Tippy Dam Pond

Manistee County
Manistee River Watershed; Surveyed 2011

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Environment

Tippy Dam Pond (Fig. 1) is an impoundment on the Manistee River near Wellston, MI, in southeastern Manistee County. Tippy Dam Pond was created in 1916-1918 when Tippy Dam (originally called "Junction Dam") was constructed. At full pool, it has a surface area of 1540 acres (Lawler, Matusky, and Skeller (LMS), Binder 2, 1991). Average discharge below Tippy Dam is 1773 cfs (Lawler, Matusky, and Skeller, Binder 2, 1991). Tippy Dam was constructed upon a high-gradient (6 ft/mile) riffle area (Rozich, 1998) and maintains a normal head of 58.9 feet (LMS, Binder 2, 1991). Tippy Dam is a hydroelectric dam, and it is operated by Consumers Energy and regulated by the Federal Energy Regulatory Commission. The current operating license was issued in 1994 and will expire in 2034.

The majority of the land surrounding Tippy Dam Pond is owned by the U. S. Forest Service (USFS) as part of the Manistee National Forest. Much of the remaining property is owned or leased by Consumers Energy. There are three public boat launches on Tippy Dam Pond (Fig. 2). One is at Red Bridge on Coates Highway (administered by the USFS) on the extreme upper end of the impoundment, another (administered by MDNR as part of the Tippy Dam State Recreation Area) is just north of the dam itself, and the third (administered by Norman Twp.) is on the Pine River arm of the impoundment, off Snyder Rd. Rustic camp sites are available at Red Bridge and at the Tippy Dam State Recreation Area, and there are two private campgrounds on the impoundment as well. Dispersed camping is possible at many different unofficial campsites located on USFS land around Tippy Pond.

The terrain surrounding Tippy Dam Pond is characterized as hilly with a mix of hardwoods and conifers. Substrates in the impoundment consist mainly of sand, organic muck (particularly in the coves), and some gravel. Most of the impoundment is defined by steep dropoffs. The upper portion of the impoundment has a maximum depth of 30 feet and includes several large islands. The Pine River arm of the impoundment has relatively steep dropoffs, with maximum depth between 30 and 40 feet. In the main body of Tippy Dam Pond, maximum depth is 50 feet, with very steep dropoffs. Several more islands and some shallow, flat areas are present in the main body area. Stumps and woody debris which once defined the floodplain now offer fish cover. Those stumps also can present navigational hazards.

A number of Designated Trout Streams flow into Tippy Dam Pond, the largest of which is the Pine River. The Pine River is a Blue-Ribbon Trout Stream with naturally reproducing populations of brown trout, brook trout, and rainbow trout. In 2003, the removal of Stronach Dam, a large hydroelectric dam on the Pine River approximately 1.5 miles upstream of Tippy Pond, was completed. The completion of this project resulted in uninhibited fish passage from Tippy Dam Pond upstream into the Pine River. Other smaller trout streams that flow into Tippy Dam Pond include Hinton Creek, Peterson Creek, and Snyder's Creek.

History

The first documented fish stocking of Tippy Dam Pond took place in 1929, when bluegill and yellow perch were stocked (Table 1). Walleye fry and smallmouth bass were first stocked in the following year. From 1931 to 1938, fish stockings included smallmouth bass, largemouth bass, walleye, yellow perch, and bluegill. After 1938 fish stocking ceased in Tippy Dam Pond until 1984. In 1984 and 1985, walleye fry and spring fingerlings were stocked. Since then, spring fingerling walleye have been stocked on a fairly regular basis, with fish stocked in 1992, 1999, 2001, 2004, and 2011. Channel catfish fall fingerlings were stocked for the first time in 1988, with further stockings in 1991, 1998, 2004, and 2008.

The first MDNR fisheries survey on Tippy Dam Pond was conducted from May 20-23, 1980. During that survey, the impoundment was drawn down so that repairs could be made on the dam. Species recorded in that survey included brown trout, northern pike, pumpkinseed sunfish, rock bass, smallmouth bass, walleye, and yellow perch (Table 2). Limnological data were collected in 1955 and 1978, but no fisheries surveys had occurred on Tippy Dam Pond until 1980.

The next fisheries survey of Tippy Dam Pond was conducted in 1990 as part of the relicensing effort for Tippy Dam. The 1990 survey was conducted by a consultant retained by Consumers Energy (LMS, Binder 12, 1991). Methods used included electrofishing, seining, fyke nets, trap nets, and gill nets. A total of 971 fish representing 25 species were captured (Table 2). Gamefish species captured included smallmouth bass, walleye, northern pike, largemouth bass, and brown trout. Panfish species caught included rock bass, black crappie, bluegill, pumpkinseed sunfish, and yellow perch. Other species caught included brown bullhead, common carp, chestnut lamprey, golden redhorse, golden shiner, greenside darter, johnny darter, logperch, mimic shiner, river redhorse, sand shiner, shorthead redhorse, silver redhorse, spottail shiner, trout perch, and white sucker.

