Hamlin Lake

Mason County
Big Sable River watershed, surveyed 2010

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Environment

Hamlin Lake (Figure 1) is 5,350 acres in size and located approximately five miles north of Ludington, in western Mason County, Michigan, in the northwestern Lower Peninsula. Hamlin Lake was originally a "drowned river mouth lake" located approximately one mile upstream of Lake Michigan, with the Big Sable River flowing through it. In the 1850s, a wooden sawmill dam was constructed on the outlet of the lake. That dam failed in 1888, but was rebuilt. It failed again in 1912 and was replaced with a concrete dam. Currently, the dam is a 20-foot high concrete structure that raises the water level of Hamlin Lake by about 12 feet. The dam is operated by the Michigan Department of Natural Resources (DNR) and is located within Ludington State Park. It was most recently renovated in 2007. Upstream of Hamlin Lake, the Big Sable River is a designated trout stream with populations of brown and brook trout. The river rises from several spring-fed lakes in western Lake County and flows for approximately 40 miles before entering Hamlin Lake, which is the largest lake in the Big Sable River watershed and in Mason County.

Hamlin Lake has two major basins separated by a narrows (Figure 1). The lower (or western) basin is the larger and deeper of the two, with depths nearing 80 feet. The upper, (eastern) basin is shallower, only reaching approximately 34 feet in depth. The east portion of this basin is shallow and swampy near where the Big Sable River enters. Hamlin Lake also has a number of small "bayous" that were created when the water level was raised by the dam. Some of the more prominent bayous include South, Middle, North, Rupert, and Indian Pete. Due its shallow nature, the upper basin has heavy concentrations of aquatic plants, some of which are controlled using chemical treatments on an annual basis. Chemical aquatic vegetation treatments are also conducted in some bayous and shoal areas in the lower basin.

The land surrounding the upper basin is mostly privately owned, with public access limited to Victory and Wilson Hill Township parks on the southern side. The extreme eastern tip of the lake where the Big Sable River flows in is surrounded by Manistee National Forest land. In that area, there is a boat launch on the north side of the lake known as the Hamlin Marsh access site. The Nordhouse Dunes Wilderness Area, also part of the Manistee National Forest, lies just to the north and east of Hamlin Lake. The eastern shore of the lower basin is mostly privately owned, with only Long Skinny Park, located ½ mile north of the South Bayou, offering shore fishing access. However, much of the western shore of the lower basin is owned by the State of Michigan as part of Ludington State Park. Also, a one-mile reach of the Big Sable River between the dam and Lake Michigan flows entirely through state land. Ludington State Park offers tremendous access to Hamlin Lake, including a boat launch, two handicapped accessible fishing piers, and miles of undeveloped shoreline.

The terrain to the east of the lake is a relatively flat residential area with larger, wooded lots. Further east, agriculture becomes the primary land use. To the north and west, Ludington State Park combines with the Nordhouse Dunes Wilderness Area to create one of the largest contiguous tracts of public land

in the western lower peninsula. The landscape is rolling sand hills and dunes, with both deciduous and coniferous forests present. Several miles to the south lies Lincoln Lake (Fig. 1), which is a "drowned river mouth" of the Lincoln River.

There have been a number of citizen-led groups dedicated to Hamlin Lake over the years (Kent Gage, Hamlin Lake Preservation Society, personal communication). The first was the Hamlin Dam Association, formed in 1912 to help construct the first concrete dam in 1913. The association was disbanded when the dam was sold to the state in 1935. Another group was the Hamlin Lake Improvement Association. This group was active from the late 1940s through the early 1970s, and served to promote tourism. In the early 1990s, the Hamlin Lake Improvement Board was formed. It was active for a number of years in the 1990s, when it was responsible for conducting a study of Hamlin Lake. The Hamlin Lake Improvement Board was never officially disbanded, but has been inactive for a number of years. There are currently two active citizen-led organizations dedicated to Hamlin Lake, the Hamlin Lake Association and the Hamlin Lake Preservation Society. The Hamlin Lake Association was formed in 1986, primarily to focus on environmental issues including unregulated development on the lake, oil and gas drilling, and the establishment of the Nordhouse Dunes Wilderness. This group is now mostly dormant, but remains closely allied with the Hamlin Lake Preservation Society, which was formed in 1997 and remains the most active citizen-led group on Hamlin Lake. Another organization with interest in Hamlin Lake is the Big Sable Watershed Restoration Committee, although that organization focuses primarily on the Big Sable River itself upstream from Hamlin Lake.

History

While Hamlin Lake was originally dammed for the lumber industry in the 1850s, by the late 1800s it had become important as a tourist destination. After construction of the concrete dam in 1913, a large number of resorts and lodges were built on the lake, many of which are still active. There are also a number of marinas offering boat rentals. Sport fishing-based tourism remains very important to the local economy, as it has for over a century.

One recurring issue in the Hamlin Lake file is that of winter lake levels. Many riparian landowners were in favor of a winter drawdown to protect infrastructure from ice damage, while sportsman's groups favored maintaining a stable, year-round water level, based on the principle that a stable water level would maintain better fish populations. Over the years, the DNR has been mostly neutral in the debate. Carbine (1942) stated that the maximum productivity in most lakes would probably be obtained with stable water levels. However, he qualified this by acknowledging the position of the riparian landowners. He also stated that while some species might benefit from stable water levels, other species might not.

Fish Stocking

The first recorded fish stocking in Hamlin Lake was in 1897 when lake trout were stocked (Table 1). Largemouth bass were stocked in 1905 and 1909, and walleye were stocked in 1910. In the 1930s and early 1940s, species including bluegill, largemouth bass, smallmouth bass, walleye, and yellow perch were stocked in varying numbers by the State of Michigan.

In the late 1920s or early 1930s, a program began in which volunteers (primarily from the Mason County Chapter of the Izaak Walton League and the Mason County Fin and Feather Club) captured fish with seines below the dam and transferred them up into the lake (Hubbs 1931). This activity primarily took place in spring, with walleye, northern pike, and steelhead being the most commonly transferred species. The first official records available are in 1936, with records available for 1936-1942 and 1953-1955 (Table 1), although transfers may have been done in other years. These transfers were apparently discontinued after 1955. The adult walleye stocked from 1956-1958 (Table 1) were apparently fish purchased by the Hamlin Lake Improvement Association from Lake Michigan commercial fishermen and stocked into the lake. File correspondence indicates that many of the transferred walleye were tagged upon stocking. Apparently anglers caught some of the fish in Hamlin Lake, but others migrated out of the lake back into Lake Michigan and were caught in places like Pere Marquette Lake and the Muskegon River.

Starting in 1969, the Michigan Department of Conservation (MDOC) began a tiger-muskellunge stocking program (Table 1). This program continued until 1988, when the tiger muskellunge program was cancelled statewide. Although a few walleye were stocked into Hamlin Lake in the early 1970s, a consistent walleye stocking program began in 1989. Since then, spring fingerling walleye have been stocked in 14 of the past 22 years, creating an extremely popular walleye fishery. Most walleye stocked in the last 20+ years have come from ponds cooperatively run by the DNR and the Mason County Walleye Association. In 2005, a northern muskellunge stocking program was commenced. Since then, a total of 42,682 muskies have been stocked in 2006, 2008, 2010, and 2011. The only other fish stocking in recent years has been the sporadic stocking of hybrid bluegill by the Hamlin Lake Preservation Society.

