Bear Lake
(Oneida County, Wisconsin)

Aquatic Invasive Species Monitoring Report

This is a product of annual monitoring conducted on behalf of:

Bear Lake Protection & Rehabilitation District
Contact: Mic Austin
P.O. Box 68
Hazelhurst, WI 54531

Prepared by:

White Water Associates, Inc.
Contact: Jesse Gabbard
429 River Lane, P.O. Box 27
Amasa, Michigan 49903
Phone: (906) 822-7889; Email: jesse.gabbard@white-water-associates.com

Cite as: *Gabbard, Jesse and Carole Gabbard. 2025. Aquatic Invasive Species Monitoring Report for Bear Lake (Oneida County, Wisconsin). White Water Associates, Inc.*

WHITE WATER ASSOCIATES, INC.

Date: August 2025

INTRODUCTION

White Water Associates, Inc. has been retained by the Bear Lake Protection and Rehabilitation District to conduct annual Aquatic Invasive Species (AIS) monitoring in Bear Lake (Oneida County, Wisconsin). White Water professional staff has had significant experience with the Bear Lake ecosystem having developed the 2018 Aquatic Plant Management Plan and Adaptive Lake Management Plan for Bear Lake and updated the documents in 2023. Also, White Water professional staff has conducted annual AIS monitoring since 2018.

METHODS

For this survey, we conducted a thorough search of likely habitats for aquatic invasive species around the entire Bear Lake shoreline with special focus on the boat landing and other points of most likely introduction or colonization. The field work was conducted on July 31, 2025 by White Water aquatic biologist Jesse Gabbard, field technician Faryn Rice along with boat navigation assistance by Bear Lake steward Mic Austin. The late season timing was to target aquatic invasive species that are more easily identified in the late season (for example, purple loosestrife and narrow-leaved cattail).

The search was conducted from a pontoon boat and began from the Austin's home located next to the boat landing. Using the pontoon boat, we meandered searched around the entire lake and stopped at five target search sites, waded with viewing bucket and snorkeled to look for AIS in the water and near shore. As part of the survey, a Ponar dredge was used at the deep hole to monitor for spiny water fleas. The survey ended by wading and snorkeling at the boat landing area looking for AIS. The shoreline in the vicinity of the boat landing was walked and waded looking for AIS.

SURVEY RESULTS

Five established invasive species (three wetland invasive plant species and two aquatic animal species) were observed during this monitoring bout, including yellow iris (*Iris pseudacorus*), narrow-leaved cattail (*Typha angustifolia*), purple loosestrife (*Lythrum salicaria*), Chinese mystery snail (*Cipangopaludina chinensis*), and rusty crayfish (*Faxonius rusticus*) (Figure 1).

1. ***Yellow Iris.*** At the time of the 2025 survey, iris plants were not in flower making definitive species identification impossible. Mr. Austin has been working with notifying land owners about removing the yellow iris. We recommend that as these yellow irises are dug up, they could be replaced with the native blue flag iris (*Iris versicolor*) to stabilize the disturbed shoreline. These would be available from nurseries in Wisconsin.

2. ***Narrow-leaved Cattail*** (Figure 2). Narrow-leaved cattail is a classified as restricted in Wisconsin and could invade freshwater marshes, wet meadows, fens, roadsides, ditches, shallow ponds, stream and lakeshores (Wisconsin DNR, 2024). The Wisconsin DNR recommends that all stems (both green and dead) be cut in mid to late summer or early fall. Bear Lake narrow-leaved cattail population is established at several locations along the shoreline in large clumps but mixed with the native cattail, broad-leaved cattail (*Typha latifolia*). The two species can be hard to tell apart if not observed during the blossoming (Figure 3).