MDNR surveyed Tippy Dam Pond a second time in the spring and summer of 2002 (Tonello 2004). The survey consisted of inland gill nets, trap nets, and large-mesh fyke nets set over a four-day period from 5/28/02 to 5/31/02 and an electroshocking effort on 6/27/02. A total of 720 fish weighing 556.4 lbs and representing 15 species (Table 2) were caught in the 2002 survey.

Panfish species captured in the 2002 survey included black crappie, bluegill, pumpkinseed sunfish, rock bass, and yellow perch. Black crappies were particularly numerous in the catch, with 141 individuals caught ranging from 5 to 13 inches in length. Gamefish captured in the survey consisted of channel catfish, largemouth bass, northern pike, rainbow trout, smallmouth bass, and walleye. Of those, smallmouth bass were the most common, with 145 individuals caught and fish up to 19 inches in length. Nine different age classes of smallmouth bass were represented in the catch. Thirteen northern pike were caught, and the largest individual was 41 inches in length. The 19 walleye caught in the 2002 survey ranged from 7 to 22 inches in length and represented seven different age classes. A mix of stocked and non-stocked walleye year classes were represented. Also, a total of 23 channel catfish ranging from 10 to 30 inches in length were caught in the survey. Other species collected during the 2002 survey included brown bullhead, white sucker, redhorse (not identified to species) and trout-perch.

The next MDNR survey took place on 9/15/04 (Tonello 2004), when an MDNR fisheries crew conducted an electrofishing effort to evaluate the survival of stocked walleye, and document any

walleye natural reproduction occurring. The survey was conducted according to the protocols outlined by Serns (1982, 1983) and Ziegler and Schneider (2000). However, only eight walleye were caught in the sampling effort. Four of those caught were age-0 (young of the year), one was age-2, two were age-3, and one was age-5. This resulted in catch rates of 1.33/mile (age-0) and 0.33/mile (age-1). These are relatively low catch rates, indicative of weak year classes. Three other walleye were observed but not captured in the survey. Other species observed but not captured included logperch, bluegill, pumpkinseed sunfish, rock bass, carp, white sucker, channel catfish, largemouth bass, smallmouth bass, and northern pike (Table 2).

Fisheries personnel from the Little River Band of Ottawa Indians (LRBOI) have also conducted fisheries surveys on Tippy Pond in recent years. From 2004 to 2009, LRBOI personnel conducted fall walleye evaluations (LRBOI 2009) by electrofishing in the style of Serns (1982, 1983) and Ziegler and Schneider (2000). In those years, the age-0 walleye catch ranged from 3.0 to 11.0 fish per mile, while the age-1 walleye catch ranged from 1.9 to 6.9 fish per mile. According to Ziegler and Schneider, age-0 catch rates under 45/mile indicate weak year classes. Walleye were only stocked in one of those years (2004), so age-0 fish caught in other years were naturally reproduced fish. Despite the fact that the year classes were relatively weak, it was concluded that walleye natural reproduction had occurred in all years. Further sampling was conducted by LRBOI Fisheries personnel in 2010 and 2011 (Marty Holtgren, LRBOI, personal communication). In 2010, the catch rate for age-0 walleye was 8.4 fish per mile, and the catch rate for age-1 walleye was 0.8 fish per mile. In 2011, the age-0 walleye catch rate was 5.3 fish per mile, and the age-1 walleye catch rate was 0.5 walleye per mile.

Tippy Dam Pond has produced thirteen entries into the MDNR Master Angler program in recent years (Table 3). Species entered include seven rock bass, four channel catfish, one northern pike, and one bluegill.

Current Status

The most recent comprehensive fisheries survey of Tippy Dam Pond was conducted in the spring and summer of 2011. Status and trends netting protocols (Wehrly et al. 2009) were used for the survey. The netting portion of the survey took place from May 16 through May 20. Gear used included five large-mesh fyke nets (15 net-nights), 4 trap nets (11 net-nights), and 5 experimental graded-mesh inland gill nets (18 net-nights). Seining and electrofishing were conducted on June 29, 2011. A total of six seine hauls were completed, along with three ten-minute electrofishing transects conducted with an 18-foot boomshocking boat. Age and growth analysis on fish captured was conducted by counting growth rings on scales (panfish and smaller gamefish) and spines (larger gamefish). The purpose of this survey was to assess the fish community in Tippy Dam Pond, and evaluate walleye and channel catfish populations.