Fisheries Surveys

The first fisheries report on Hamlin Lake was written in 1932 (Hubbs and Eschmeyer 1932) by the Michigan Department of Conservation (MDOC; the precursor to today's Department of Natural Resources). Although netting was apparently conducted, no data was included in the report. According to the authors, game fish present at that time included largemouth bass, smallmouth bass, yellow perch, muskellunge, northern pike, walleye, rock bass, black crappie (referred to as "calico bass"), pumpkinseed sunfish, and bluegill (Table 2). It is likely that the muskellunge collected in 1932 and 1942 were naturally reproduced Great Lakes muskellunge. In a separate report, Hubbs (1933) indicates that muskellunge were native to Hamlin Lake. Other species mentioned in Hubbs and Eschmeyer (1932) as present include suckers (probably white sucker) and "mullet" (likely meaning redhorse, species unknown), catfish (likely channel catfish), carp, sheepshead (freshwater drum), longnose gar, bowfin (referred to as "dogfish"), spottail shiners, sand shiners, trout-perch, and bluntnose minnows. Some of the prominent issues discussed included winter lake-levels, fish stocking (including transferring fish over the Hamlin Lake Dam), vegetation control, and fisheries habitat. In particular, the authors recommended lowering the water level in winter, stocking walleye, yellow perch, largemouth bass, smallmouth bass, and bluegill, and continuing to do fish transfers over the dam.

In the winter of 1935-36, a creel census study was conducted (Eschmeyer 1936). According to the report, ice fishing was sporadic that winter, with very little angler effort expended. The author concluded that the winter catch was so meager that it likely did not have any effect on summer catch.

Another comprehensive fisheries report was written in 1942 (Brown and Kilpela 1942). This report was on assessment netting conducted in late June and early July of 1942 and also some earlier creel census work (Clark 1940, 1941). The assessment netting conducted included the use of fyke nets, gill nets, and seines. The report contains a list of fish species that had been documented for Hamlin Lake either through the netting survey or creel census (Table 2). The authors also identify 28 different species of aquatic plants as present. The authors also mention that fishing pressure has increased "several hundred percent" in the past 20 years. In their recommendations, they advise not continuing with the fish transfers, stating that "the small number of fish added to Hamlin Lake by these operations certainly does not justify the effort involved".

Minor fisheries surveys were conducted in 1948 and 1953 by MDOC personnel. The 1948 survey was conducted in September, and included gill netting and seining. The 1953 survey was conducted in August of 1953 and consisted entirely of seining. Several fish species were caught (Table 2). No writeups or reports were completed for these surveys.

The next comprehensive fisheries survey was conducted in August of 1956 (Crowe 1956), using trap nets. This survey captured 1,323 fish, representing 18 different species (Table 2). Panfish, including bluegill, black crappie, and pumpkinseed were the most commonly caught species. Walleye were also common, while smallmouth bass, northern pike, and largemouth bass were caught in smaller numbers. Growth for most species was deemed to be "good". The author concluded that the fish populations were in good shape and had not changed appreciably since the initial 1932 survey. Similar to Carbine in 1942, Crowe took a middle-of-the-road stance on the water level issue, which was clearly still a major issue in the mid-1950s. Aquatic vegetation control on the upper basin was also a controversial issue at that time.

Another fisheries survey was conducted on the lower basin in 1967, but was only partially completed due to inclement weather. Trap nets, fyke nets, and electrofishing were used. Sixteen different species were captured (Table 2). Although no official report was produced from the 1967 survey, the following comments were recorded: "Northern pike appear to be fairly abundant, but believe heavy pressure in winter cropping off large fish. Walleyes going down hill fast. Have good populations of bluegill and crappie. Believe sample is low- should continue survey on upper lake".

The next DNR fisheries survey was conducted in late summer of 1973. Survey gear consisted of trap and gill nets. Catch data for the basins were kept separate, but no report was ever completed. A total of 21 different species were caught (Table 2).

In the early 1970s, one controversial issue on Hamlin Lake was that of winter spearing for northern pike. Some felt that this practice was responsible for poor northern pike fishing. Because of that, the DNR made a proposal to place a spearing ban on the lake. However, file correspondence indicates that "vociferous objection from the community" led to the proposal being dropped. In the 1970s, angler reports indicated that the tiger muskie fishery improved significantly as they began to attain catchable size. Many large tiger muskies were caught or speared through the ice. At one point Hamlin Lake even held the state record for tiger muskie.

The next fisheries survey of Hamlin Lake was conducted in 1983 (Hay 1984; Hay 1984a). As in 1973, catch data was kept separate for the two basins. Eighteen different species were caught (Table 2).

According to Hay (1984), the lower basin provided a good population of northern pike, although they were growing slowly. Yellow perch were very numerous in the lower basin, but they were small in size and growing slowly. Hay (1984a) reported similar results for the upper basin. He also mentioned that anglers were concerned about the excessive aquatic vegetation present in the upper lake and that they would like to see improvement in the walleye fishery; a total of only three walleye were caught in the survey. In file correspondence from 1984, Hay referred to Hamlin Lake as "one of the better panfish lakes in the area".

A consistent walleye stocking program began in 1989, when just over 100,000 walleye fingerlings were stocked (Table 1). Another comprehensive fisheries survey was conducted in 1992, in part to look at progress of the walleye program (Rozich 1992). A total of 2,071 fish representing 20 species (Table 2) were caught in the survey, which used fyke, inland gill, and Great Lakes gill nets. Also, scale samples from over 100 walleye caught by volunteer anglers in the summer of 1992 were analyzed and showed that the vast majority of the walleye were from the 1989 and 1990 year classes, and therefore were likely stocked fish. Rozich concluded that the stocking program was working and necessary to maintain a viable fishery, despite the fact that some natural reproduction was occurring. He also concluded that "the diverse fish community sampled appears to be well-distributed and growing well on the average".

In 1994, an attempt was made to conduct a fall walleye survey. Fall walleye surveys are done by electrofishing (Serns 1983, 1984) targeting age-0 and age-1 walleye to determine year class strength. However, due to heavy winds and dangerous conditions, the survey was not completed. Unfortunately, this is a recurring theme in the history of Hamlin Lake fisheries surveys. Due to its size and proximity to Lake Michigan, the lake is prone to extremely heavy winds and dangerous conditions. A number of surveys (fall walleye surveys in particular) have been aborted or cut short due to such conditions.

