WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Gilas Lake - 2022 Fish Management Report

WBIC 523300

Photo Credit: WDNR

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Introduction

Gilas Lake is a 136-acre drainage lake located in southwestern Marinette County. An intermittent outlet in the northeast corner of the lake drains to Little Nelligan Lake approximately 1 mile away. Gilas Lake has clear water and has a maximum depth of 88 feet making it the deepest lake in Marinette County. The littoral zone is composed of 80% sand, 10% silt, 9% gravel and 1% muck.

Public access to Gilas Lake was acquired by the Department of Natural Resources (DNR) in 1990. The first fisheries survey of Gilas Lake was completed in 1995. This survey revealed a good bluegill population in addition to good fishing opportunities for a variety of other species. Limited stocking has occurred in Gilas Lake (Table 1).

Table 1. Gilas Lake stocking history, Marinette County, WI.

Year	Species	Number Stocked	Average Length (inches)	Source
1997	YELLOW PERCH	500	4.0	PRIVATE HATCHERY
1999	BLACK CRAPPIE	1000	4.5	PRIVATE HATCHERY

The last fisheries survey of Gilas Lake was completed in 2012 and consisted of a single night of electrofishing to evaluate gamefish and panfish populations. The primary objective of the 2022 survey was to characterize fish populations based on relative abundance, proportional stock density (PSD), relative stock density (RSD), catch per unit effort (CPUE) and mean length at capture (age and growth).

SURVEY EFFORT

A single night of electrofishing was conducted on May 26th, 2022. Five fyke nets were set for 2 nights (June 1 and June 2, 2022).

Methods

DATA COLLECTION

Standard fyke nets (spring & summer; 3-foot hoop, 3/4-bar, 1.5-inch stretch) and a standard DNR electrofishing boat were used to collect fish. All fish collected were measured to the nearest 0.1-inch (in) total length (TL). A sub-sample of scales or dorsal spines were collected for age and growth analysis from all gamefish. Aging structures were collected from 5 fish per half inch group in the stock, quality and

preferred length groups. Ages were assigned to each fish using standard WDNR procedures.

DATA ANALYSIS

Catch per unit effort (CPUE) was calculated as catch by gear divided by sampling effort for each species collected. Length frequency distributions were tabulated from fish measured during the electrofishing and fyke net samples; not all panfish were measured. Proportional stock density (PSD) and relative stock density for preferred length fish (RSD^P) were calculated for dominant gamefish (Anderson and Neumann 1996). Preferred lengths of various gamefish have a minimum length between 45 and 55% of the world record length for that species (Anderson and Neumann 1996). Stock, quality, and preferred lengths were used as proposed by Gabelhouse (1984). Mean length at capture data was calculated for dominant gamefish and compared to the average of mean length at age for northern Wisconsin.

Results

Overall, 1,281 fish representing 8 species and hybrid sunfish were collected during the 2022 sampling season (Table 2). The five most abundant species collected by number were Bluegill *Lepomis macrochirus* (55%), Yellow Bullhead *Ameiurus natalis* (32%) Largemouth Bass *Micropterus salmoides* (5%), Pumpkinseed *Lepomis gibbosus* (3%) and Black Crappie *Pomoxis nigromaculatus* (2%).

Table 2. Species composition of fishes collected during the 2022 survey of Gilas Lake, Marinette County, WI.

2022						
SPECIES COMPOSITION OF FISHES COLLECTED						
***COMMON NAME**	**TOTAL NUMBER COLLECTED**	**PERCENT**	**NUMBER COLLECTED (SE2 - EF)**	**NUMBER COLLECTED (FN PANFISH)**	**AVERAGE LENGTH (inches)**	**LENGTH RANGE (inches)**
Bluegill	701	54.7%	82	619	6.3	1.8-8.9
Yellow Bullhead	405	31.6%	5	400	11.6	10.2-12.4
Largemouth Bass	59	4.6%	56	3	9.7	3.5-18.9
Pumpkinseed	41	3.2%	8	33	6.3	3.9-7.2
Black Crappie	27	2.1%	1	26	9.2	5.5-14.9
Yellow Perch	22	1.7%	22		4.8	3.1-7.7
Northern Pike	10	0.8%	2	8	23.4	19.0-26.4
Warmouth	10	0.8%	2	8	5.3	5.0-7.0
Sunfish Hybrids^	6	0.5%	3	3	7.5	6.0-8.9
TOTALS	**1,281**		**181**	**1,100**		
* Common names of fishes recognized by the American Fisheries Society.						
^Hybrids may include: Bluegill X Unknown & Pumpkinseed X Bluegill.						

BLUEGILL

A total of 701 Bluegill was collected which accounted for 55% of the fish collected (Table 2). Bluegill ranged in length from 1.8 to 8.9 inches and averaged 6.3 inches (Figure 1). Electrofishing CPUE increased from 134.0 to 164.0 Bluegill/mile between 2012 and 2022. Bluegill PSD decreased from 40 to 31 but RSD^{P} increased from 3 to 7 between the 2012 and 2022 electrofishing samples.