During the May netting portion of the 2011 survey of Tippy Dam Pond, a total of 475 fish were caught, representing 19 different species (Table 4). Rock bass were the most abundant species collected, with a total of 137 caught (from 3-11 inches), representing 29% of the total catch by number. Other panfish species present in the 2011 netting catch (Table 4) included black crappie (35 fish caught ranging from 8-12 inches), bluegill (7 from 5-8 inches), pumpkinseed sunfish (1 at 5 inches), and yellow perch (30 from 5-11 inches). The most abundant game fish species caught in the netting portion of the 2011 survey was northern pike, with 66 caught ranging from 10-39 inches in length. Other

games species present in the 2011 netting catch included largemouth bass (1 at 6 inches), rainbow trout (4 from 12-18 inches), smallmouth bass (19 from 12-18 inches), and walleye (23 from 8-25 inches). Channel catfish were also abundant, with 39 caught from 10-28 inches in length. Channel catfish represented 19.1% of the catch by weight. Other species caught in the netting portion of the 2011 survey included golden redhorse, greater redhorse, mudpuppy, shorthead redhorse, silver redhorse, white sucker, and yellow bullhead.

During the June seining and electrofishing portion of the 2011 survey of Tippy Dam Pond, a total of 334 fish were caught, representing 16 different species (Table 5). Species most frequently collected while seining and electrofishing were rock bass (78 from 2-8 inches), sand shiner (56 from 1-2 inches), and smallmouth bass (54 from 3-14 inches). Other panfish species present in the seining and electrofishing catch included bluegill (24 from 1-5 inches), pumpkinseed (1 at 5 inches) and yellow perch (32 from 2-5 inches). Other game species present in the seining and electrofishing catch included largemouth bass (27, all in the 1 inch class), northern pike (3 from 11-20 inches), and walleye (8 from 6-8 inches). Other nongame species present in the seining and electrofishing catch included bluntnose minnow, greater redhorse, Johnny darter, logperch, shiner (not identified at species level), and silver redhorse.

In the netting portion of the survey, species caught showed growth rates that were near the State average (Table 6). The two exceptions were black crappie and walleye. Black crappie (ages 4, 6, and 7) were growing nearly one inch faster than the State average, and walleye (age 4) were growing 1.0 inches below the State average. In the electrofishing and seining portion of the survey however, all species were growing slightly below the State average (Table 7). Fish from the electrofishing and seining portion of the survey tended to be younger fish. For example, age 1, 2, and 4 smallmouth bass from the electrofishing and seining portion of the survey were growing 1.5 inches below the State average, while age 5 and 6 smallmouth bass from the netting portion of the survey were growing 0.1 inches above the State average.

Previously recorded fish species that were not present in the 2011 survey of Tippy Dam Pond included brown bullhead, brown trout, chestnut lamprey, common carp, golden shiner, greenside darter (this was likely a misidentified Iowa darter), mimic shiner, river redhorse, spottail shiner, and trout perch (Table 2). Species caught in the 2011 survey that were not present in previous surveys of Tippy Dam Pond included black bullhead, bluntnose minnow, greater redhorse, mudpuppy, and yellow bullhead.

Shoreline data were collected on Tippy Dam Pond by DNR Fisheries personnel on July 28, 2011 according to protocols outlined in Wehrly et al. (2009). Data collected included the number of docks, submerged trees, and houses observed per kilometer of shoreline, as well as how much of the shoreline is armored or hardened with a structure to prevent erosion. Tippy Dam Pond averaged 0.2 docks, 156.3 submerged trees and 0.0 houses per kilometer of shoreline. Armoring structures and materials were present along only 1.0% of the lake shoreline.

Analysis and Discussion

The 2011 MDNR fisheries survey of Tippy Dam Pond showed relatively healthy fish populations. Although catch rates were moderate, most popular fish species showed multiple year classes (an indication that natural reproduction is occurring regularly) and modest growth. The popular fish

species for anglers on Tippy Dam Pond include black crappie, channel catfish, northern pike, smallmouth bass, and walleye.

Walleye, in particular, are a very popular species for Tippy Dam Pond anglers. Fisheries surveys conducted in multiple years by both MDNR and LRBOI show that while successful walleye natural reproduction is clearly occurring in most years, it does not appear to be sufficient to support population levels desired by the angling public.

