

# **Boat Landing Exotic/Invasive Species Inspections and Shoreline AIS Survey Balsam Lake WBIC: 2620600 Polk County, Wisconsin**



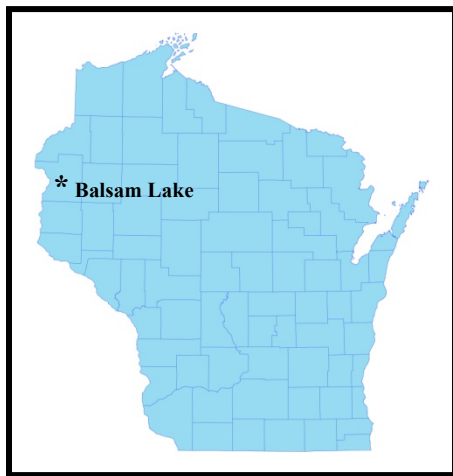
Purple loosestrife by the HWY 46 landing 8/22/22



Yellow iris in the Mill Pond 6/17/22

## **Project Initiated by:**

Balsam Lake Protection and Rehabilitation District and the  
Wisconsin Department of Natural Resources – Grant ACEI21218



Zebra mussel on Forest Lake Circle sampler October 2022

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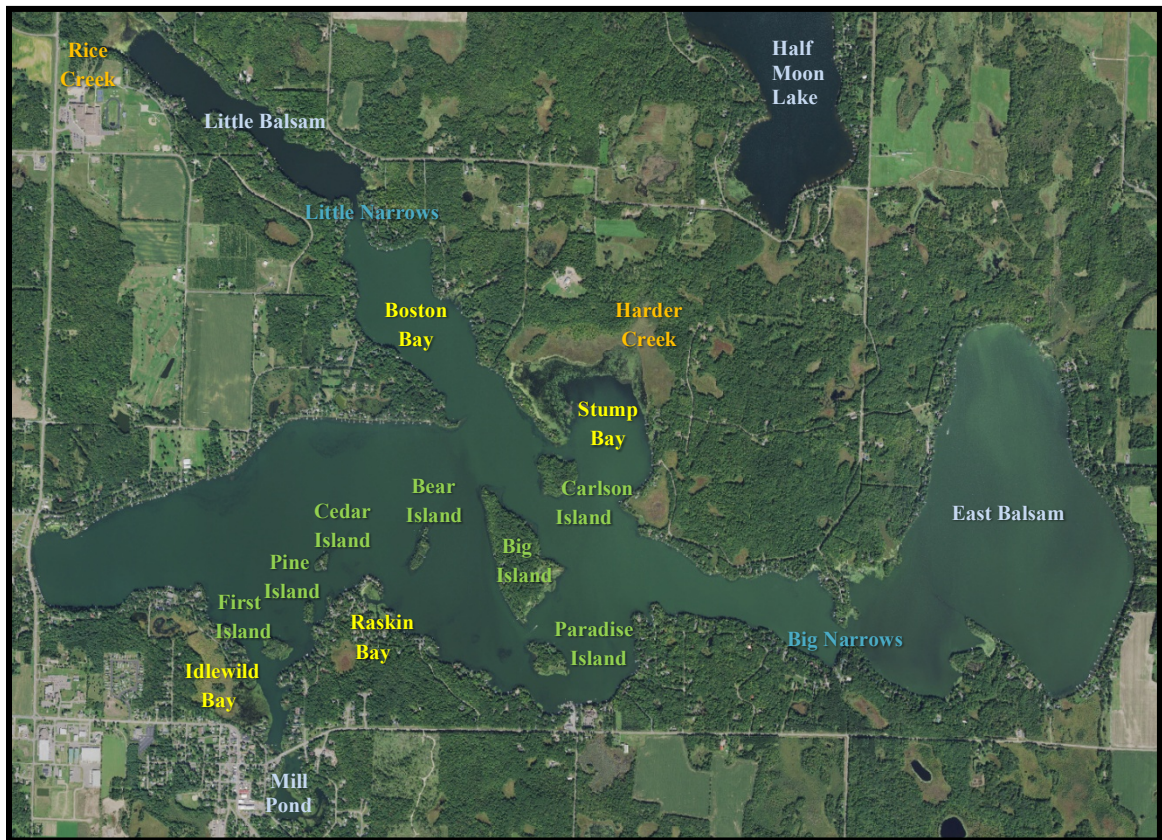
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## INTRODUCTION:

