Fletcher Pond

Alpena/Montmorency counties
Upper South Branch Thunder Bay River watershed, last surveyed 2005-06

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Environment

Fletcher Pond is a flooded section of the Upper South Branch Thunder Bay River in southern Montmorency and Alpena counties. The pond is about 6 miles southeast of the town of Hillman. It is approximately 8,970 acres in size and is commonly referred to as Fletcher Floodwaters. The pond was created in 1930 by Alpena Power Company for water storage purposes. The dam, located in the northeast part of the impoundment, has a 19-foot head and the pond has 45,000 acre-foot storage capacity. Fletcher Pond dam, also known as Upper South Dam, has been regulated by the Federal Energy Regulatory Commission since 1998 and operates under run-of-river (ROR) mode.

Fletcher Pond is a large and very shallow waterbody. The river channel cuts a course through the pond as does various old railroad beds. Most of the water is less than 10 feet deep, and the mean depth is just over 5 feet deep. Aquatic vegetation, standing timber, and stumps are abundant throughout the waterbody. Fletcher Pond has been noted for its tremendous diversity of aquatic vegetation. A brief spot-survey of the aquatic vegetation was made in July 2003 by Aquatic Control, Inc. This was done in response to possible chemical treatment of Eurasian water milfoil, which had infested the waterbody in recent years. Table 1 lists the species but most likely is an underestimate of what is present since no actual vegetation sampling protocol was followed. Fletcher Pond is unique from most Midwestern lakes in that the current plant community is both diverse and heavily infested with the non-native Eurasian water milfoil (Michigan DNR files). This latter species was estimated at 70-80% occurrence during the 2003 spot-check. Winter and spring fish kills are quite common at Fletcher Pond nearly every year and can seem excessive in nature. This is due to the relatively shallow nature of the pond, heavy ice and snow cover in certain years, and low dissolved oxygen levels often associated with such conditions and the breakdown of organic materials. These fish kills have not impaired the fishery. Zebra mussels have been found in Fletcher Pond in recent years.

The bottom of Fletcher Pond is mostly comprised of muck with some sand present. The riparian zone is one of the least developed when compared to other large inland lakes in Michigan. Some fishing resorts exist along the shore along with some cottages. Most of the riparian zone is heavily forested and comprised of both conifers and a variety of hardwoods. A variety of boat launches occur across the lake and one can be found at nearly every fishing resort. A large state owned access site exists on the north shore and possesses a hard-surfaced ramp. Despite this access, most of the land around the pond is privately owned. Fishing pressure is very high on Fletcher Pond relative to other Michigan lakes while other recreational activities such as water skiing are absent. Tournament fishing, particularly for black bass and northern pike, has become a popular activity on Fletcher Pond in the recent decade.

History

Early fish community surveys are generally lacking for Fletcher Pond in the first decades following its establishment. Various hook and line fishing efforts to gain growth data on northern pike occurred

from the 1950s through the 1980s. Growth results for pike have been obtained for the pond dating back to 1948 (Table 2) as have creel survey data. During the 1940s and 1950s, the minimum size limit for northern pike was 14 inches with a daily possession limit of 5 fish. Winter spearing in this shallow pond was also allowed during these two decades. Growth rates of pike were at the state average in 1948. However, northern pike growth rates began to decline for many decades following the establishment of the pond. Fishing pressure was calculated at nearly 29 hours/acre in 1948, which is high for a large inland lake.