Currently, Tippy Dam Pond offers an outstanding opportunity for catching large channel catfish. While channel catfish are not rare statewide, inland lake opportunities in the northwestern Lower Peninsula are few. Thus Tippy Dam Pond offers a unique angling experience not often found in this part of the State. It is doubtful that natural reproduction of channel catfish is occurring in Tippy Dam Pond or nearby Hodenpyl Dam Pond (Tonello 2012), and most likely all of the fish present in both lakes originated from stocking. Aging structure analyses of the fish caught in the 2011 Tippy Dam Pond survey does not entirely align with stocking years; however this is attributed to difficulties associated with aging older channel catfish.

Compared to other lakes in Michigan, Tippy Dam Pond is sparsely populated with docks and dwellings. Tippy Dam Pond had 0.0 dwellings per kilometer while the average large deep lake in Michigan has 9.2 dwellings per kilometer (Wehrly et al. in press). Tippy Dam Pond also had only 0.2 docks per kilometer of shoreline, while the average large deep lake in Michigan had 4.3 docks per kilometer (Wehrly et al. in press). Tippy Dam Pond also had much more submerged woody debris (156.3 trees/km) than other large lakes in Michigan (average =8.4 trees/km; Wehrly et al. in press). Tippy Dam Pond also had very little shoreline armoring (1.0%) than other large, deep, inland lakes in Michigan (average=24.2%). The lack of development on Tippy Dam Pond is due to the fact that much of the shoreline is owned either by the USFS or by Consumers Energy and has been kept in a relatively natural state by those two entities. Due to its largely undeveloped state, Tippy Dam Pond offers a wilderness-type fishing experience that is not found on most other northwestern Lower Peninsula lakes.

Management Direction

Walleye stocking should continue in Tippy Dam Pond. Due to precautions related to VHS (Viral Hemorrhagic Septicemia), no walleye were stocked into Tippy Dam Pond between 2004 and 2011. Stocking resumed in 2011 and should continue into the foreseeable future. Although natural reproduction is occurring in most years, it does not appear to be sufficient to support the level of fishery desired by the public. Therefore, walleye stocking levels should be 50,000 spring fingerlings (44/acre) every other year. Walleye stocking should resume in 2013. When possible, fall electrofishing surveys should be conducted (Serns 1982, 1983). While it is not necessary to conduct such surveys every time walleye are stocked, conducting them periodically should allow managers to monitor the survival of the stocked fish, levels of natural reproduction, and walleye growth.

Tippy Dam Pond has an impressive channel catfish population that offers anglers the opportunity to catch large fish. The stocked channel catfish in Tippy Dam Pond exhibit excellent growth rates and strong survival. However, it may be possible to over-stock channel catfish in northern Michigan impoundments. Nearby Hodenpyl Dam Pond (Tonello 2012) currently has a very large population of

stocked channel catfish that may be inhibiting the populations of other popular fish species. While Tonello (2012) calls for a halt in channel catfish stocking in Hodenpyl Dam Pond, channel catfish stocking should continue in Tippy Dam Pond, but at lower rates. Therefore, stocking of channel catfish into Tippy Dam Pond should be at the reduced level of 7,500 fall fingerlings (6/acre) every third year. Previous Fisheries Prescriptions for Tippy Dam Pond called for 15,000 fall fingerlings (12/acre) every third year. The last stocking of channel catfish into Tippy Dam Pond was in 2008; therefore it is recommended that the next stocking should occur in 2013.

Netting surveys of Tippy Dam Pond should be conducted more frequently. Conducting frequent netting surveys allows fisheries personnel to track fish population dynamics occurring in Tippy Dam Pond, and in particular track the performance of stocked fish like channel catfish and walleye. However, current budgetary and personnel constraints on DNR Fisheries Division will likely not allow for more frequent sampling in the near future. Unless major changes occur within Fisheries Division, it is unlikely that another netting survey will be conducted on Tippy Dam Pond within the next ten years.