Another netting survey was conducted in April of 1997, using large-mesh fyke and inland gill nets. A total of 975 fish representing 17 species (Table 2) were caught. The well-represented species included largemouth bass, northern pike, rock bass, and yellow perch. All species were growing well except for northern pike and yellow perch, which were well below the state average length at age. Bluegill catch was very low, with only 57 caught, although those that were caught did have a very large average size (7.9 inches). The low bluegill catch may also have been due to low water temperatures, as the survey was conducted in late April. Although no report or write-up was completed for the survey, September 1997 file correspondence from Fisheries Biologist Tom Rozich indicates that the bluegill population had declined in recent years. This was attributed the decline to overfishing, based on reports from Conservation Officer Jim Gallie. The correspondence also mentioned that the "walleye population in Hamlin Lake is excellent and provides a quality fishery". Field notes from the 1997 survey indicate that zebra mussels were present in large numbers all over the lake.

Due to the poor growth and size structure in the northern pike population, in 1999, the DNR changed the regulations for northern pike from a 24" minimum size limit to no minimum size limit. The logic behind this regulation change was that if anglers harvested large numbers of smaller pike, those that remained might grow better. Even if better growth did not occur, it would allow anglers to harvest northern pike without harming the fish community structure. However, the no minimum size limit on northern pike was removed in 2006, due to the muskellunge stocking program which started in 2005. It

was felt that if the no minimum size limit remained, anglers would mistakenly harvest small muskellunge in addition to small northern pike.

In 2003, another attempt was made to conduct a fall walleye survey, but heavy winds and dangerous conditions caused the survey to be aborted. Only two stations were completed, but a total of 41 walleye between 6 and 8 inches were caught. These fish were likely age-0 walleye that had been stocked in the spring of 2003. The catch rate for the completed portion of the survey was 10.25 age-0 walleye per mile. The presence of these fish indicated probable good survival for 2003 walleye stocking effort.

The next comprehensive survey was conducted in 2004, with fyke, trap, and inland gill nets, and electrofishing. A total of 3,464 fish representing 18 species were caught (Tables 3 and 4), the largest number of fish that had been caught in any survey to date. The majority were caught by nets (Table 3), with smaller numbers caught by electrofishing (Table 4). Most abundant were rock bass and bluegill, with brown bullhead, largemouth bass, pumpkinseed sunfish, and yellow perch also prevalent. The bluegill population was particularly impressive, with 902 individuals from 2 to 9 inches. Of those, fully 94% exceeded 6 inches in length. Growth rates for most species were good (Tables 5 and 6), including northern pike, which were growing 1.4 inches faster than the state average length at age. This was the first time in the fisheries survey history of Hamlin Lake where northern pike exhibited growth rates better than the state average.

Creel census surveys were conducted in the summer of 2008 and the winter of 2009 (DNR Fisheries Division, unpublished data). In the summer creel survey, it was estimated that 128,502 fish were caught, with 83,022 of those released. Bluegill was the most commonly caught species, with 27,264 kept and 29,495 released. One striking feature of the summer creel survey was the relatively small number of sport fish that were kept: only 275 walleye were kept while 397 were released; only 1,614 largemouth bass were kept while 29,387 were released; only 15 northern pike were kept while 5,292 northern pike released. The total summer angler effort was 110,386 angler hours (28,968 anger trips). Of that, only 11,704 angler hours were generated by anglers fishing from shore. Clearly, most anglers fish Hamlin Lake via boat in the summer.

In the winter 2009 creel data, an estimated 12,745 fish were caught, with 6,692 released. Bluegill were the most commonly caught species, with 4,454 kept and 4,971 released. The total winter effort was 11,345 angler hours (3,027 angler trips). The combined effort for these two creel surveys was 121,731 angler hours or 31,995 angler trips. Based on a value of $24/day for daily angler expenditures (U.S. Department of the Interior, Fish and Wildlife Service, and U.S. Department of Commerce, U.S. Census Bureau 2006) the Hamlin Lake fishery is worth at least $767,880 to the local economy on an annual basis.

From 1994-2011, a total of 236 exceptional fish, representing 20 species, caught from Hamlin Lake have been entered into the DNR Fisheries Division Master Angler program (Table 7). Bluegill, freshwater drum, brown bullhead, yellow bullhead, rock bass, bowfin, and channel catfish were the most commonly represented species, with at least fifteen entries per species. Notable entries include a 24.75 inch smallmouth bass caught and released in 2008, a number of channel catfish in excess of 20 lbs, and a 45 inch, 20 lb muskellunge that was speared in 2003 (prior to the beginning of the muskellunge stocking program). The large number of Master Angler entries for Hamlin Lake exemplifies the popularity of this fishery.

Current Status

The most recent comprehensive fisheries survey was conducted in the summer of 2010 using status and trends netting protocols (Wehrly et al. 2009) The survey netting portion took place from June 7 through June 10, 2010 and included four trap nets (11 net-nights), and three experimental graded-mesh inland gill nets (9 net-nights). Seining and electrofishing were conducted on July 14, 2010. A total of six seine hauls were completed, along with three ten-minute electrofishing transects conducted with an electroshocking boat. The primary purpose of this survey was to assess the status of all fish populations in Hamlin Lake, although a secondary goal included assessing the walleye stocking program.

During the netting survey, a total of 947 fish were caught (Table 8), representing 21 different species (Table 8). Bluegill (157 from 3-9 inches), pumpkinseed sunfish (135 from 4-9 inches), and rock bass (171 from 4-10 inches) were the most frequently collected species. They represented 49% of the total catch by number. Other panfish species present included black crappie and yellow perch. Other sportfish species caught included largemouth bass (46 from 6-16 inches), northern pike (42 from 15-29 inches), smallmouth bass (15 from 13-18 inches), and walleye (37 from 11-25 inches). Other species captured included: black bullhead, bowfin, brown bullhead, common carp, channel catfish, freshwater drum, golden redhorse, longnose gar, muskellunge, shorthead redhorse, white sucker, and yellow bullhead.

During the July seining and electrofishing portion, a total of 658 fish were caught, representing 20 different species (Table 9). Juvenile yellow perch (averaging 2.9 inches in length) were the most frequently collected species, with a total of 221 caught, representing 34% of the total catch by number. Other species caught by seining and electrofishing included banded killifish, black bullhead, bluegill, bluntnose minnow, bowfin, brook silverside, freshwater drum, golden shiner, Johnny darter, lake chubsucker, largemouth bass, logperch, mimic shiner, pumpkinseed sunfish, rock bass, sand shiner, smallmouth bass, spottail shiner, and white sucker.

Fish growth was fair. Fish that were netted exhibited growth that was near the state average length-at-age (Table 10), with the exception of black crappie, northern pike, and yellow perch, which were all growing at least 1.0 inches slower than the state average. Bluegill and pumpkinseed sunfish were growing slightly faster than the state average, while largemouth bass, rock bass, smallmouth bass, and walleye were growing slightly slower than the state average. Only enough yellow perch were captured from any one age class, by electrofishing and seining, to make any statistical inferences regarding age and growth (Table 11), and that species was growing 0.8 inches slower than the state average.