Schneider and Lockwood (1979) reported that exceptional fishing for northern pike and other species was experienced at the pond until the late 1940s. At this point it was suspected that lake productivity slowed while pike recruitment remained high, and as a result, the forage base was overgrazed. Various resort owners as well as sportsmen's clubs appealed to the Michigan Department of Conservation (MDOC) Fisheries Division during 1954 to close the pond to winter fishing (Williams 1954). These individuals and groups felt there had been a great change in the pike population since the 1948 creel survey. They maintained that greatly increased spearing pressure, occurring when the pike are concentrated during the winter drawdown, had resulted in an over-exploitation of this species as evidenced by their smaller size. Fisheries Division personnel distributed scale envelopes to various resorts in order to gain insight into current northern pike growth. The situation at that time showed a small average size for Fletcher Pond northern pike, a significant decrease in growth rate in young fish, and few fish older than 3 years old. It was determined if the younger fish were growing slowly because of overabundance, then the present fishing pressure should be continued. If the impoundment was changing and conditions were such that the population and growth rates were declining, then perhaps fishing pressure on pike should be curtailed. Biologists at this time believed overabundance was more of an issue with Fletcher Pond pike (Williams 1954). The results were given to the Conservation Committee of the DNR with the recommendation that the pond should not be closed to winter fishing. The commission decided to make no change in the regulations for the 1955 season but that the MDOC should further study the pike population to decide whether or not winter fishing should be curtailed in the future.

Creel surveys continued to occur at Fletcher Pond in the 1950s, particularly in 1955 and 1956 (Table 2). Pressure estimates in these years were again high and similar to what was observed in 1948. Harvest of northern pike remained very high, with both open-water and ice fishing periods contributing significantly to the harvest. This may have been a result of the low minimum size limit on this species. Growth rates of pike during the 1950s remained between 1 and 3 inches below the statewide average. Growth data from hook and line sampling was obtained for northern pike again in 1959 (Table 2) and the population continued to demonstrate poor growth.

For some 10 years prior to 1963, Fletcher Pond contained an abundant, but slow growing, population of northern pike. Creel surveys and age and growth studies through the early 1960s documented extremely slow growth of this species while fishing pressure remained rather high (Table 2). The minimum size for northern pike was changed in the early part of the decade to 20 inches (from 14 inches) while the daily possession limit (5 fish) remained the same. This change was part of a statewide change. However, complaints from Fletcher Pond anglers were again heard, mainly because few northern pike above 20 inches could be found in the pond.

In 1963, a special regulation was placed on northern pike fishing at Fletcher Pond in an effort to obtain a greater harvest of this species. The new regulations included going back to the previous 14 inch size limit, but closing the lake to spearing (Table 2). The local people insisted on the spearing ban, believing that the big fish were being speared, and that with protection from this gear the summer anglers would catch larger pike. In order to counteract the loss in harvest which the spearing ban would effect, the MDOC enacted a 10 pike-per-day creel limit for Fletcher Pond. These special regulations were to be in effect for three years (1963 through 1965).

In 1963, the ban on spearing seemed to have little effect on holding down the winter harvest of pike at Fletcher Pond as over 18,000 were estimated taken. Approximately 17% of the harvest was due to the increased bag limit of 10 pike per day. During the summer of 1963 a record high number of pike were taken, at least compared to previously censused years. The 43,500 estimated total included only 3% which could be ascribed to the higher limit (10 per day). The average length, 17.1 inches, was close to the average size in 1956 when a 14 inch size limit was also in effect, but growth was very slow.

During the winter season of 1964, only 10,300 pike were estimated harvested at Fletcher Pond. The decrease in the winter take, as well as the relatively lower harvest in the summer of 1964, was caused by local highway renovation which interfered with angler access to the pond. Average size of the pike (17.4 inches) taken was close to the average of 1963 with continued poor growth.

The winter harvest of 1965 was very similar to that of 1964, and only 6% of the catch was due to the 10 fish per day limit. A slight improvement was observed in the growth rate of pike collected in this year, which probably reflected the increased harvest in 1963 and 1964 (relative to previous years).

