

White Lake Happenings

Volunteers complete aquatic macrophyte survey and find new invasive plant

Fifteen volunteers from the White Lake Association and the WRWP gathered on 23 – 24 August to complete the survey of aquatic macrophytes that the groups began last year. The weather cooperated, facilitating completion of 15 sites along 5 offshore transects and 7 shoreline stretches. Data from these locations will be combined with last year's observations at 48 other sites. Once compilation and interpretation of the data is completed toward year's end, a comprehensive picture of White Lake's aquatic plant community will be in hand to help establish changes from past surveys and to guide future management decisions. According to Profs. Jane Herbert (MSU) and Ryan Thum (GVSU), "Identification and mapping are key components of 'adaptive' aquatic plant management for your inland lake. Volunteer citizen scientists can make it happen."

Thanks to all who contributed to this substantial accomplishment!

Unfortunately, one result of this year's survey was the discovery of an invasive plant not previously reported in White Lake: curly leaf pondweed (scientific name *Potamogeton crispus*). So far, the plant appears to occur in only a limited area, but the experiences of other Michigan lakes show that it has the capacity to spread and assume nuisance characteristics, according to the Michigan Department of Environmental Quality. . In White Lake, as well as throughout the state, there is the constant threat that boats and anglers traveling between lakes will transport unwelcome "hitchhikers" on boats, trailers, fishing gear, and in bait buckets. Michigan State University's Dr. Sarah Nichols conducted a study targeting tourism industry professionals to help inform the development of the 2012-2017 Michigan Tourism Strategic Plan. The study revealed the greatest threat to Michigan's tourism industry is the spread of aquatic and terrestrial invasive species.

Looking at the larger picture, preliminary assessments of the lake-wide survey results suggest that White Lake's plant community is more diverse and healthier than earlier studies indicated. For example, the nuisance invasive, Eurasian water milfoil, while still very widespread, no longer totally dominates other plants anywhere in the lake. Even where it is abundant, the milfoil grows alongside several other plant types that have more desirable characteristics. The plant community as a whole seems to be trending towards a healthy mix of plants that provide habitat for juvenile fish and good forage for waterfowl.

Nonetheless, the recent discovery of curly leaf pondweed demonstrates the need for continued monitoring. Local volunteers are needed to conduct citizen-science observations of conditions in the lake to supplement less frequent observations by State agencies.

The White Lake community is about to celebrate the lake's removal from the Area of Concern list, the culmination of decades of effort by local citizens and government, as well as State and federal agencies. As important as this achievement is, it should not be a cause for complacency but rather a call for renewed community involvement in protecting and improving our water resources.

A cool Summer leads to late stratification and early remixing

The absence of extended periods of hot (or even warm!) weather produced a shortened period of thermal stratification in White Lake this year. Stratification refers to the accumulation of warmer, less dense water at the top of the water column, while cooler and thus more dense water remains isolated at greater depths. Development of the two layers was just getting under way as the first week of June arrived (70 F at the surface, 57 F at 50 feet) and was less pronounced than usual even by mid-August (73 F at surface, 61 F at 50 feet), according to measurements undertaken by White Lake Association volunteers.

While the degree of stratification was sufficient to lead to the customary seasonal oxygen depletion at depths below about 20 feet by mid-August, this situation began to reverse early and rapidly. At the time of the year's last readings on 19 September, surface waters had cooled to 62 F, nearly the same as water near the bottom. The approach of near-isothermal conditions has led to rapid remixing ("turn-over") with the result that the lake's bottom waters are now almost fully oxygenated (good news for migratory fish seeking colder waters).

Cyanobacteria dominate the late-Summer phytoplankton of White Lake

Two samples taken with a 10-micron mesh plankton net on 19 September were dominated by two types of cyanobacteria, also known as blue-green algae, *Microcystis* and *Anabena* species. These organisms are typical of late-Summer conditions in our waters, but are worthy of vigilance because both are capable of producing the toxins associated with HABs (harmful algal blooms) such as the ones that plagued western Lake Erie again this year.