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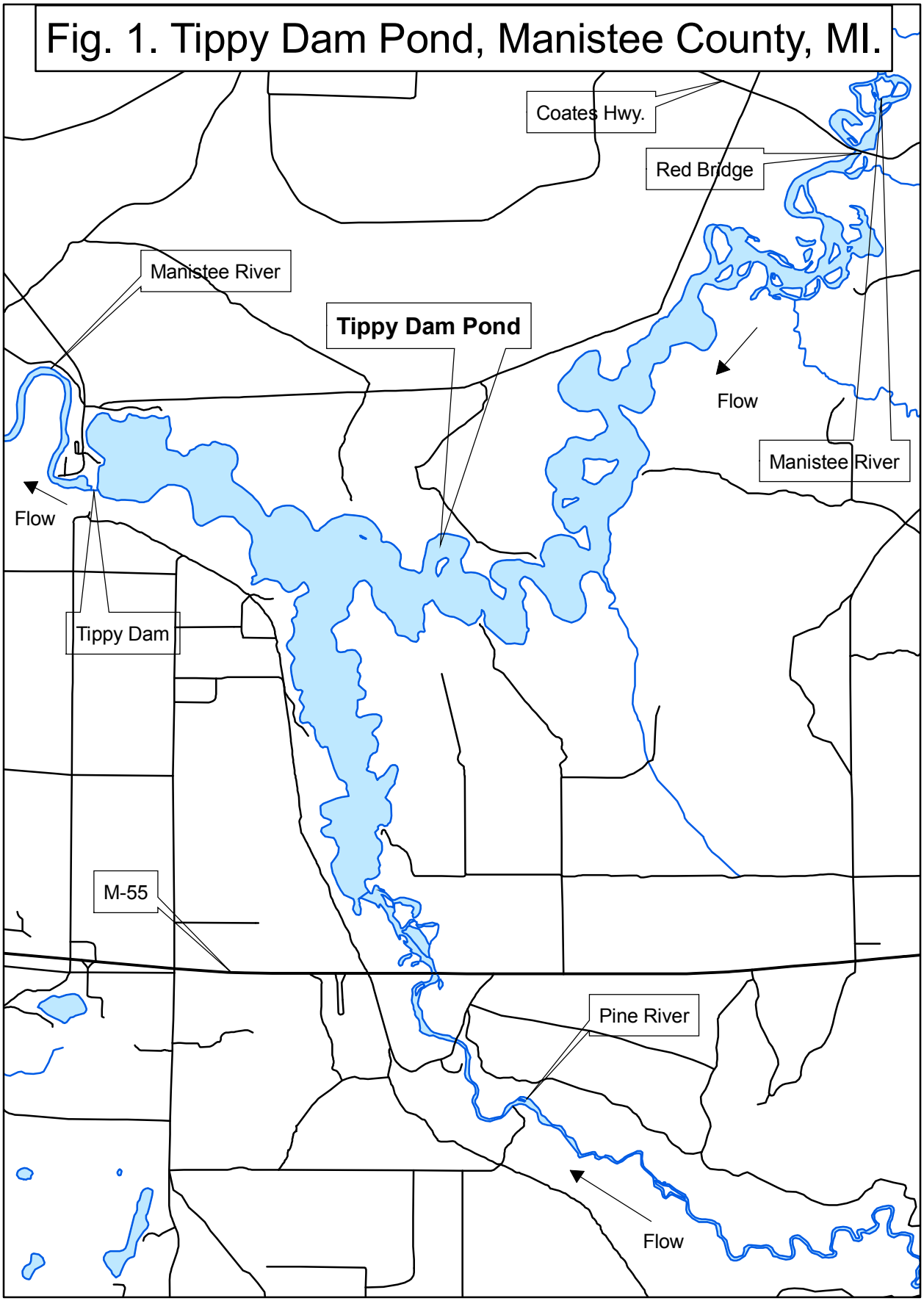
Fig. 1. Tippy Dam Pond, Manistee County, MI.
Coates Hwy.
Red Bridge
Manistee River
Tippy Dam Pond
Flow
Manistee River
Flow
Tippy Dam
M-55
Pine River
Flow

Fig. 2. Publicly accessible boat launch sites on Tippy Dam Pond, Manistee County, MI.

