

An uncertain future for Lac Vieux Desert's walleye fishery

GLIFWC Inland Fisheries Section

Watersmeet, Mich.—Straddling the borders of Michigan and Wisconsin in the 1842 Ceded Territory, Lake Lac Vieux Desert (LVD) has been a productive walleye fishery for both tribes and state anglers. Tribal members from Mole Lake and Lac Vieux Desert Bands have harvested walleye in this lake, and state anglers from both Michigan and Wisconsin have long-enjoyed catching walleye with hook and line. Unfortunately, both catch and harvest has declined considerably in recent years, with many anglers and tribal members suggesting that the walleye population has crashed in the lake. This notion prompted the Lac Vieux Desert Tribe to eliminate harvest of walleye by its members in 2010-2011 and every year since 2013.

To understand the walleye downward population trend in LVD, biologists from Great Lakes Indian Fish and Wildlife Commission (GLIFWC) worked in spring 2016 to estimate the lake's walleye numbers, referred to as "abundance." The effort involved capturing adult walleye by electrofishing along the spawning grounds. The captured fish were marked by fin-clipping and then released into the lake. Shortly after that, fish were recaptured by electrofishing around the entire shoreline. The proportion of recaptured fish relative to the number that were fin-clipped was used by biologists to estimate the abundance of walleye. The estimates revealed that in 2016, the abundance of adult walleye hit a 26-year low of just over 2,000 fish. By comparison, walleye abundance was at a high of 13,000 fish in 1990 (See Figure 1).

Continuing the search for clues in the LVD walleye decline, biologists from GLIFWC and Wisconsin Department of Natural Resources teamed up last fall, this time focusing on the abundance of LVD's age-0 walleye (i.e., fish that have not reached their first birthday). This time, crews sought to collect age-0 walleye by electrofishing the entire shoreline of LVD. Biologists were interested in comparing the abundance of walleye captured in 2016 to previous years by counting the number of walleye captured per mile of shoreline.

The results of the fall 2016 assessment were not encouraging. The survey indicated that no age-0 walleye had survived to September. Not any. To put these results in context, consider that in the late 1980s and early 1990s, the relative abundance of age-0 walleye was approximately 30 per mile of shoreline and this number had more than doubled to over 80 walleye per mile of

shoreline by the mid-to-late 1990s (See – Figure 2). The declining number of young fish – culminating in a finding of zero age-0 walleye in the fall 2016 assessment – is limiting the number of adult walleye in the population, yet the cause of this decline remains unclear.

Climate change has the potential to influence the abundance of cool and warm-water fishes. Recent research has quantified the probability that largemouth bass and walleye will be abundant in lake ecosystems under future climate scenarios. The research first depicts largemouth bass and walleye abundance under present-day environmental conditions and then projects how abundance might change in the next 40 to 60 years. For LVD, largemouth bass currently comprise a small portion of the fish community. By 2085, however, largemouth bass likely become abundant in the lake. On the other hand, walleye abundance will likely remain at present-day levels over the next 60 years. This means that as the climate changes, largemouth bass (and possibly other sunfishes, e.g., smallmouth bass, crappie) might become a major component of the fish community and could provide new opportunities for the harvest and recreational fisheries in LVD.

Clearly, management actions need to be taken to conserve dwindling walleye stocks and restore walleye natural reproduction in LVD. Over the long-term, managers should also consider how climate change might impact the fish community. Public opportunities to comment on LVD fisheries management are being planned later this spring.