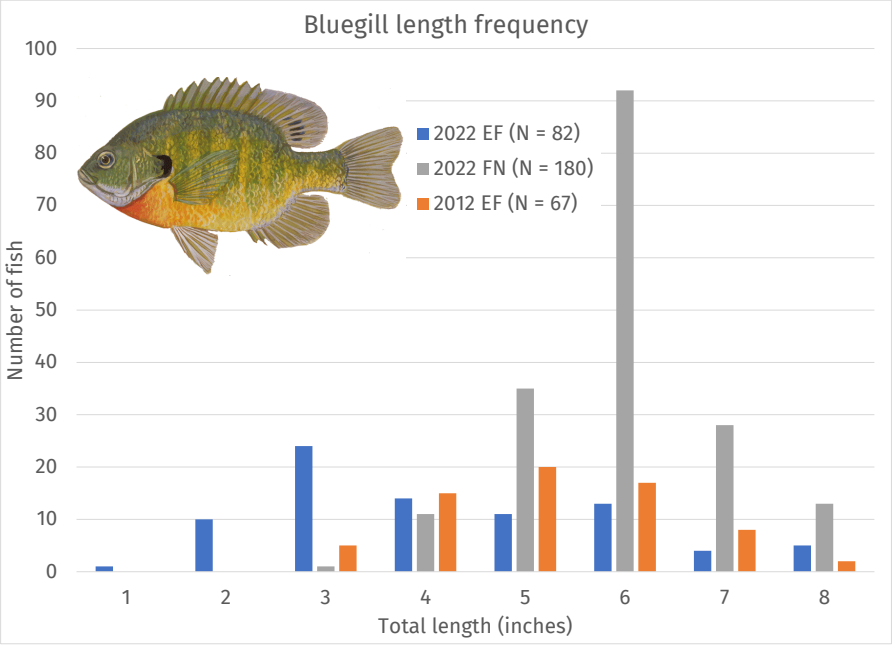

Figure 1. Length frequency of Bluegill from Gilas Lake, Marinette County, WI.

A subsample of 30 Bluegill was aged from 2 to 10 years old. In 2022, growth was average at all ages 4 compared to the mean length at age of Bluegill in northern Wisconsin (Figure 2).

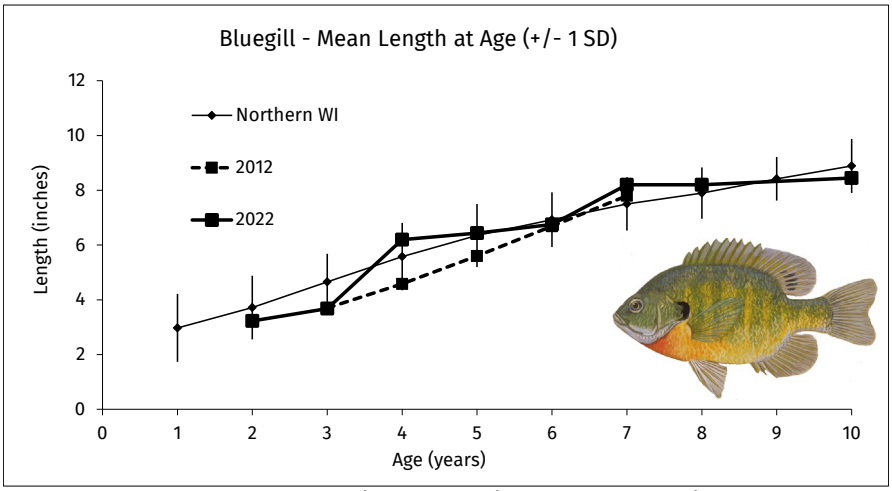

Figure 2. Mean length at age of Bluegill from Gilas Lake, Marinette County, WI.

LARGEMOUTH BASS

Largemouth Bass only accounted for 5% of the fish collected during the 2022 survey (Table 2). Overall, 59 Largemouth ranged in length from 3.5 to 18.9 inches and averaged 9.7 inches (Figure 3). Electrofishing CPUE decreased between 2012 and 2022 from 47.0/mile to 28.0/mile. PSD increased from 62 to 81 between 2012 and 2022. RSD^{P} improved from 11 to 46 between surveys. RSD^{P} increased because few fish between 8 and 12 inches were collected between survey years (Figure 3).