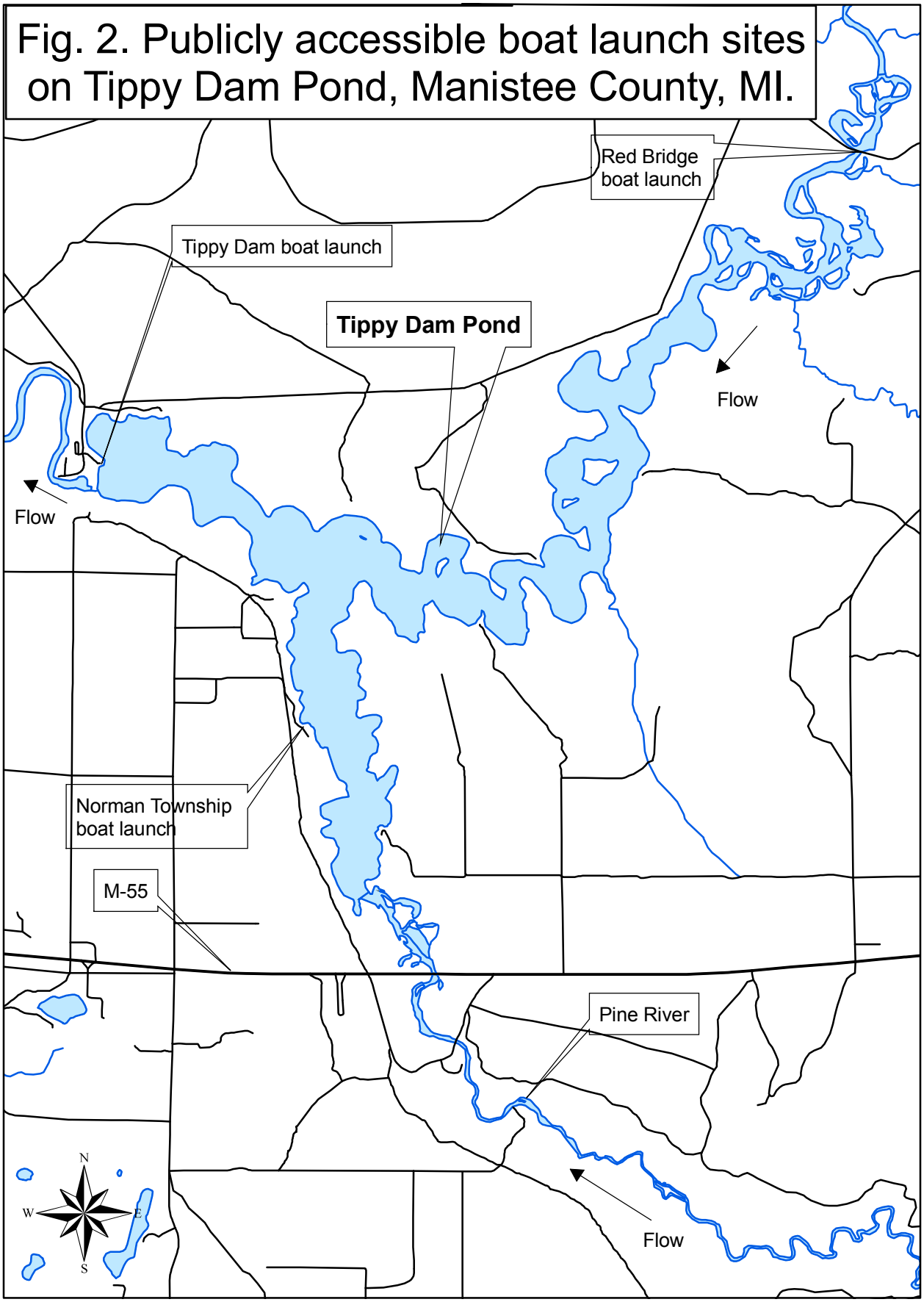

Table 1. Fish stocked in Tippy Dam Pond, Manistee County, 1929-2011.

Year	Species	Number	Size/age	Strain
1929	bluegill	8,000	4-5 mo.	
	yellow perch	2,500	1 mo.	
1930	bluegill	600	yearlings	
	smallmouth bass	10,000	unknown	
	walleye	300,000	fry	
	yellow perch	5,000	unknown	
1931	smallmouth bass	2,500	1 mo.	
1932	largemouth bass	1,300	unknown	
1933	bluegill	12,000	unknown	
	largemouth bass	2,000	unknown	
	smallmouth bass	900	unknown	
	walleye	370,000	fry	
1934	bluegill	12,500	unknown	
	largemouth bass	250	unknown	
	smallmouth bass	150	unknown	
	yellow perch	15,000	unknown	
1935	walleye	170,000	fry	
	yellow perch	25,000	unknown	
1936	walleye	450,000	fry	
1937	bluegill	15,000	5 mo.	
	largemouth bass	6,300	fingerlings	
	smallmouth bass	3,000	3 mo.	
	walleye	450,000	fry	
1938	bluegill	25,200	5 mo.	
	walleye	320,000	fry	
	yellow perch	96,000	7 mo.	
1939	bluegill	80,000	4-5 mo.	
	smallmouth bass	2,000	5 mo.	
	walleye	300,000	fry	
1940	bluegill	110,000	4 mo.	
	smallmouth bass	700	4 mo.	
	walleye	120,000	fry	
1941	bluegill	104,000	4 mo.	
	smallmouth bass	600	4 mo.	
	yellow perch	23,000	5 mo.	
1942	bluegill	24,500	4 mo.	
	smallmouth bass	500	4 mo.	
	walleye	300,000	fry	
1943	smallmouth bass	750	3 mo.	
1944	bluegill	2,000	4 mo.	
	smallmouth bass	1,000	4 mo.	
1984	walleye	7,972	fall fingerlings	
	walleye	172,500	fry	
1985	walleye	125,000	fry	Manistique
	walleye	87,500	fry	Muskegon
	walleye	13,500	spring fingerlings	Muskegon
1988	channel catfish	16,530	fall fingerlings	
1991	channel catfish	20,000	yearlings	