Fish species that were not caught in 2010 and had been reported in previous surveys included blackchin shiner, blacknose shiner, brook stickleback, brown trout, central mudminnow, common shiner, Iowa darter, least darter, longear sunfish, rainbow darter, rainbow trout, sculpin, tadpole madtom, tiger muskellunge, trout-perch, and white bass (Tables 2, 8, 9). No new species that had not been previously recorded were caught in 2010.

Shoreline data was collected in July and August, 2010 (Table 12). Data included the number of docks, submerged trees, and houses found per kilometer of shoreline, as well as how much of the shoreline is

armored or hardened with a structure in order to prevent erosion. Hamlin Lake averaged 8.6 docks per kilometer, 48.7% shoreline armoring, 56.6 submerged trees per kilometer, and 7.7 houses per kilometer.

Analysis and Discussion

One of the reasons for conducting the 2010 survey of Hamlin Lake was to evaluate the walleye stocking program. Walleye have been regularly stocked since 1989 (Table 1), although there was a lull between 2006-2011. During that time, only limited walleye stocking was conducted in Michigan due to the threat of Viral Hemorrhagic Septicemia (VHS). By 2011, walleye testing and rearing practices had been refined enough that the threat of stocking infected fish had subsided and stocking was resumed. While the walleye catch in the 2010 survey was not overly large, at 37 fish, seven different year classes were represented. Also, the walleye catch per unit effort in gill nets was 3.7 walleye per net-night, indicating a good abundance for an inland lake in Michigan (MDNR unpublished data). Of those seven year classes found, four were years in which walleye were stocked, while three were not. The presence of fish from non-stocked year classes indicates that low-level natural reproduction continues to occur in many years. While this is encouraging, the strongest year class represented was the 2006 year class, which had been stocked. Clearly, stocking continues to play a critical role in the walleye fishery. Therefore, the DNR should continue to work with the Mason County Walleye Association to stock walleye into Hamlin Lake on a regular basis.

Hamlin Lake has received stockings of northern-strain muskellunge since 2005. More desirable would be Great Lakes strain muskellunge, since they were originally native to the lake (Hubbs 1933). While only one muskellunge was caught in the 2010 survey, angler reports of muskellunge catches have been received. Hamlin Lake has a diverse fish population with numerous cyprinid (common carp) and catostomid (white sucker, redhorse) species that will provide adequate forage for muskellunge.

The 2010 DNR fisheries survey showed that the lake has generally healthy fish populations. Largemouth bass in particular were numerous and are a keystone predator. The smallmouth bass catch was smaller, but they remain an important component of the fish community. Hamlin Lake has a reputation as one of the best bass fishing lakes in the western lower peninsula. While the northern pike catch from the 2010 survey was numerically adequate, the below average growth rate was discouraging, particularly when the northern pike growth rate from the 2004 survey was so good. It is possible that the return to a 24 inch minimum size limit and 2 fish bag limit may be limiting harvest, thereby promoting interspecific competition and slow growth for northern pike. However, the 24 inch minimum size limit is in place to protect the stocked muskellunge and should remain.

Bluegill are the most commonly pursued species and Hamlin Lake has an excellent reputation as one of the best bluegill fishing lakes in Michigan. While bluegill catches have varied based on fisheries surveys over the years (Table 13), growth rates have consistently been greater than state averages. The Schneider Index (Schneider 1990) is a ranking scale for inland lake bluegill populations based on the proportions of larger bluegill captured during fisheries surveys. The scale for the Schneider Index is from 1 to 7, with a score of 1 (very poor) indicating a population with many small bluegill and a score of 7 (superior) indicating a population with many large bluegill. The bluegill population has been consistently rated above average since 1992. According to the Schneider Index using the 2010 catch data, the bluegill population ranked as a 5.5, between "Good" and "Excellent". When combined with

the above average growth displayed by bluegill, it is clear that there continues to be a very good bluegill fishery.

Many other fish species were also captured (Tables 8 and 9). Bluntnose minnow, mimic shiner, sand shiner, golden shiner, and spottail shiner are all important forage for largemouth bass and walleye. White sucker, redhorse, and common carp provide forage for northern pike and muskellunge. Yellow perch and bluegill are also likely important prey items for walleye.

The shoreline data collected showed that Hamlin Lake has a very heavily armored shoreline (48.7%) when compared with other large, deep, inland lakes in Michigan (average=24.2%). This is due to Hamlin Lake being an impoundment with artificially high water levels. Riparian landowners have armored their shorelines to protect against ice damage and erosion from the heavy winds. The lake is not significantly more developed with docks and dwellings than other lakes in Michigan (Table 12) with 8.6 docks per kilometer of shoreline, while the average large deep lake in Michigan had 4.3 docks per kilometer (Wehrly et al. 2010). There were 7.7 dwellings per kilometer, compared to 9.2 dwellings per kilometer for other large deep lakes in Michigan. However, Hamlin Lake also had more submerged woody structure (56.5 trees/km) than other large lakes in Michigan (average =8.4 trees/km). Much of this wood is found on the western shoreline, which is part of Ludington State Park and in a natural, undeveloped state for the most part. The extreme upper end of the upper lake, which is surrounded by Manistee National Forest Land, is also in a natural undeveloped state.

Treatment of aquatic macrophytes remains, and likely will always remain, an issue on Hamlin Lake. There is no one statutory lake board or other entity that oversees the treatments. Instead, individuals or groups of individuals from different areas of the lake apply for permits and then conduct treatments on "their" area of the lake. In 2011 for example, ten different treatment permits were issued, with ten different treatments presumably conducted (Eric Bacon, DEQ Water Resources Division, personal communication). Treatments of native aquatic plants are not recommended by the DNR.

Management Direction

Hamlin Lake remains as one of the best and most popular fishing lakes in the western lower peninsula with a large, diverse fish population that is healthy. Native species like bluegill, pumpkinseed sunfish, rock bass, largemouth bass, and smallmouth bass should continue to thrive in Hamlin Lake without direct management efforts. While northern pike in Hamlin Lake grow slowly, natural reproduction supports the population, and some larger individuals are present. At times in the past, hybrid sunfish have been stocked into Hamlin Lake by the Hamlin Lake Preservation Society. However, none of the stocked hybrid sunfish have ever been caught in any fisheries surveys. Also, the stocking of hybrid sunfish into Hamlin Lake could have negative effects on native bluegill populations, including the potential for competition, reduced bluegill growth, and compromised genetic structure from interbreeding. Therefore it is recommended that hybrid sunfish not be stocked into Hamlin Lake.

At this point, the walleye fishery appears to be heavily dependent upon stocking, despite the presence of naturally reproduced fish in most years. Therefore, spring fingerling walleye (Muskegon River strain) should continue to be stocked into Hamlin Lake, at a rate of 28/acre (150,000 fish) every other year. Since a full complement of walleye was stocked in 2011, they should again be stocked in the spring of 2013. Fall walleye electrofishing surveys should be conducted in years when walleye are

stocked to assess the survival of these stocked fish. By looking at older walleye in addition to age-0 fish, the contribution of natural reproduction from non-stocking years can also be determined. Walleye stocked into Hamlin Lake will likely come from the Mason County Walleye Association rearing pond.