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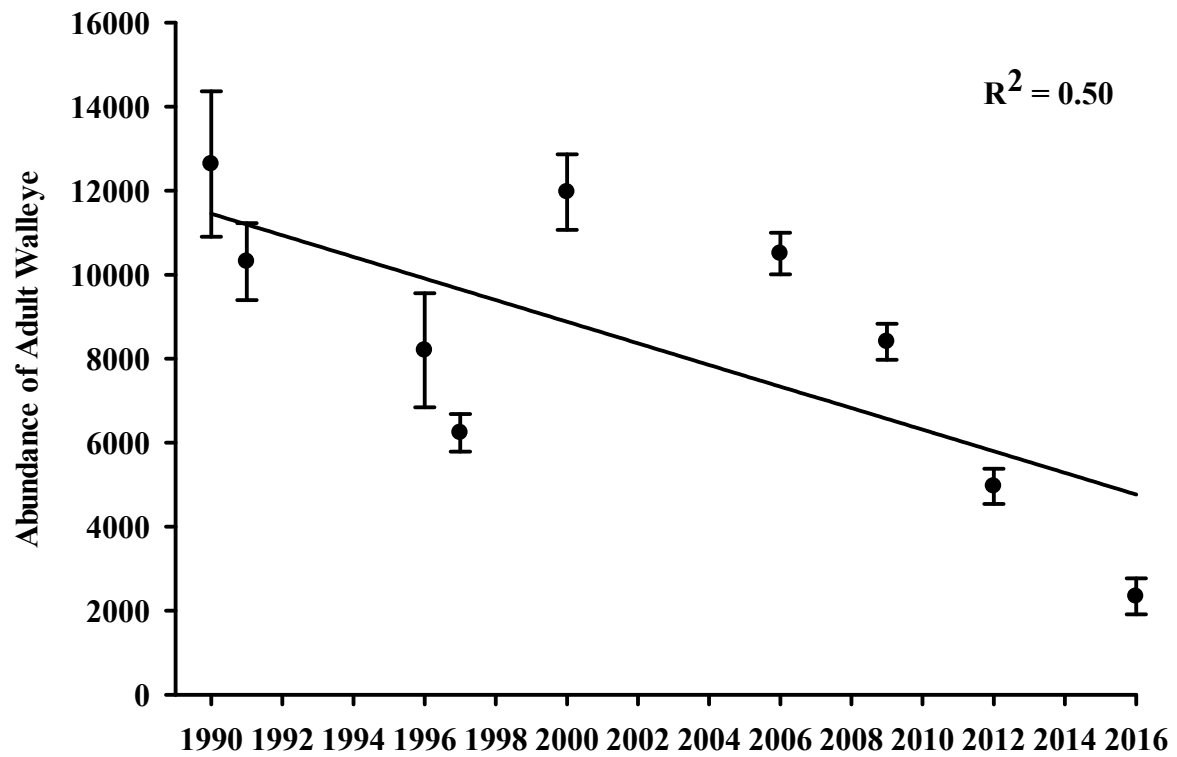


Figure 1. Estimate of adult walleye abundance in Lac Vieux Desert Flowage, Vilas County, Wisconsin, USA from 1990-2016. Estimates are generated from mark-recapture data collected during spring electrofishing surveys.

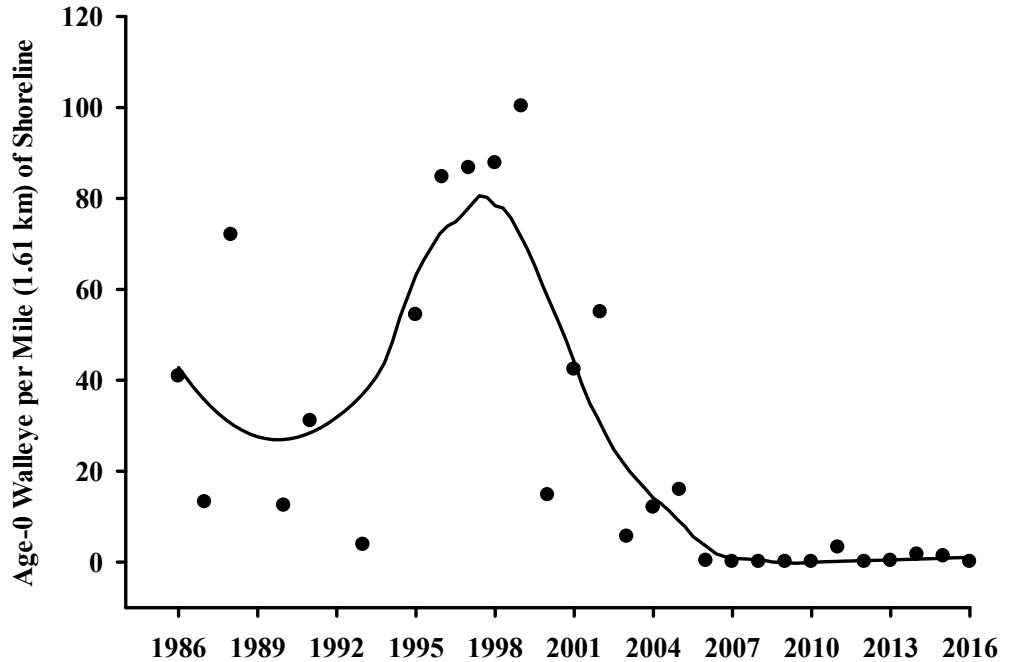


Figure 2. Relative abundance of age-0 walleye per mile (1.61 km) of shoreline in Lac Vieux Desert Flowage, Vilas County, Wisconsin, USA from 1979-2016. Age-0 walleye were collected during fall electrofishing surveys. Solid line represents a LOESS, 2nd-degree polynomial curve. Approximately 25,000 small fingerlings were stocked in early summer from 1986 – 1989 and 1993-1999. Note large fingerlings (~25,000) were stocked before the fall survey in 1991. Similarly, extended growth fingerlings in 1995 (~3,000 fish) and 1999 (~6,000 fish) were stocked before the fall survey.