The summer harvest in 1965 (Table 2) was estimated as 114,600 pike, which was nearly three times as many as the previous censused high in 1963. Local livery operators believed it to be one of the best angling years ever. The high catch was a factor both of increased angling pressure and higher catch rates. The average size of northern pike in winter 1966 was 18.5 inches which was the highest average size since the late 1940s (with the exception of 1961 when a higher size limit was established). The growth rate of pike also improved considerably. Because of the high harvest and improved growth rate of pike in 1965, it was decided to continue the special regulations one more year through December of 1966.

Average length of northern pike from Fletcher Pond collected in the winter of 1967 was 1 inch greater than in 1966 and growth rates continued to show slight improvement. Although pike regulations reverted to normal statewide size (20 inches) and creel limits (5 per day) in 1967, pike collected in winter of 1968 averaged only slightly larger in Fletcher Pond than the year previous (Table 2). Growth rates, however, continued improving.

Northern pike stomach samples were collected in summer of 1963 and 1965, and in winter of 1963, 1964, 1967, and 1968. Winter samples averaged 83% fish items and 17% non-fish items, while summer samples averaged only 31% fish items and 68% non-fish items. Throughout the study fish items in stomachs averaged about 2.5 inches in length. Evidently by spring of each year the pike had so decimated the young-of-year population of food fishes that the pike had to consume non-fish food to survive until the next year-class of food fishes was produced. High summer water temperatures may also have been a barrier to high pike growth rates.

In summarizing northern pike populations in the 1960s, four years (1963-66) of fishing regulations were liberalized at Fletcher Pond in an attempt to increase harvest and growth. Seemingly, the liberalized regulations (14 inch size limit, 10 pike per day, no winter spearing) had the desired effect. Available data indicate that harvest of pike increased significantly while growth rates positively increased. By 1967, normal state regulations on northern pike were established at Fletcher Pond (20 inch size limit, 5 pike per day) while the winter spearing ban continued. Data from the late 1960s showed that pike growth rates continued to increase as did mean length. Northern pike harvest rates in creeled years for Fletcher Pond ranged from: 4.2 - 5.5 per acre from 1948-1956 (14 inch size limit, 5 fish per day, spearing allowed); 0.2 per acre from 1961-1962 (20 inch size limit, 5 fish per day, spearing allowed); and 5.1 - 13.9 per acre from 1963-1965 (14 inch size limit, 10 fish per day, spearing prohibited). Also during this period, Schneider and Lockwood (1979) stated that large catches of pumpkinseed, yellow perch, and largemouth bass were made by anglers in some years. Those species which evaded pike predation grew fast and reached a large size.

Fish community information for Fletcher Pond is virtually absent for the 1970s. Angler catch was estimated from mail survey in 1970. Harvest estimates were as follows: yellow perch 90,530; bass 12,740; panfish 46,240; and northern pike 40,560. Winter fishing reports from 1979-80 indicated good panfish catches, especially for 7-10 inch bluegill.

Age and growth data for northern pike was collected on three occasions in the 1980s. Growth had stabilized to the statewide average during this decade and even began to increase by the late 1980s (Table 2). In 1982, precipitated by a drastic drawdown that year, concerns about the fluctuation of the water levels in the impoundment came to the forefront. The drawdown decreased the surface area of the pond significantly and resulted in a very poor year class of pike (Borgeson 1996). The crowding of fish into a much smaller area was suspected to have a substantial effect on the fish community. As a result, an agreement was reached between concerned parties, including MDNR Fisheries Division and the Alpena Power Company (operators of dam), assuring adequate water levels for pike spawning (Borgeson 1996).