Comprehensive fisheries surveys of Hamlin Lake should be conducted by the DNR at least once every 10 years. Future fisheries surveys should continue electrofishing and seining efforts. While netting is often the most effective technique for catching panfish and sport fish, the electrofishing and seining efforts often catch juvenile and smaller minnow-type species providing a better picture of the overall fish community. Future survey efforts also should target stocked muskellunge, in order to assess the stocking program. DNR Fisheries personnel will continue to work with Hamlin Lake citizens groups and anglers to monitor the fishery.

The DNR should also continue to stock muskellunge on a regular basis. The next stocking event should be in 2013, with 10,700 fall fingerlings, repeating this in 2016. It is preferable that muskellunge stocked into Hamlin Lake be the Great Lakes strain. If the Great Lakes strain is not available, the northern strain muskellunge can be substituted.

Winter lake level continues to be an issue, as it has been since at least the 1930s. There is no court-mandated lake level. The lake level is controlled at the Hamlin Lake Dam, which is operated by Ludington State Park. The current Ludington State Park Hamlin Lake Dam Operation Plan calls for the lake level to be lowered by two feet (to an elevation of 592.20') on the fourth Monday in October, and then raised to the summer level (elevation 594.20') in spring of each year. As ice-out dates are unpredictable and vary widely from year to year, no hard and fast refill date is specified in the plan. Instead, the plan states that "refilling to summer level should commence after all of the ice goes off the lake, which normally occurs around the first week of April". The logic behind lowering the lake level is to protect riparian infrastructure from severe storms in late fall and ice damage in the winter. However, as in the past, not all agree with the current lake level management. Some believe that lowering the water level at the end of October negatively effects late fall fishing and waterfowl hunting in addition to potentially affecting fish populations. From a purely fisheries perspective, a year-round stable water level would probably be best, although the need to balance fisheries issues with those of riparian landowners is understood.

Any remaining riparian wetlands adjacent to Hamlin Lake should be protected as they are critical to the continued health of the lake's aquatic community. Future riparian development and wetland loss may result in deterioration of the water quality and aquatic habitat. Healthy biological communities 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 good water quality, especially for nutrients; preservation of natural shorelines, especially shore contours and vegetation; and preservation of bottom contours, vegetation, and wood structure within a lake. Guidelines for protecting fisheries habitat in inland lakes can be found in Fisheries Division Special Report 38 (O'Neal and Soulliere 2006).

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Fig. 1. Hamlin Lake, Mason County, Michigan.

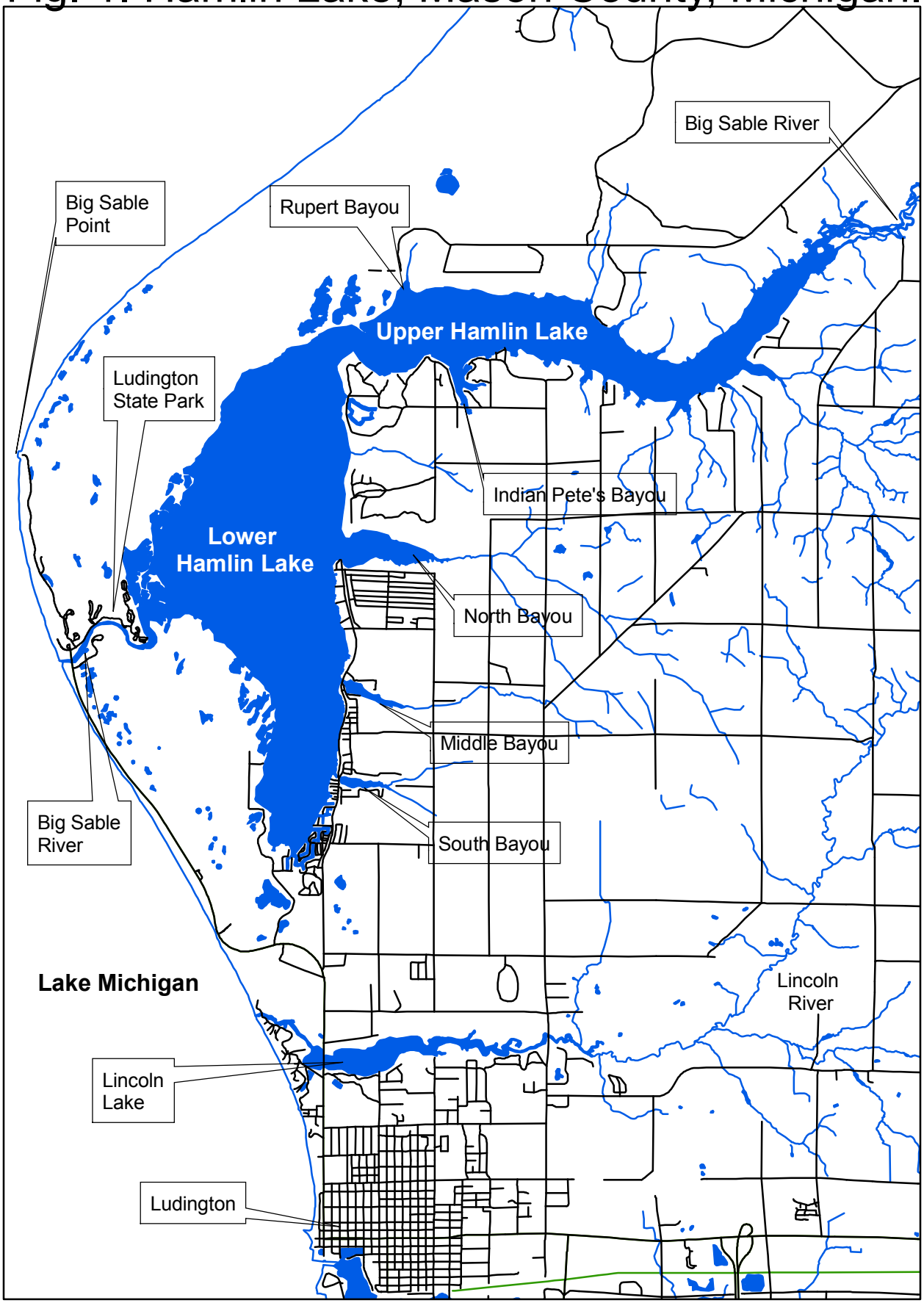

Table 1. Fish stocked in Hamlin Lake, Mason County, 1897-2011.