Balsam Lake (WBIC 2620600) is a 2,054-acre stratified drainage lake in central Polk County, Wisconsin in the Towns of Balsam Lake, Milltown, Georgetown, and Apple River (T34N R17W) (Figure 1). It reaches a maximum depth of 37ft north of Cedar Island in the western basin and has an average depth of 20ft (Hopke et al. 1964). The lake is mesotrophic bordering on eutrophic in nature, and water clarity is fair with historical summer Secchi readings averaging 5ft in East Balsam, 6ft in Little Balsam, and 8ft in the deep hole north of Cedar Island (WDNR 2022). Bottom substrate is variable with organic muck in most bays, and rock/sand in the Big and Little Narrows and around the lake's many islands.



**Figure 1: Aerial Photo of Balsam Lake**

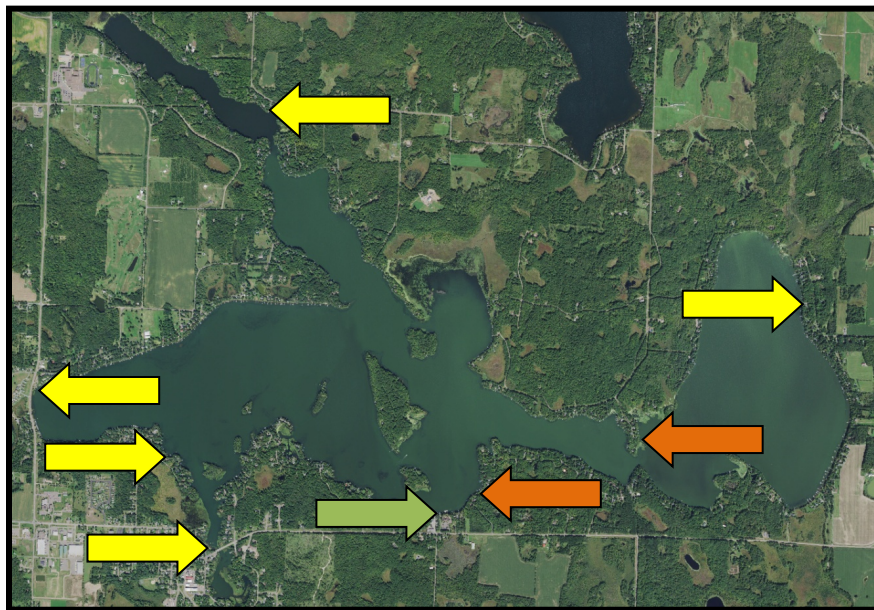
The Balsam Lake Protection and Rehabilitation District (BLPRD), Harmony Environmental (HE), and the Wisconsin Department of Natural Resources (WDNR) commissioned a series of 2022 Aquatic Invasive Species (AIS) landing and shoreline surveys in accordance with the lake's 2015 Aquatic Plant Management Plan (Clemens 2015). This report is the summary analysis of the five landing inspections conducted on June 17<sup>th</sup>, July 18<sup>th</sup>, August 22<sup>nd</sup> and 23<sup>rd</sup>, September 20<sup>th</sup>, and October 16<sup>th</sup> and 20<sup>th</sup>, and the full shoreline survey on August 22<sup>nd</sup> and 23<sup>rd</sup>.



## **METHODS:**

### **Landing Inspection Surveys:**

Throughout the 2022 growing season, we conducted landing inspections at the five main public landings (HWY 46, Little Balsam, Idlewild, City Beach, and East Balsam – yellow arrows below), two unimproved public landings (Forest Lake Circle and Northeast of the Big Narrows – orange arrows below, and the private landing at Sunnyside Marina – green arrow below (Figure 2). Using three 100-150m parallel transects approximately 15, 30 and 45m from shore; we motored at idle speed looking for any evidence of Eurasian water-milfoil's (*Myriophyllum spicatum*) characteristic red growth top, or any other exotic/invasive plant species we might encounter. Once we had finished the three transects, we returned to our starting point using a stitch pattern that crossed back and forth over all three lines to look for any plants we may have missed between the transects.



