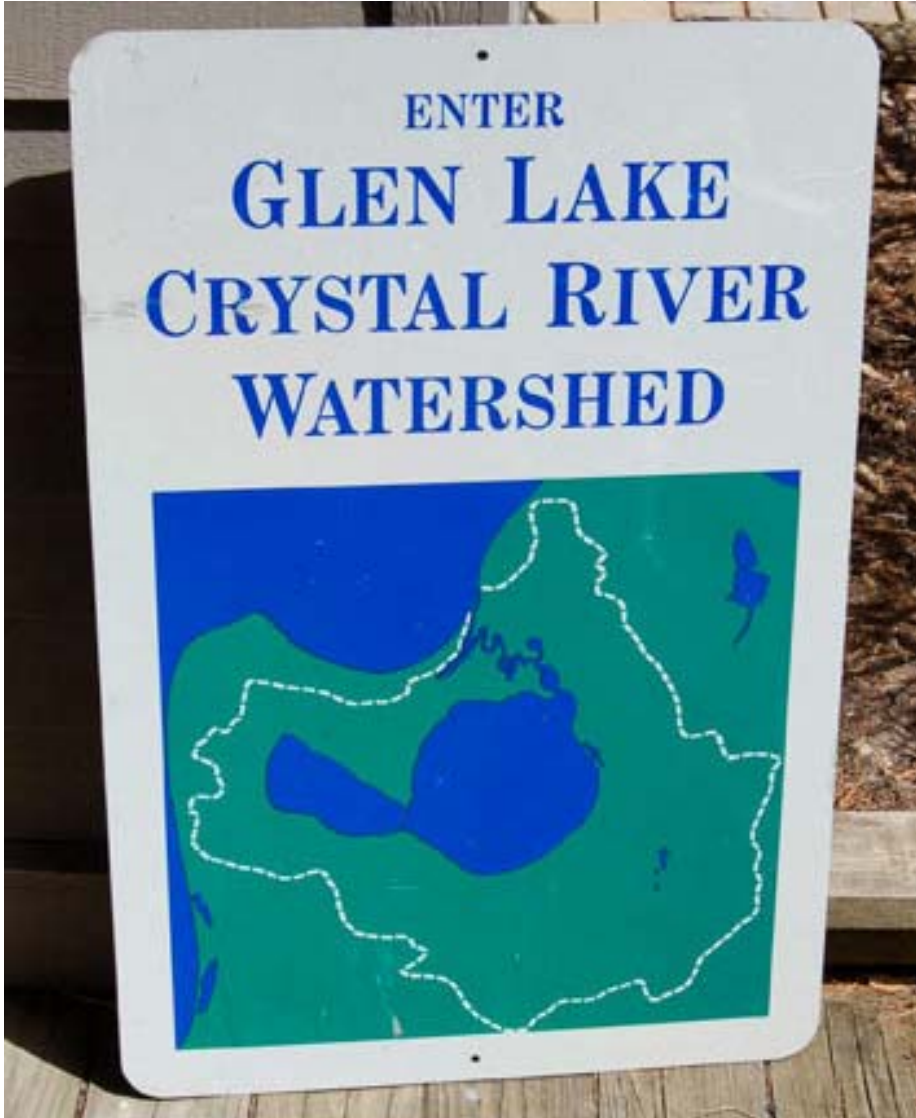
## Glen Lake - Crystal River Landowners Handbook and Checklist

Both publications available at side display table



# Water Quality Education

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**Glen Lake - Crystal River  
watershed signs**



# Projects for 2006

- Chemical Studies (Water & Sediment)
- Swimmer's Itch (Merganser Control)
- Shoreline Naturalization (Green Belting)
- Cladophora Survey (Nutrient Loading)
- Plankton Studies (Microscopic Studies)
- Education (Guest Speaking & Karner's Korner)

# Chemical Studies

- Dissolved Oxygen - needed for all aquatic life
- Acidity/Alkalinity - ph
- Conductivity - a pollutant indicator
- Temperature - dealing with stratification
- Sediment Analysis - testing for heavy metals



HYDROLAB  
**DATASONDE 4a**  
WATER QUALITY MULTIPROBE



# Shoreline Naturalization

- Goal is to preserve shorelines that already have greenbelts and to restore shorelines that lack greenbelts
- Goal is to reduce phosphorous loading and provide a contiguous wildlife corridor

# Cladophora Survey

- Goal - to map sites on shorelines that have nutrient loading
- Goal - use maps to set priorities for Shoreline Naturalization

# Plankton Studies

- Goal - monitor microscopic biodiversity and chart changes over time
- Goal - study changes in Microcystis