Year	Species	Number	Size/age	Strain
1897	lake trout	15,000	unknown	
1905	largemouth bass	1,500	fingerling	
1909	largemouth bass	4,000	fingerling	
1910	walleye	375,000	fry	
1934	bluegill	1,020	4 mo.	
	bluegill	800	adults	
1936	largemouth bass	1,500	yearlings	
	rainbow trout	40	adults-transfer	
	smallmouth bass	31	adults-transfer	
	walleye	233	adults-transfer	
1937	black crappie	312	adults-transfer	
	bluegill	8,000	5 mo.	
	bluegill	2	adults-transfer	
	brook trout	1	adults-transfer	
	brown trout	1	adults-transfer	
	smallmouth bass	30	adults-transfer	
	northern pike	30	adults-transfer	
	rainbow trout	49	adults-transfer	
	rock bass	1	adults-transfer	
	walleye	281	adults-transfer	
	yellow perch	231	adults-transfer	
1938	black crappie	22	adults-transfer	
	bluegill	2	adults-transfer	
	largemouth bass	5,000	4 mo.	
	northern pike	26	adults-transfer	
	rainbow trout	51	adults-transfer	
	smallmouth bass	19	adults-transfer	
	walleye	307	adults-transfer	
	yellow perch	112	adults-transfer	
1939	bluegill	30,000	3 mo.	
	bluegill	38	adults-transfer	
	northern pike	48	adults-transfer	
	rainbow trout	80	adults-transfer	
	smallmouth bass	1,000	4 mo.	
	smallmouth bass	54	adults-transfer	
	walleye	515,000	fry	
	walleye	301	adults-transfer	
	yellow perch	9,000	7 mo.	
	yellow perch	196	adults-transfer	
1940	bluegill	8,000	3 mo.	
	largemouth bass	500	3 mo.	
	northern pike	48	adults-transfer	
	rainbow trout	51	adults-transfer	
	rock bass	5	adults-transfer	
	smallmouth bass	23	adults-transfer	
	walleye	200,000	fry	
	walleye	302	adults-transfer	
	yellow perch	65	adults-transfer	

Table 1 continued

Year	Species	Number	Size/age	Strain
1941	bluegill	5,000	3 mo.	
	largemouth bass	1,000	3 mo.	
	northern pike	40	adults-transfer	
	rainbow trout	47	adults-transfer	
	smallmouth bass	1,000	3 mo.	
	smallmouth bass	15	adults-transfer	
	walleye	381	adults-transfer	
1942	largemouth bass	300	4 mo.	
	northern pike	12	adults-transfer	
	rainbow trout	36	adults-transfer	
	smallmouth bass	3,000	3 mo.	
	smallmouth bass	2	adults-transfer	
	walleye	200,000	fry	
	walleye	282	adults-transfer	
1953	rainbow trout	5	adults-transfer	
	walleye	4	adults-transfer	
	northern pike	19	adults-transfer	
1954	rainbow trout	3	adults-transfer	
	smallmouth bass	3	adults-transfer	
	walleye	25	adults-transfer	
	northern pike	10	adults-transfer	
1955	rainbow trout	1	adults-transfer	
	smallmouth bass	3	adults-transfer	
	walleye	13	adults-transfer	
1956	walleye	360	adults-transfer	
1957	walleye	228	adults-transfer	
1958	walleye	18	adults-transfer	
1969	tiger muskellunge	216	fall fingerlings	Hybrid
1970	tiger muskellunge	9,920	fall fingerlings	Hybrid
1971	tiger muskellunge	6,000	fall fingerlings	Hybrid
	walleye	1,002	fall fingerlings	
1972	tiger muskellunge	4,352	fall fingerlings	Hybrid
	walleye	3,684	fall fingerlings	
1973	walleye	742	fall fingerlings	
1975	tiger muskellunge	5,330	fall fingerlings	Hybrid
1976	tiger muskellunge	5,000	fall fingerlings	Hybrid
1977	tiger muskellunge	10,000	fall fingerlings	Hybrid
1978	tiger muskellunge	13,000	fall fingerlings	Hybrid
1979	tiger muskellunge	6,000	fall fingerlings	Hybrid
1980	tiger muskellunge	12,096	fall fingerlings	Hybrid
1981	tiger muskellunge	7,093	fall fingerlings	Hybrid
1982	tiger muskellunge	25,000	fall fingerlings	Hybrid
1983	tiger muskellunge	2,300	fall fingerlings	Hybrid
1984	tiger muskellunge	10,000	fall fingerlings	Hybrid
1985	tiger muskellunge	8,000	fall fingerlings	Hybrid
1986	tiger muskellunge	10,000	fall fingerlings	Hybrid
1987	tiger muskellunge	10,000	fall fingerlings	Hybrid
1988	tiger muskellunge	9,000	fall fingerlings	Hybrid

Table 1 continued

Year	Species	Number	Size/age	Strain
	walleye	300	fall fingerlings	
1989	walleye	100,561	spring fingerlings	Bay De Noc
	walleye	1,910	fall fingerlings	Bay De Noc
1990	walleye	138,734	spring fingerlings	Bay de Noc
	walleye	212	fall fingerlings	Bay de Noc
1991	walleye	125,586	spring fingerlings	Muskegon
1994	walleye	137,451	spring fingerlings	Bay de Noc
	walleye	108	fall fingerlings	Bay de Noc
1996	walleye	1,942	spring fingerlings	Bay de Noc
1997	walleye	28,861	spring fingerlings	Bay de Noc
1998	hybrid bluegill	4,350	adults	private plant
	walleye	38,527	spring fingerlings	Muskegon
1999	walleye	13,115	spring fingerlings	Muskegon
	walleye	51,237	spring fingerlings	Bay de Noc
2000	walleye	115,219	spring fingerlings	Muskegon
2001	hybrid bluegill	3,300	adults	private plant
	walleye	83,825	spring fingerlings	Muskegon
2003	walleye	163,081	spring fingerlings	Muskegon
2004	walleye	4,410	fall fingerlings	Muskegon
2005	muskellunge	12,510	fall fingerlings	Northern
2006	muskellunge	5,000	fall fingerlings	Northern
	walleye	156,254	spring fingerlings	Muskegon
	walleye	413	fall fingerlings	Muskegon
2008	hybrid bluegill	3,000	adults	private plant
	muskellunge	12,500	fall fingerlings	Northern
2010	muskellunge	5,653	fall fingerlings	Northern
2011	hybrid bluegill	8,600	adults	private plant
	muskellunge	7,019	fall fingerlings	Northern
	walleye	152,250	spring fingerlings	Muskegon

Table 2. Presence/absence of fish species in historical fisheries surveys of Hamlin Lake.

