



Fremont Lake, Newaygo County, 9/12/2005 Richard P. O'Neal

Characteristics of Waterbody and Biological Communities.

Fremont Lake is part of the Brooks Creek, Muskegon River and Lake Michigan watersheds. The lake is 790 acres in size, with a perimeter length of 5.96 miles (ArcView GIS). Specific evaluations of aquatic vegetation have not been conducted in this lake but observation indicates this lake has moderate levels of vegetation providing habitat for aquatic life. Shoreline development by humans is extensive on this lake. Refer to the site descriptions for specific information collected in this survey.

Fremont Lake was heavily polluted in the 1960s through early 1980s and had a very abundant carp population. Following water quality improvements, this lake received a full chemical reclamation to reduce the abundant carp population. This lake presently contains a typical warmwater fish community found in Michigan lakes, with predominant game species including northern pike, largemouth bass, yellow perch, bluegill, pumpkinseed, black crappie, bullhead, carp, and white sucker. Walleye stocking began in 1983. Refer to the catch summary and fish growth analysis portion of this report for detailed information on catch rates, lengths, and growth of fish.

Purpose and Results of Survey.

The purpose of this survey was to evaluate walleye recruitment. Information was gathered on larger walleye as well. An electrofishing survey was conducted over 2.85 miles of shoreline (Figure 1; ArcView GIS). This distance was insufficient to estimate young-of-the-year density.

The fall electrofishing showed some survival of stocked walleye. A total of 12 (7.4/hr, 4.2/mile) Age-0 walleye were collected. Growth rates were the same as state average. Relatively good numbers of larger walleye were also collected during the survey, especially of age-2 (2003 year-class) fish. It appears there was very good survival of the 2003 year-class. Growth of older fish appeared to be at or above state average. Angler fishing reports have been very good for walleye during the past two years.

Stocking of walleye in Fremont Lake began in 1983, following the full chemical reclamation of this lake. A total of 866,033 fingerling walleye have been stocked since 1984, with some additional fry and adults in 1983 (Table 1). Recruitment appeared to be much higher in 1997 (age-0 = 74/hour, 42/mi, age-1 = 22.2/hour, 12.7/mi) indicating variable first year survival in this lake.

Conclusions and Recommendations.

Recruitment of walleye appears to be variable in Fremont Lake. The 1997 and 2005 surveys indicated strong year-classes were present in 1996, 1997, and 2003. Lower survival was indicated for the 2005 year-class. Walleye stocking should continue but may need to be adjusted to insure good growth rates based on earlier surveys.

Healthy biological communities in lakes require suitable natural habitat. Human development within the lake watershed, along the shoreline, and in the lake proper has a tendency to change and diminish natural habitat. Appropriate watershed management is necessary to sustain healthy biological communities, including fish, invertebrates, amphibians, reptiles, birds and aquatic mammals. Generally for lakes this includes maintenance of water quality, especially for nutrients; preservation of natural shorelines, especially shore contours and vegetation; and preservation of bottom contours, vegetation, and wood debris within the lake. The reader should refer to the Fisheries Management Guide to Stream Protection and Restoration (MDNR Fisheries Division Special Report Number 15), and the Muskegon River Watershed Assessment (MDNR Fisheries Division Special Report Number 19) for a detailed discussion of appropriate watershed management techniques. Detailed guidelines for lakes are being developed and will be available in the future. Information necessary to make specific recommendations for this lake are not available at this time.