**Figure 2: Balsam Lake Landings**

### **Zebra Mussel Samplers:**

Two plastic plate samplers were attached to the docks at six landings (five main landings and the Forest Court unimproved landing) on June 13<sup>th</sup>. During each subsequent landing inspection, we visually checked these samplers for Zebra mussels (*Dreissena polymorpha*).

### **Shoreline Aquatic Invasive Species Survey:**

In August, we complete a shoreline survey of the entire lake (including islands) to look for the presence of AIS plant species. The timing of the survey was designed to find Eurasian water-milfoil as this species has usually canopied at this point of the growing season. During the survey, we looked for EWM in the zone of growth it would most likely be found in (6-10ft bathymetric ring) and paid special attention to floating plants on the north and east shores as these are places that fragments would likely get blown to by the prevailing southwest winds before settling to the lake bottom. We also looked carefully around docks as plants that are uprooted by motors tend to settle when props are stopped.

## RESULTS AND DISCUSSION:

### Landing Inspection Surveys:

Yellow iris (*Iris pseudacorus*), Purple loosestrife (*Lythrum salicaria*), Common forget-me-not (*Myosotis scorpioides*), Reed canary grass (*Phalaris arundinacea*), Curly-leaf pondweed (*Potamogeton crispus*), and Narrow-leaved/Hybrid cattail (*Typha angustifolia*) are the only exotic plant species known to occur on the lake. During the 2022 surveys, we saw **no evidence** of Eurasian water-milfoil or any other new fully aquatic exotic species during any of our landing surveys.

Yellow iris (YI) was first found on the lake in 2020 by the Polk County Land and Water Resources Department (PCLWRD). In 2021, we located and helped remove a significant stand at Ward's Resort as well as a handful of other clusters around the lake. Well established stands tend to form dense clusters of sword-like leaves and are easy to identify even when they are not in bloom. However, because newly-established plants can look very similar to the native Blue flag iris (*Iris versicolor*), we also indiscriminately trimmed seed heads and leaves off all iris plants found on the lake during our August 2021 full shoreline survey. In June 2022, we pro bono revisited these sites, and as expected, almost all of these plants turned out NOT to be YI. In the few places we did find YI, we removed as much of the plants as we could. The only place we did not remove plants/seed heads was in the Mill Pond where this species is spreading rapidly, and it would have taken considerable time and effort to dig out what is currently there (Figure 3).



**Figure 3: Yellow Iris in the Mill Pond 6/17/22**



We again found Purple loosestrife (PL) near the village beach landing area and in Idlewild Bay. Most of the plants observed in these areas again had *Galerucella* beetles – a natural biocontrol that specializes in eating loosestrife. First released in 2014, these insects have done a highly effective job at controlling PL in this area since that time (Figure 4).

Away from City Bay, we again removed several large plants at the HWY 46 landing (Figure 5). We also revisited places where we had dug out plants in East Balsam in 2021. We were pleased to find they remained loosestrife free with the exception of the sizable stand that is growing in the cattails just across the road from the northwest finger bay.