Prompted by the water level concerns and complaints of poor pike fishing, Fletcher Pond was surveyed by MDNR in 1984. The sampling effort was done in May and early June and utilized 179 fyke-net lifts (237 fyke-net nights). Only northern pike were collected in the first two weeks of the survey, while other species were collected during the remainder of the period. It was determined that most the spawning pike in Fletcher Pond use the marshy wetlands around the lake to spawn in rather than moving upstream through the Upper South Branch Thunder Bay River. The survey also revealed that the pike population had declined in number. The population was no longer a stunted one, but was a fast growing population which was part of a much better balanced fish community (Borgeson 1996). Age and growth from the survey revealed that pike were now growing about 1 inch faster than the statewide average (Table 2) which was a signficant reversal compared to previous decades. Pike comprised less than 1% of the catch by number (Table 3) and specimens nearly 40 inches were captured. The lower relative catch could probably be explained by the overwhelming catch of bullheads. There was no size limit on Fletcher Pond northern pike during this period, the bag limit was 5 fish, and spearing remained prohibited.

Largemouth and smallmouth bass appeared to be in very good shape based on the 1984 fish community survey of Fletcher Pond. The percent of the catch represented by bass (smallmouth and largemouth) in 1984 was very similar to that represented in more recent fish surveys (Table 5). Largemouth bass up through 20 inches were collected while the less abundant smallmouth bass could reach similar maximum lengths. The panfish population, consisting primarily of bluegill, pumpkinseeds, rock bass, black crappie and yellow perch, was considered to be in excellent condition (Borgeson 1996). Yellow perch over 12 inches were collected and were relatively common at larger sizes while black crappie over 13 inches were found, but less abundant. Bluegill were abundant and fish over 10 inches were surveyed, with good numbers in the 8-10 inch range (Table 6).

Northern pike growth rates continued to increase based on harvest data from 1990. Growth rate at this point was nearly 3 inches faster than statewide average (Table 2). A follow-up assessment of the pike population was made in mid-May 1992 with the use of 24 large-mesh fyke-net lifts. Growth rates (n=15) continued to increase for pike. Largemouth bass catches during this period were high with many year classes and sizes represented. Growth of largemouth bass was more than 1 inch faster than statewide average. Most panfish collected were considered on the smaller side.

An intensive fish community assessment was made by DNR Fisheries Division at Fletcher Pond over a two-week period in May 1993. Effort consisted of a variety of small- and large-mesh fyke nets, including 153 net-lifts or 211 net-nights. The total catch of the survey (17,337 fish) can be examined in Table 4. Bullheads and panfish dominated the catch as would be expected. Panfish comprised 44% of the catch by number (Table 5) while bullheads comprised 52% of the catch by number. The majority of the panfish catch were pumpkinseed and bluegill with most running on the small side, in the 6-7 inch size range (Table 6). Panfish anglers at the time had been doing very well on Fletcher Pond according to reports (Borgeson 1996). Yellow perch, rock bass, and black crappie were also very common in the survey and added excellent diversity to the fishery. Perch and crappie 10 inches and larger in Fletcher Pond were not uncommon in the catch (Table 4).

The abundance and size of largemouth and smallmouth bass was considered exceptional according to Borgeson (1996). With the changing of the fish community from the dominance of northern pike to one of more balance, anglers had yet to completely adjust to the relatively new fish community structure. It was believed at the time by fisheries managers that the bass fishery would become more prominent in future years, especially for largemouth bass. Many largemouth bass in the 15-20 inch range were collected during the spring 1993 survey.

Nothern pike were less than 1% of the total catch in the 1993 survey. However, their population appeared healthier in number with a very good size distribution (Borgeson 1996) (Table 6). The percentage of catch by number of northern pike in 1993 was similar to the 1984 survey (Table 5). Northern pike were attaining legal size (24 inches) by age-3 (Table 8) and growth was considered excellent (Table 2 and 7).

It was at this time that Fletcher Pond was considered to be at a historical highpoint in terms of the variety and quality of the warmwater fishery it provided (Borgeson 1996). No changes in fisheries management, in terms of regulations or stocking, were recommended at this time. Throughout this period, the size limit on northern pike remained 24 inches with a bag limit of 5 fish and a ban on spearing (Table 2).