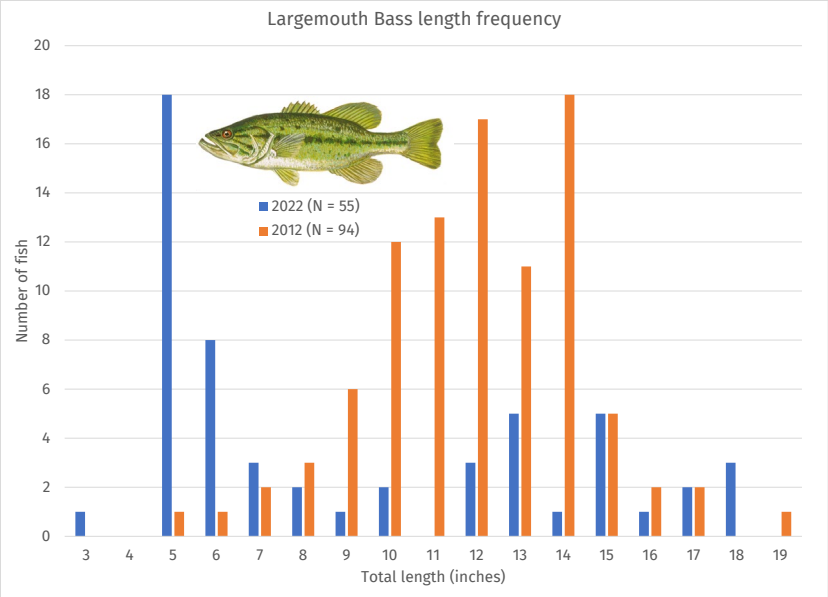

Figure 3. Length frequency of Largemouth Bass from Gilas Lake, Marinette County, WI.

A subsample of 10 Largemouth Bass was aged using scales (<12") and dorsal spines (>12"). Ages ranged from 3 to 8 years old (Figure 4). In 2022 Largemouth Bass growth was average compared to the mean length at age of Largemouth in northern Wisconsin (Figure 8). Largemouth were reaching 14 inches by age 5.

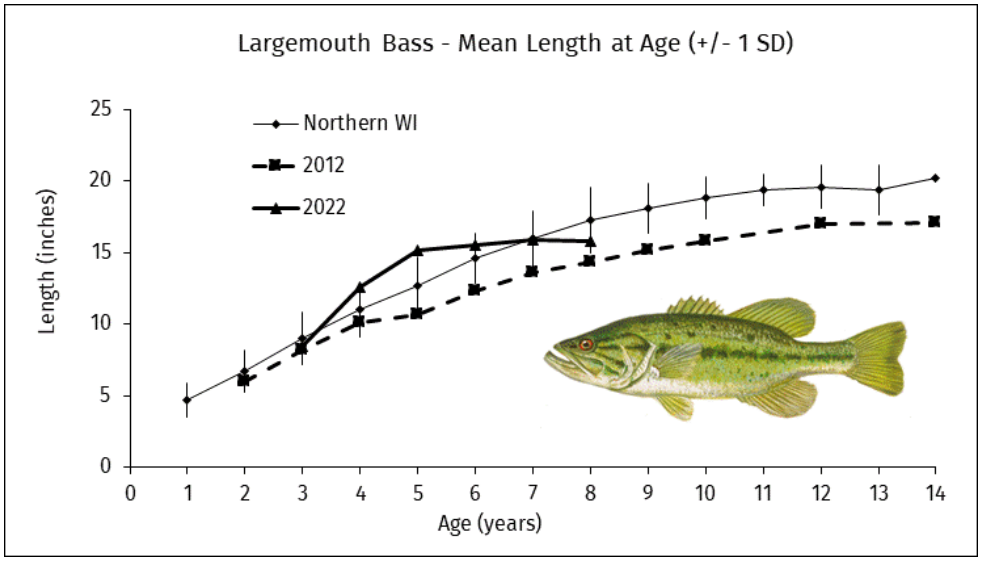

Figure 4. Mean length at age of Largemouth Bass from Gilas Lake, Marinette County, WI.

Discussion

Gilas Lake supports a quality and diverse fishery. Largemouth Bass and Bluegill are the main species anglers should target however, crappie, bullheads and other panfish are present in good numbers. Northern Pike have never been a dominant predator in Gilas Lake. The amount of shallow, weedy habitat that Pike favor is limited. Therefore, the lack of Pike observed during the survey should not be alarming.

Zebra mussels were first detected in Gilas Lake in 2020. The zebra mussel (Dreissena polymorpha) is a tiny (1/8-inch to 2-inch) bottom-dwelling clam native to Europe and Asia. Zebra mussels were introduced into the Great Lakes in 1985. Zebra mussels look like small clams with a yellowish or brownish D-shaped shell, usually with alternating dark- and light-colored stripes. Zebra mussels usually grow in clusters containing numerous individuals.

Boaters are reminded to remove all vegetation from their boat and trailer before leaving to limit the spread of this and other invasive species. A map of Gilas Lake can be found at: https://dnr.wi.gov/lakes/maps/DNR/0523300a.pdf

Recommendations

The current fishing regulations are adequate to provide quality fishing opportunities for a variety of species. The next survey (summer electrofishing and panfish fyke netting) of Gilas Lake is scheduled for 2032 and will focus on the age, growth, abundance and recruitment of Largemouth Bass and Bluegill.

References

Anderson, R. O. and R. M. Neumann. 1996. Length, weight, and associated structural indices. Pages 447-481 *in* B. R. Murphy and D. W. Willis, editors. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.

Gabelhouse, D.W. Jr. 1984. A length-categorization system to assess fish stocks. North American Journal of Fisheries Management4: 273-285.