Species	1932	1942	1948	1953	1956	1967	1973	1983	1992	1997	2004	2010
Banded killifish		x	x	x								x
Black bullhead		x			x							x
Black crappie	x	x	x	x	x	x	x	x	x	x	x	x
Blackchin shiner		x		x								
Blacknose shiner		x										
Bluegill	x	x	x	x	x	x	x	x	x	x	x	x
Bluntnose minnow	x	x	x	x							x	x
Bowfin	x	x			x	x		x	x	x	x	x
Brook silversides		x		x								x
Brook stickleback		x										
Brown bullhead		x	x	x			x	x		x	x	x
Brown trout					x	x			x			
Bullhead spp.						x			x			
Central mudminnow		x										
Channel catfish	x				x				x			x
Common carp	x	x			x			x	x	x	x	x
Common shiner						x	x					
Freshwater drum	x	x			x	x	x	x	x	x	x	x
Golden redhorse		x										x
Golden shiner		x	x				x			x		x
Iowa darter		x	x	x								
Johnny darter		x		x								x
Lake chubsucker				x			x					x
Largemouth bass	x	x	x	x	x	x	x	x	x	x	x	x
Least darter		x										
Logperch		x	x									x
Longear sunfish		x										
Longnose gar	x	x	x		x		x	x	x	x	x	x
Mimic shiner		x										x
Muskellunge	x	x										x
Northern pike	x	x	x	x	x	x	x	x	x	x	x	x
Pumpkinseed sunfish	x	x	x	x	x	x	x	x	x	x	x	x
Rainbow darter				x								
Rainbow trout		x										
Redhorse spp.	x	x			x	x	x	x	x	x		
Rock bass	x	x	x	x	x	x	x	x	x	x	x	x
Sand shiner	x	x										x
Sculpin		x										
Shorthead redhorse		x									x	x
Smallmouth bass	x	x	x		x	x	x	x	x	x	x	x
Spottail shiner	x	x					x					x
Tadpole madtom		x		x								
Tiger muskellunge							x	x	x			
Trout-perch	x						x	x	x			
Walleye	x	x			x	x	x	x	x	x	x	x
White bass		x			x							
White sucker	x	x	x			x	x	x	x	x	x	x
Yellow bullhead		x					x				x	x
Yellow perch	x	x	x	x	x	x	x	x	x	x	x	x

Table 3. Number, weight, and length of fish collected from Hamlin Lake with large mesh fyke nets, trap nets, and inland gillnets on May 11- May 14, 2004.

Species	Number	Percent by number	Weight (Pounds)	Percent by weight	Length range (inches)[1]	Average length	Percent legal size[2]
black crappie	103	3.2	56.1	2.9	4-13	9.4	82 (7")
bluegill	875	27.1	254.5	13.4	4-9	7.3	96 (6")
bowfin	15	0.5	73.3	3.9	17-28	23.6	
brown bullhead	343	10.6	255.4	13.4	8-13	11.7	100 (7")
common carp	6	0.2	41.9	2.2	19-31	24.2	
freshwater drum	10	0.3	65.9	3.5	20-28	23.8	
largemouth bass	163	5.1	215.4	11.3	8-20	13.3	32 (14")
longnose gar	12	0.4	27.4	1.4	14-33	28.6	
northern pike	69	2.1	153.8	8.1	13-29	21.3	15 (24")
pumpkinseed sunfish	271	8.4	73.3	3.9	4-9	6.8	85 (6")
rock bass	977	30.3	345.3	18.2	4-11	7.7	95 (6")
shorthead redhorse	12	0.4	21.9	1.2	6-19	15.9	
smallmouth bass	1	0.0	1.9	0.1	15-15	15.5	100 (14")
walleye	11	0.3	31.7	1.7	11-26	20.0	91 (15")
white sucker	95	2.9	231.7	12.2	6-21	18.1	
yellow perch	236	7.3	32.8	1.7	4-11	6.8	36 (7")
yellow bullhead	26	0.8	19.5	1.0	8-15	11.5	100 (7")
Total	3,225	100	1901.8	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 4. Number, weight, and length of fish collected from Hamlin Lake by electrofishing on June 28, 2004.

Species	Number	Percent by number	Weight (Pounds)	Percent by weight	Length range (inches)[1]	Average length	Percent legal size[2]
black crappie	1	0.4	0.1	0.1	5-5	5.5	0 (7")
bluegill	27	11.3	3.8	2.7	2-7	5.6	37 (6")
bluntnose minnow	1	0.4	0	0.0	3-3	3.5	
brown bullhead	2	0.8	0.8	0.6	9-9	9.5	100 (7")
largemouth bass	106	44.4	101.1	73.0	4-18	11.7	17 (14")
northern pike	4	1.7	6.1	4.4	18-20	19.3	0 (24")
pumpkinseed sunfish	17	7.1	3.1	2.2	4-7	6	47 (6")
rock bass	24	10.0	7.3	5.3	3-8	7.2	79 (6")
smallmouth bass	2	0.8	4.1	3.0	11-18	15.0	50 (14")
walleye	16	6.7	9.3	6.7	7-19	10.6	19 (15")
yellow perch	39	16.3	2.7	2.0	2-9	5.0	10 (7")
Total	239	100	138.4	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. Average total weighted length (inches) at age, and growth relative to the state average, for fish sampled from Hamlin Lake with trap nets, fyke nets, and inland gill nets, May 11-14, 2004. 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	5.0 (2)	6.0 (19)	8.1 (9)	9.4 (14)	10.0 (12)	10.9 (8)	12.1 (5)	11.7 (6)	12.0 (1)	12.1 (1)	+0.7
Bluegill			4.9 (2)	5.6 (7)	7.1 (31)	7.8 (9)	9.4 (1)	9.1 (1)			+0.2
Largemouth bass		8.1 (3)	10.2 (9)	12.3 (32)	14.0 (14)	14.7 (20)	16.1 (3)	17.3 (4)	19.0 (1)	10.6 (1)	+0.8
Northern pike	15.5 (7)	18.6 (13)	21.6 (30)	23.5 (16)	27.3 (2)						+1.4
Pumpkinseed sunfish			4.9 (7)	5.6 (12)	7.1 (13)	7.0 (16)	8.1 (3)				+0.7
Rock bass			4.7 (4)	5.6 (11)	6.5 (14)	7.6 (42)	8.8 (18)	9.8 (2)	10.3 (2)		+0.6
Smallmouth bass					15.6 (1)						-
Walleye		11.1 (1)		18.3 (3)		20.1 (2)	19.8 (1)	23.5 (1)	22.4 (2)	26.3 (1)	-
Yellow perch			5.8 (6)	6.5 (53)	7.8 (10)	9.8 (3)	10.0 (1)	11.7 (1)			-0.8

Table 6. Average total weighted length (inches) at age, and growth relative to the state average, for fish sampled from Hamlin Lake by electrofishing, June 28, 2004. 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.

Species	Age I	II	III	IV	V	VI	VII	VIII	IX	X	Mean Growth Index
Black crappie	5.8 (1)										
Largemouth bass	5.2 (8)	8.0 (13)	10.4 (4)		16.5 (1)			18.2 (1)			-0.5
Northern pike		18.9 (3)									-
Smallmouth bass				11.3 (1)			18.6 (1)				-
Walleye	8.39 (11)	11.4 (2)		16.2 (3)							+0.2
Yellow perch	4.1 (1)	4.5 (9)			9.4 (2)						-1.2

Table 7. Michigan DNR Master Angler awards issued for fish caught from Hamlin Lake, Mason County, 1994-2011.