3. ***Purple Loosestrife*** (Figure 4). Purple loosestrife is a perennial plant (2+ growing seasons) that prefers wetland areas (Czarapata 2005). Purple loosestrife was introduced as an ornamental plant, and has since infested almost every county in Minnesota, Wisconsin and Michigan. It has opposite/whorled leaves with attractive purple flowers (Czarapata 2005). It impacts native plants by competing for food sources and by replacing native plants. Individual plants of this species can produce up to a million seeds in a growing season, which can lie dormant for years. The plant can also regenerate from fragments. A new purple loosestrife location was found during the 2025 AIS survey. The historical purple loosestrife in the island remains while the one on the west coast was not found. Volunteers have been active for a number of years hand pulling a few Purple Loosestrife plants

each season at the two historical locations (Figure 1). Efforts are still recommended to prevent purple loosestrife to spread (Figure 5).

4. ***Chinese Mystery Snail*** (Figure 5). This species is a large snail (up to nearly 3 inches long) and comes from Asia. The shell is dark brown. A sturdy operculum is able to seal off the shell when the snail feels threatened. Chinese mystery snails likely compete for food and resources with native snails and other grazers or filter-feeders. Some research studies suggest that impacts to native species may be insignificant. Chinese mystery snails, like many native and non-native snails, serve as host for parasites (Harried et al. 2015, Karatayev et al. 2012). Some larger animals like turtles or muskrats may occasionally feed on Chinese mystery snails. The manual removal of Chinese mystery snails remains the only method of control (05ChineseMysterySnail.pdf). Live and dead specimen of Chinese mystery snail were found in low density at each of the target search sites and at the boat landing (Table 1).

5. ***Rusty crayfish*** (Figure 6). The rusty crayfish is classified as restricted in Wisconsin. They have dominated the native crayfish by taking over their habitat and natural forage and reduce aquatic plant abundance and diversity. Live specimens of rusty crayfish were found in low density in four of the target search sites (Table 1).

Table 1. Target search site GPS coordinates and their findings.

Target search site	Latitude	Longitude	Findings
BL2025-1	45.76936	-89.79989	Live specimen of rusty crayfish and Live and dead specimens of Chinese mystery snail.
BL2025-2	45.76666	-89.79249	Live specimen of rusty crayfish and Live and dead specimens of Chinese mystery snail.
BL2025-3	45.76105	-89.79624	Live specimen of rusty crayfish and Live and dead specimens of Chinese mystery snail.
BL2025-4	45.76437	-89.80858	Live and dead specimens of Chinese mystery snail.
BL2025-5	45.77183	-89.80347	Live specimen of rusty crayfish and Live and dead specimens of Chinese mystery snail.
Boat Landing	45.77255	-89.79884	Live and dead specimens of Chinese mystery snail.
DR2025	45.76645	-89.79838	No AIS Present