Table. 1 continued

1992	walleye	44,479	spring fingerlings	Muskegon
1998	channel catfish	25,942	yearlings	
1999	walleye	43,029	spring fingerlings	Muskegon
2001	walleye	52,499	spring fingerlings	Muskegon
2004	channel catfish	14,958	yearlings	
	walleye	50,941	spring fingerlings	Muskegon
2008	channel catfish	15,081	yearlings	
2011	walleye	49,935	spring fingerlings	Muskegon

Table 2. Presence/absence of fish species in historical fisheries surveys of Tippy Dam Pond.

Species	1980	1990	2002	2004	2011
black bullhead					x
black crappie		x	x		x
bluegill		x	x	x	x
bluntnose minnow					x
brown bullhead		x	x		
brown trout	x	x			
channel catfish			x	x	x
chestnut lamprey		x			
common carp		x		x	
golden redhorse		x			x
golden shiner		x			
greater redhorse					x
greenside darter*		x			
Johnny darter		x			x
largemouth bass		x	x	x	x
logperch		x		x	x
mimic shiner		x			
mudpuppy					x
northern pike	x	x	x	x	x
pumpkinseed sunfish	x	x	x	x	x
rainbow trout			x		x
redhorse (non-specific)			x		
river redhorse		x			
rock bass	x	x	x	x	x
sand shiner		x			x
shorthead redhorse		x			x
silver redhorse		x			x
smallmouth bass	x	x	x	x	x
spottail shiner		x			
trout-perch		x	x		
walleye	x	x	x	x	x
white sucker		x	x	x	x
yellow perch	x	x	x		x
yellow bullhead					x

*likely a mis-identified Iowa darter

Table 3. Michigan DNR Master Angler awards issued for fish caught from Tippy Dam Pond, Manistee County, 1994-2012.

Species	Number of Master Angler awards issued
Rock bass	7
Channel catfish	4
Northern pike	1
Bluegill	1
Total:	13

Table 4. Number, weight, and length of fish collected from Tippy Dam Pond with large mesh fyke nets, trap nets, inland gillnets, on May 16-20, 2011.

Species	Number	Percent by number	Weight (Pounds)	Percent by weight	Length range (inches)1	Average length	Percent legal size2
black bullhead	7	1.5	0.7	0.1	9-12	11.8	100 (7")
black crappie	35	7.4	22.6	3.0	8-12	10.3	100 (7")
bluegill	7	1.5	1.6	0.2	5-8	6.8	71 (6")
channel catfish	39	8.2	143.5	19.1	10-28	20.9	78 (12")
golden redhorse	6	1.3	17.6	2.3	17-24	20.0	
greater redhorse	22	4.6	72.5	9.6	16-24	21.0	
largemouth bass	1	0.2	0.1	0.0	6-6	6.5	0 (14")
mudpuppy	1	0.2	0.0	0.0	11-11	11.5	
northern pike	66	13.9	150.8	20.1	10-39	20.4	14 (24")
pumpkinseed	1	0.2	0.3	0.0	5-5	5.5	0 (6")
rainbow trout	4	0.8	6.4	0.9	12-18	16.3	100 (8")
rock bass	137	28.8	39.5	5.3	3-11	7.0	85 (6")
shorthead redhorse	17	3.6	59.7	7.9	14-24	20.3	
silver redhorse	9	1.9	25.5	3.4	15-24	20.3	
smallmouth bass	19	4.0	33.8	4.5	12-18	15.2	74 (14")
walleye	23	4.8	40.3	5.4	8-25	16.5	57 (15")
white sucker	50	10.5	126.9	16.9	6-22	17.7	
yellow bullhead	1	0.2	0.9	0.1	12-12	12.5	100 (7")
yellow perch	30	6.3	8.7	1.2	5-11	8.4	80 (7")
Total	475	100	751.4	100			

[1]Note some fish were measured to 0.1 inch, others to inch group: e.g., "5"=5.0 to 5.9 inch, 12=12.0 to 12.9 inches; etc.

[2]Percent legal size or acceptable size for angling. Legal size or acceptable size for angling is given in parentheses.

Table 5. Number, weight, and length of fish collected from Tippy Dam Pond by seining and electrofishing on June 29, 2011.