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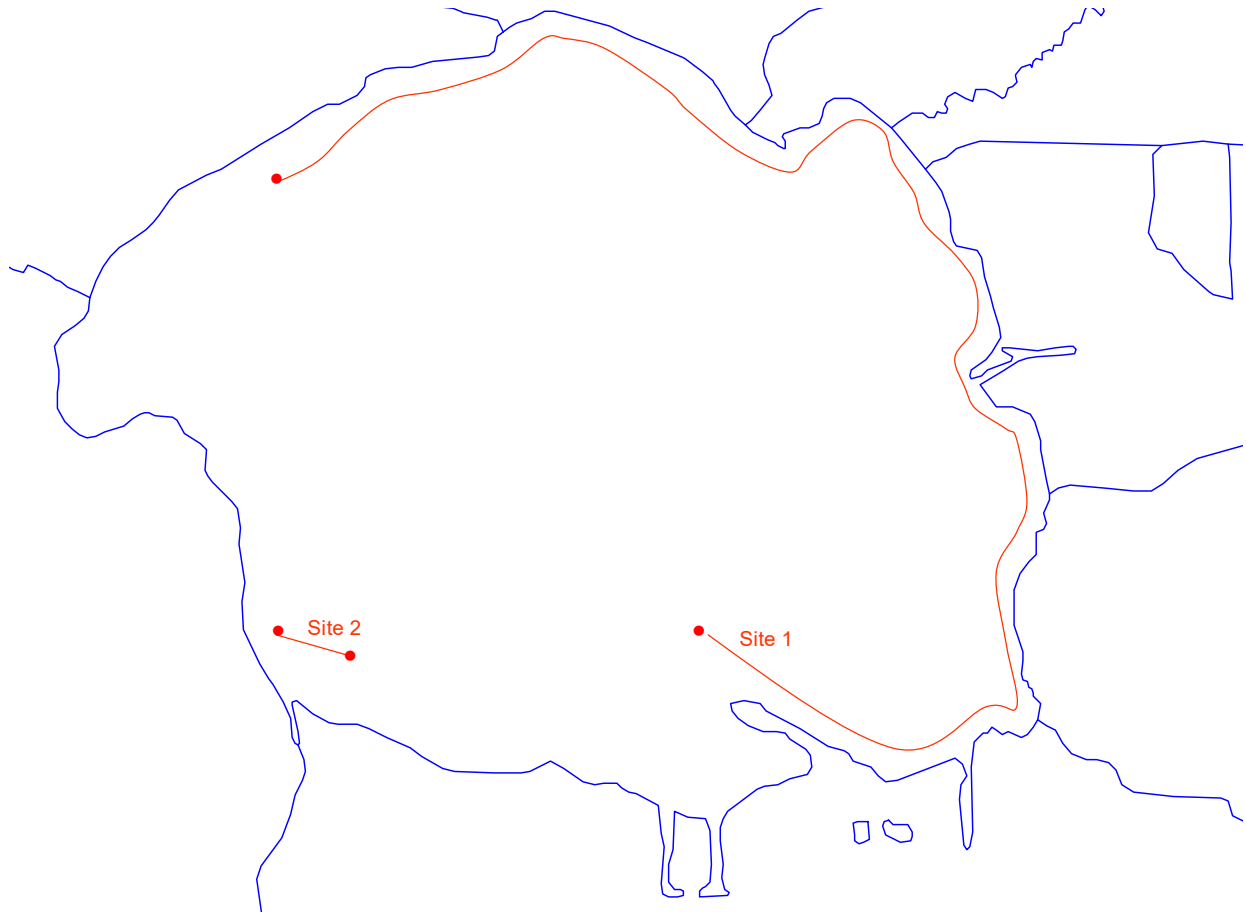


Figure 1. Fremont Lake electro-fishing survey sites used in 2005.



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Table 1. Walleye stocking history of Fremont Lake, Newaygo County. Note: OX indicates oxytetracycline mark.

Year	Number of fingerlings	Size (inches)	mark
1983	A		
1984	21381	3.7	
1985	3273	5.2	
1986	51684	1.8	
1987	24600	1.7	
1988	1276	4.2	
1989	30814	2.1	
1990	0		
1991	60803	1.5	
1992	93597	1.4	
1993	0		
1994	83088	1.1	
1995	0		
1996	82131	1.1	
1997	72787	1.9	
1998	0		
1999	81068	1.1	
2000	0		
2001	101319	1.0	ox
2002	0		
2003	79098	1.0	
2004	0		
2005	79384	1.1	
Total	866303		

A. In 1983, 2.8 million fry and 700 large walleye were stocked.