

Fish community status in Little and Big bays de Noc- 2014 Update

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Background: Since 2009, MDNR Fisheries Division has been conducting a standardized fish community assessment in nearshore waters of northern Lake Michigan. The objectives of the project are to describe the status and trends in the overall fish community, provide data on abundance, growth, and reproductive success for species of management importance, including walleyes, yellow perch, smallmouth bass, northern pike, lake sturgeon, and others. Data are collected in August and September using experimental mesh gill nets and trawling. Sampling occurs annually in Little Bay de Noc (LBDN) and Big Bay de Noc (BBDN), and every two years at eastern ports (Manistique and Naubinway) and western ports (Cedar River and Menominee). Information from this survey also supports projects with agency and university collaborators. Data to track the sport fishery are collected through an on-site creel survey at some locations.

Changes: MDNR has also collected fish and habitat data from gill net and trawl surveys at index sites in LBDN and BBDN, and from jaw-tagged walleyes since 1989. Data from these surveys have shown major changes in the bays, especially since these waters were colonized by zebra mussels and quagga mussels in the 1990s. For example, water clarity in BBDN has increased 65% between the early 1990s and 2010s. During this time in LBDN, abundance of forage fishes most commonly eaten by walleyes declined by 62%. Angler catches of walleyes in LBDN declined in summer, and angler reports of tagged fish showed the average distance of the catch location from the tagging site (Rapid River access site) increased from less than 5 miles to more than 25 miles. In other words, where the average summer-caught walleye used to come from around Saunders Point, now it comes from waters about 10 miles south of Escanaba. Clearly, the bay ecosystems have changed and continue to change!

Recent trends: The table below shows the catch rate (number of fish per 320 ft of gill net) for important fishes in LBDN and BBDN. These data suggest an increasing trend in walleye abundance in LBDN, and a lower and stable level of abundance in BBDN. Yellow perch abundance has been relatively high and stable in LBDN compared to BBDN. Smallmouth bass abundance is considerably higher (and seems to be increasing) in BBDN compared to LBDN. Compared to the previously mentioned species, northern pike catches have been fairly stable in both bays.

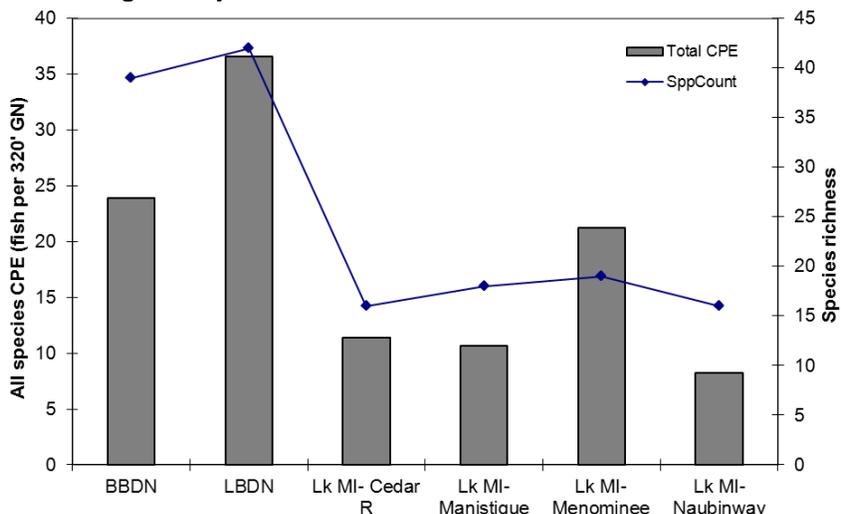
Year	Walleye		Yellow perch		Smallmouth bass		Northern pike	
	LBDN	BBDN	LBDN	BBDN	LBDN	BBDN	LBDN	BBDN
2009	3.2	0.7	4.7	11.0	0.7	1.4	0.7	0.3
2010	4.8	2.8	20.4	7.6	1.4	3.2	0.9	0.4
2011	5.9	2.7	22.8	13.5	0.4	3.1	0.5	0.3
2012	5.8	2.1	27.2	5.0	1.5	3.9	0.5	0.3
2013	10.2	2.3	21.0	16.1	0.3	7.4	0.3	0.4

Fish growth rates: Have you wondered how old that nice one you recently caught might be? The table below shows the average length in inches for different ages of fish encountered in MDNR surveys in the LBDN and BBDN. Averages are shown only for ages where 10 or more fish of a given age were captured.

Age	Yellow Perch	Walleye	Smallmouth bass	Northern pike
1	5.0	11.0	7.8	19.3
2	7.0	13.6	11.1	23.3
3	8.3	15.8	12.9	26.3
4	9.4	17.3	15.2	27.9
5	10.7	19.0	16.4	29.5
6	10.8	19.9	17.5	29.5
7	11.8	21.2	18.3	
8	12.1	21.5		
9		21.7		
10		22.9		

Angler use: Angler effort remains relatively low in both bays, with the number of hours annually spent fishing on LBDN and BBDN being about half of values in the 1990s. This trend exists for most of Michigan's Great Lakes waters.

Comparison among locations: Data from alternate year sampling in Lake Michigan near Menominee, Cedar River, Manistique, and Naubinway suggest that fish communities in the bay environments of LBDN and BBDN support more species and higher densities of fish than the more open-water environments of the other ports. The chart below shows the average number of fish caught per net (CPE) and numbers of fish species observed (species richness) during assessment netting surveys.



Recent trends: Catch rates of nearshore game fish in assessment nets (see table below) generally followed the overall fish community picture, with lower catches being typical of these environments. Higher catches of walleye and yellow perch at Menominee appear to be the exception, and this may relate to influences of the Menominee River or Menominee being in the more southern, productive portion of Green Bay. Walleye catch rates have declined at Menominee over time, as the influence of huge 2003 year class of walleyes lessens, and yellow perch abundance showed a notable increase in 2013. Brown trout CPE at Menominee has increased, with values of 0.3, 0.4, and 1.0 fish per net night for the three survey years. Assessment catch rates of nearshore sport fishes at Cedar River, Manistique, and Naubinway were similar between years.

Year	Walleye		Yellow perch		Smallmouth bass		Northern pike	
	Menominee	Cedar River	Menominee	Cedar River	Menominee	Cedar River	Menominee	Cedar River
2009	8.0		8.4		0.1		0.4	
2011	4.6	3.0	4.6	3.8	0.3	0.3	0.3	0.1
2013	3.0	2.8	21.3	1.0	0.0	0.8	0.3	0.0

Year	Walleye		Yellow perch		Smallmouth bass		Northern pike	
	Manistique	Naubinway	Manistique	Naubinway	Manistique	Naubinway	Manistique	Naubinway
2010	0.6	0.3	0.4	2.8	0.0	0.2	0.5	0.3
2012	1.3	0.1	0.7	4.0	0.3	0.0	0.6	0.2

Bottom trawling: Samples from bottom trawls in waters less than 40 ft deep show a bottom fish community that is dominated by round goby, an invasive species that colonized northern Green Bay around 1998.

2010 Lk MI nearshore trawl composition