Species	Number of Master Angler awards issued
Black bullhead	8
Black crappie	5
Bluegill	27
Bowfin	23
Brown bullhead	38
Channel catfish	16
Freshwater drum	45
Largemouth bass	3
Longnose gar	2
Muskellunge	1
Quillback	1
Pumpkinseed	10
Redear sunfish	1
Rock bass	15
Smallmouth bass	4
Tiger Muskellunge	1
Walleye	1
White sucker	5
Yellow bullhead	29
Yellow perch	1
Total:	236

Table 8. Number, weight, and length of fish collected from Hamlin Lake with trap nets, and inland gillnets on June 7-10, 2010.

Species	Number	Percent by number	Weight (Pounds)	Percent by weight	Length range (inches)1	Average length	Percent legal size2
black bullhead	16	1.7	12.5	1.1	10-13	11.8	100 (7")
black crappie	35	3.7	9.6	0.8	4-12	7.4	49 (7")
bluegill	157	16.6	41.7	3.6	3-9	7.0	75 (6")
bowfin	28	3.0	161.2	14.0	21-28	25.2	
brown bullhead	73	7.7	76.8	6.7	9-18	12.8	100 (7")
channel catfish	2	0.2	9.9	0.9	22-26	24.5	100 (12")
common carp	16	1.7	98.5	8.6	18-28	23.3	
freshwater drum	23	2.4	117.4	10.2	7-29	20.0	
golden redhorse	2	0.2	2.8	0.2	11-18	15.0	
largemouth bass	46	4.9	65.3	5.7	6-16	13.7	48 (14")
longnose gar	12	1.3	32.6	2.8	24-37	30.2	
muskellunge	1	0.1	1.5	0.1	19-19	19.5	
northern pike	42	4.4	88.1	7.7	15-29	20.9	10 (24")
pumpkinseed sunfish	135	14.3	46.7	4.1	4-9	7.3	95 (6")
rock bass	171	18.1	58.2	5.1	4-10	7.5	87 (6")
shorthead redhorse	17	1.8	39.2	3.4	11-20	17.8	
smallmouth bass	15	1.6	25.0	2.2	13-18	14.7	87 (14")
walleye	37	3.9	74.2	6.5	11-25	17.7	92 (15")
white sucker	67	7.1	175.4	15.3	14-24	18.5	
yellow bullhead	10	1.1	5.3	0.5	9-11	10.3	100 (7")
yellow perch	42	4.4	6.6	0.6	5-9	6.7	24 (7")
Total	947	100	1148.5	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 9. Number, weight, and length of fish collected from Hamlin Lake with seines and electrofishing on July 15, 2010.

Species	Number	Percent by number	Weight (Pounds)	Percent by weight	Length range (inches)1	Average length	Percent legal size2
banded killifish	6	0.9	0.0	0.0	2-3	2.7	
black bullhead	3	0.5	2.3	6.5	11-12	11.9	100 (7")
bluegill	11	1.7	0.4	1.1	2-4	3.4	0 (6")
bluntnose minnow	148	22.5	1.1	3.1	1-3	2.6	
bowfin	1	0.2	5.2	14.6	24-24	24.5	
brook silverside	6	0.9	0.0	0.0	1-4	2.7	
freshwater drum	1	0.2	1.3	3.7	14-14	14.5	
golden shiner	15	2.3	0.2	0.6	3-4	3.6	
johnny darter	31	4.7	0.1	0.3	0-2	2.2	
lake chubsucker	1	0.2	0.0	0.0	3-3	3.5	
largemouth bass	31	4.7	5.1	14.4	1-13	3.7	0 (14")
logperch	12	1.8	0.1	0.3	2-3	2.7	
mimic shiner	78	11.9	0.4	1.1	1-3	2.5	
pumpkinseed sunfish	4	0.6	0.6	1.7	2-7	5	50 (6")
rock bass	27	4.1	6.4	18.0	2-9	6.3	44 (6")
sand shiner	42	6.4	0.2	0.6	1-2	2.4	
smallmouth bass	1	0.2	0.0	0.0	2-2	2.5	0 (14")
spottail shiner	13	2.0	0.2	0.6	2-4	3.4	
white sucker	6	0.9	9.2	25.9	3-20	12.5	
yellow perch	221	33.6	2.7	7.6	1-5	2.9	0 (7")
Total	658	100	35.5	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 10. Average total weighted length (inches) at age, and growth relative to the state average, for fish sampled from Hamlin Lake with trap nets and inland gill nets, June 7-10, 2010. 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	XIII	Index
Black crappie		5.5 (17)	7.9 (9)	8.7 (4)	10.1 (3)	11.4 (1)		12.9 (1)				-1.0
Bluegill		3.8 (3)	5.0 (18)	6.5 (6)	7.3 (9)	7.4 (5)	8.3 (11)		9.4 (1)	9.2 (1)	9.4 (1)	+0.2
Largemouth bass	6.4 (1)	8.1 (1)	10.7 (2)	12.9 (6)	13.6 (12)	14.1 (4)	15.0 (8)	15.8 (3)	16.2 (2)			-0.3
Northern pike		16.7 (6)	19.4 (10)	21.9 (22)	23.9 (5)							-2.3
Pumpkinseed sunfish		4.3 (2)	4.8 (2)	5.9 (4)	6.3 (5)	6.7 (7)	7.5 (8)	8.2 (7)	8.5 (5)	8.4 (1)		+0.1
Rock bass		4.0 (3)	5.3 (12)	6.1 (4)	7.0 (10)	7.5 (6)	8.3 (12)	9.1 (7)	9.6 (3)			-0.3
Smallmouth bass				13.8 (4)	14.4 (9)	15.2 (1)	18.3 (1)					-0.3
Walleye		12.3 (2)		16.1 (17)	16.7 (4)	18.8 (7)	20.8 (2)	24.3 (1)		25.4 (3)		-0.5
Yellow perch			6.2 (8)	6.5 (18)		9.1 (2)						-1.0

Table 11. Average total weighted length (inches) at age, and growth relative to the state average, for fish sampled from Hamlin Lake by seining and electrofishing, July 14, 2010. 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										
Species	I	II	III	IV	V	VI	VII	VIII	IX	X	Mean Growth Index
Bluegill		3.5 (4)									
Largemouth bass	6.5 (3)			11.4 (1)							
Rock bass		4.1 (3)									
Yellow perch	3.5 (12)	4.7 (1)									-0.8

Table 12. Shoreline data for Hamlin Lake, Mason County. Sampling was conducted by DNR Fisheries personnel in July and August, 2010.

	Total docks per km	Percent shoreline armoring	Submerged trees per km	Dwellings per km
Hamlin Lake	8.6	48.7	56.6	7.7

Table 13. Comparison of bluegill data from four DNR Hamlin Lake fisheries surveys.

Survey year	# Bluegill Caught (trap nets and fyke nets only)	Effort	Catch Rates (# bluegill caught/net-night)	Growth Rate (compared with State average length at age)	Schneider Index and Rank
1992	272	24 fyke net lifts	11.3	+0.5	6.75, Excellent
1997	49	24 fyke net lifts	2.0	+1.1	7.0, Superior
2004	872	15 trap net lifts, 16 fyke net lifts	28.1	+0.2	6.25, Excellent
2010	156	11 trap net lifts	14.2	+0.2	5.5, Good