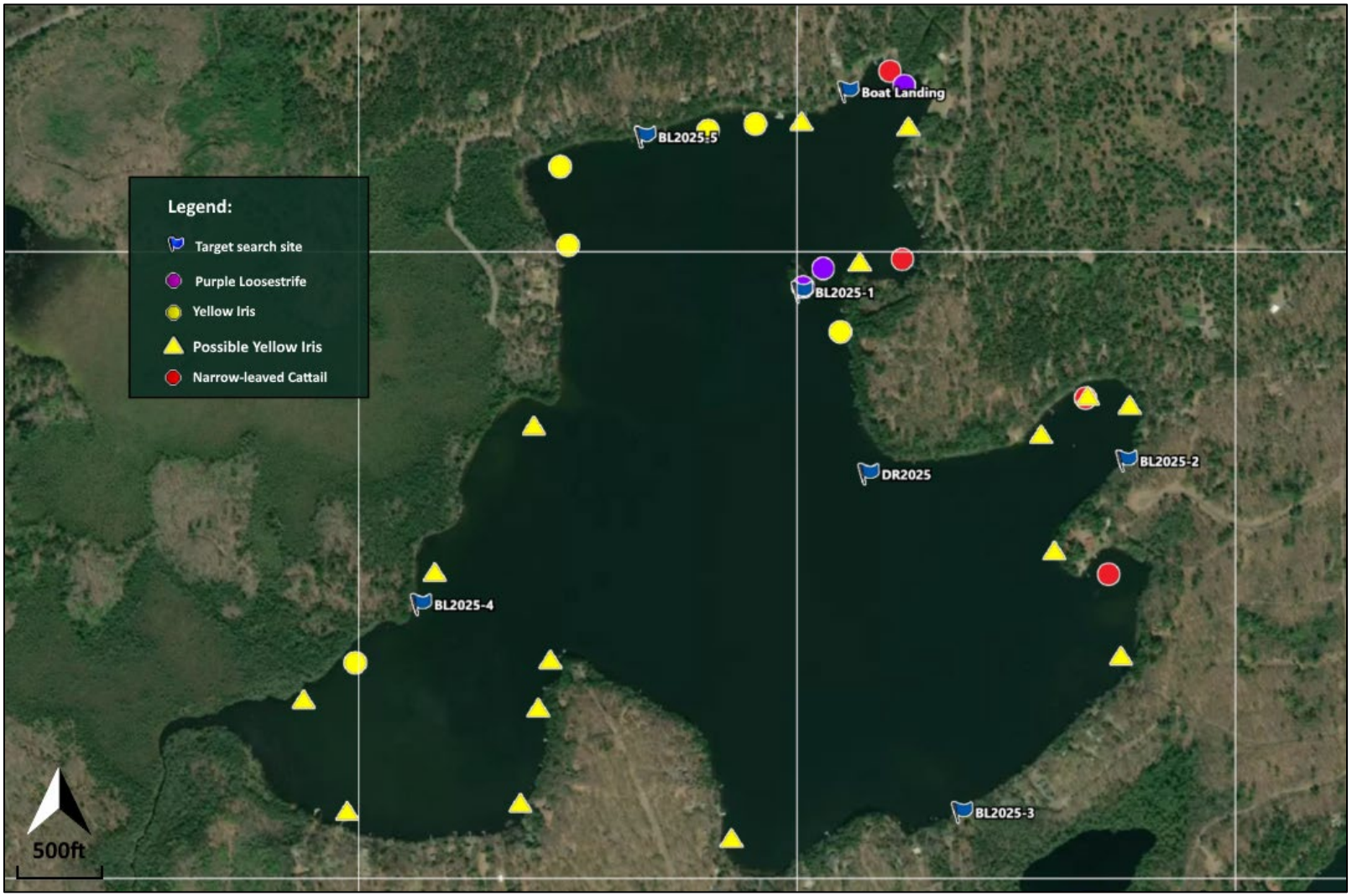

Figure 1. Bear Lake target search sites (BL2025-#), dredge (DR2025) and aquatic invasive species locations.

Figure 2. Narrow-leaved cattail in Bear Lake shoreline (Photo taken during the 2025 AIS survey).

Figure 3. Broad-leaved cattail and narrow-leaved cattail flower spikes.

Figure 4. Purple loosestrife along the shore of Bear Lake during the 2025 AIS survey.

Figure 5. Purple loosestrife spreading on the shore of a Northern Wisconsin Lake.

Figure 6. Chinese mystery snail found during the 2025 Bear Lake AIS survey.

Figure 7. rusty crayfish was found during the 2025 Bear Lake AIS survey.

6. ***Spiny water fleas*** (*Bythotrephes longimanus*) are an aquatic invasive zooplankton that is found in a few lakes in Wisconsin. One way to determine if they are present in a lake is to conduct a vertical zooplankton tow at various locations in the lake and look at the sample to see if the tiny spiny water fleas are present (this kind of sampling is suggested for September and October). A second kind of sampling is to collect bottom sediment (using a Ponar sampler or Ekman dredge) and examine this material for spiny water flea body parts using a microscope. The dredge location is usually the deepest area of the lake. In 2025, the dredge location was 24 feet deep and the coordinates were (45.76645, -89.79838) (Table 1). The sample was examined under magnification in the lab and there were no invasive zooplankton in the samples collected.

We appreciate the opportunity to serve the Bear Lake Protection and Rehabilitation District. If there are any questions about this report or special need of services, please contact us at your convenience.

Literature cited

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Assessing infection patterns in Chinese mystery snails from Wisconsin, USA using field and laboratory approaches

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