Species	Number	Percent by number	Weight (Pounds)	Percent by weight	Length range (inches)1	Average length	Percent legal size2
black crappie	1	0.3	0.0	0.0	3-3	3.5	0 (6")
bluegill	24	7.2	0.6	1.2	1-5	2.8	0 (6")
bluntnose minnow	5	1.5	0.6	1.2	2-2	2.5	
greater redhorse	3	0.9	4.6	9.0	14-17	10.5	16.2
Johnny darter	3	0.9	0.0	0.0	2-2	2.5	
largemouth bass	27	8.1	0.0	0.0	1-1	1.5	0 (14")
logperch	4	1.2	0.0	0.0	3-3	3.5	
northern pike	3	0.9	3.3	6.4	11-20	16.5	0 (24")
pumpkinseed	1	0.3	0.1	0.1	5-5	5.5	0 (6")
rock bass	78	23.4	9.8	19.1	2-8	5.0	32 (6")
sand shiner	56	16.8	0.2	0.4	1-2	2.4	
shiner (unidentified)	27	8.1	0	0.0	1-2	2.5	0 (6")
silver redhorse	8	2.4	15.6	30.5	7-21	17.2	37 (6")
smallmouth bass	54	16.2	14.6	28.5	3-14	7.0	2 (14")
walleye	8	2.4	1.2	2.3	6-8	7.8	0 (15")
yellow perch	32	9.6	0.6	1.2	2-5	3.6	2 (14")
Total	334	100	51.2	100			

[1]Note some fish were measured to 0.1 inch, others to inch group: e.g., "5"=5.0 to 5.9 inch, 12=12.0 to 12.9 inches; etc.

[2]Percent legal size or acceptable size for angling. Legal size or acceptable size for angling is given in parentheses.

Table 6. Average total weighted length (inches) at age, and growth relative to the state average, for fish sampled from Tippy Dam Pond with trap nets, fyke nets, and inland gill nets, May 16- 20, 2011. The number of fish aged is given in parenthesis. A minimum of five fish per age group is statistically necessary or calculating a Mean Growth Index, which is a comparison to the State of Michigan average.

Species	Age I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	Mean Growth Index
Black crappie			8.0 (4)	9.7 (13)	10.5 (4)	11.0 (6)	11.6 (5)	11.8 (2)						+0.9
Bluegill			5.6 (2)	6.0 (1)	8.1 (2)	7.7 (1)								-
Channel catfish				13.7 (1)						22.4 (2)	24.3 (5)	25.9 (2)	26.0 (1)	-
Large-mouth bass		6.8 (1)												-
Northern pike	13.3 (10)	17.7 (6)	20.0 (19)	22.1 (19)	25.0 (7)	32.5 (3)	32.3 (1)							-0.3
Pumpkin-seed			5.4 (1)											-
Rainbow trout			12.4 (1)	17.4 (3)										-
Rock bass		4.2 (1)	4.1 (2)	5.6 (15)	6.5 (8)	7.2 (11)	8.2 (11)	9.0 (5)	9.4 (4)	9.1 (1)	11.2 (2)	9.9 (1)		-0.4
Small-mouth bass				12.4 (3)	14.1 (6)	15.8 (5)	17.4 (4)	18.2 (1)						+0.1
Walleye	8.2 (1)	11.4 (2)	14.0 (4)	14.8 (5)	15.7 (2)	19.0 (3)	18.3 (2)	24.7 (2)	24.3 (1)					-1.0
Yellow perch			5.9 (4)	7.0 (4)	8.3 (15)	8.5 (1)	10.5 (2)	11.4 (1)	11.4 (3)					-0.3

Table 7. Average total weighted length (inches) at age, and growth relative to the state average, for fish sampled from Tippy Dam Pond by electrofishing and seining, June 29, 2011. Number of fish aged is given in parenthesis. A minimum of five fish per age group is statistically necessary for calculating a Mean Growth Index, which is a comparison to the State of Michigan average.

	Age										Mean Growth
Species	I	II	III	IV	V	VI	VII	VIII	IX	X	Index
Black crappie	3.1 (1)										-
Bluegill		3.8 (1)	5.2 (4)								-
Northern pike	11.5 (1)	17.6 (1)	20.7 (1)								-
Pumpkinseed			5.8 (1)								-
Rock bass		3.8 (12)	4.4 (3)								-0.5
Smallmouth bass	4.1 (19)	7.1 (15)	7.7 (2)	11.6 (9)	14.8 (1)	13.6 (1)					-1.5
Walleye	7.6 (7)	8.5 (1)									-0.6
Yellow perch	3.4 (14)	4.8 (3)									-0.6