**Figure 4: Purple Loosestrife with Adult Beetles/Larvae/Holes in Leaves**



**Figure 5: Purple Loosestrife at the HWY 46 Landing and in City Bay**

### Zebra Mussel Samplers:

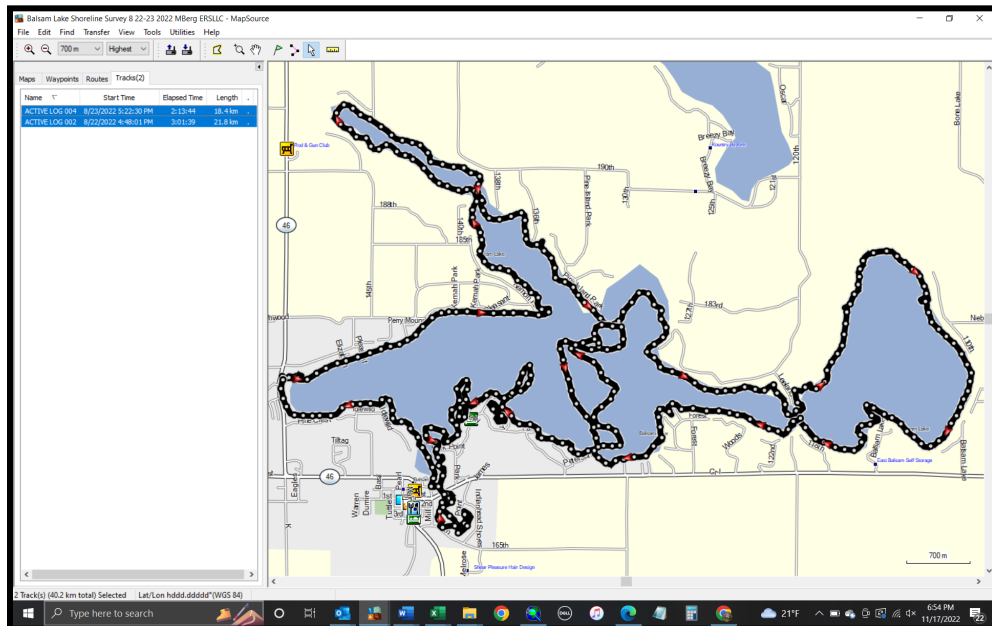
Despite the discovery of a Zebra mussel on a rock by a lake resident in mid-June 2022 just southeast of the Little Narrows, we found no evidence of ZM on any of the plastic samplers during any of our surveys. However, WDNR and PCLWRD confirmed positive veliger tows and several additional adults found on rocks around the central islands. Ultimately, the only ZM found on the samplers turned up at the Forest Lake Circle site when it was removed in late October (Figure 6).



**Figure 6: Zebra Mussel Samplers 7/18/22 and 10/18/22**

### Shoreline Aquatic Invasive Species Survey:

On August 22<sup>nd</sup> and 23<sup>rd</sup>, we surveyed transects covering 40.2km (24.9 miles) (Figure 7). We had mostly sunny skies and calm winds which allowed us to see down 5-6ft into the water column. We did **not** find any evidence of Eurasian water-milfoil anywhere in the lake.



**Figure 7: August 2022 Littoral Zone AIS Survey Transects**



## **CONSIDERATIONS FOR MANAGMENT:**

### **Eurasian Water-Milfoil:**

Eurasian water-milfoil was confirmed in Half Moon Lake in the fall of 2021 making it the eighth Polk County lake with EWM and by far the closest to Balsam Lake. Because of this, continued monitoring at landings and inspections by the BLPRD's dedicated Clean Boats/Clean Waters crew are encouraged.

### **Yellow Iris:**

Top clipping iris along the lake didn't kill many plants, but it did limit further dispersal in 2022. During our CLP bed mapping survey in the spring of 2023, we will again revisit locations that have had Yellow iris on the lake, and continue to remove them where possible. We again encourage the BLPRD to consider placing a "wanted poster" in the spring issue of the *Dock Side* to encourage property owners to remove plants along their shoreline if they find them in June when they are easy to identify.

### **Purple Loosestrife:**

The newly discovered population on East Balsam Lake's northwest shoreline bay is large enough to sustain a beetle population. Ideally, the PCLWRD will again work with the BLPRD to raise and release beetles at this location to prevent further spread. Similar to Yellow iris, a reminder for BLPRD members to be on the lookout for loosestrife in July/August and remove it immediately if they find it would help slow the spread of this beautiful, but highly invasive wetland species.

### **Zebra Mussels:**

Zebra mussels unfortunately appear to be well established in the lake, and educating lake residents and visitors to be careful about not transporting them to other area lakes now becomes a priority. During our August and September surveys, we learned several CBCW landing monitors had not yet heard that ZM had been discovered on the lake. Making sure they know so they can give appropriate updates to watercraft users will likely be an important starting point in disseminating this information to the general public.

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