Angler surveys were made on Fletcher Pond in the winter of 1995 and the summer of 1997. These were stratified creel designs with the purpose of monitoring the northern pike fishery (Lockwood 2000). Total catch for this separate period was over 550,000 fish (Table 8) while angler hours was 186,635. Pressure estimates for this one-year period were 20.8 hours/acre which was slightly lower but similar to previous historical pressure estimates (Table 2) and high compared to other inland lakes in Michigan. Nearly 45,000 angler trips were estimated during this period.

Fish harvest during the 1995 (winter) and 1997 (summer) period was 156,730 fish. Most of the harvest (94%) was of panfish, with bluegill and yellow perch dominating the overall harvest. Black bass and northern pike comprised the remainder of the harvest. A total of 4,458 northern pike (Table 8) were harvested while over 15,000 were released. This harvest pales in comparison to the harvest numbers from previous decades (Table 2). This can be easily explained by the differences in minimum size and bag limits through time. The winter creel survey from 1995 demonstrated that anglers from 46 different Michigan counties fished at Fletcher Pond as well as anglers from Ohio. Nearly 25% of the anglers fishing the pond were actively fishing for northern pike, while additional anglers (29%) were seeking pike in combination with panfish. This demonstrates the importance of northern pike to the fishery.

The following report (winter 1995-96) from an angler demonstrates the quality of the northern pike fishery at this time for Fletcher Pond: A local fisherman made 28 fishing trips to the pond during this period. He saw an average of 12 northern pike per trip through the ice, with the most in one day being 25 pike. Total legal catch of pike was 60 for the season, which averaged out to two pike per trip. Pike ranged in size from 24-37 inches with the largest fish weighing 13 pounds. About 35-40 northern pike were released with many in the 12-14 inch range and most in the 18-23 inch size range. This was the most productive season for pike for this one angler since 1990 (MDNR Fisheries Division files).

Current Status

The recent fish community survey for Fletcher Pond was made from May 16-25, 2005 by DNR Fisheries Division. Effort consisted of 23 large-mesh trap-net lifts, 20 large-mesh fyke-net lifts, 5 small-mesh fyke net lifts, 8 mini-fyke net lifts, 10 experimental gill-net lifts, and 30 minutes of daytime direct current electrofishing. Effort levels were not intensive, but considered adequate to gain insight into the current fish community. This effort amount was also less than previous surveys, but utilized a variety of gear types. Nearly 10,000 fish were collected during the survey and represented at least 14 species (Table 9). Again, panfish dominated the catch number percentage (68%) while bullheads comprised 27% of the total catch. Interesting enough, black crappie were the most common species in the survey. This was not the case in the 1984 and 1993 surveys. Black crappie were fairly slow growing (Table 7 and 9) but abundant with many individuals larger than 10 inches. Most crappie were in the 6-9 inch range. Ten year classes of black crappie were collected (Table 7) indicating relatively stable reproduction.

Bluegill and pumpkinseed were also very abundant in the 2005 total catch. Growth of both species was normal or slightly below the statewide average (Table 7). Pumpkinseed larger than 8 inches were not collected, nor were bluegill larger than 9 inches. Bluegill older than age-7 were not collected. Fish in the 5-7 inch range were common for both species. Rock bass and yellow perch were also collected in the survey, but in relatively lesser numbers. This may be a product of timing for these species. For

example, yellow perch are known to be very common in Fletcher Pond and simply may not have been collected in proportion to their true abundance. Seven year classes of yellow perch were caught. Both rock bass and yellow perch grew slightly slower than the statewide average for each species (Table 9). Thus, growth rates across the board for Fletcher Pond panfish were normal to slightly below average in 2005.

Largemouth bass remain very common in Fletcher Pond while smallmouth bass are still relatively uncommon. Growth of both species is good compared (Table 7 and 9) to statewide average, which is not surprising based on forage levels in the pond. Black bass percentage in the catch (Table 5) has remained very stable through three decades based on survey data. Many ages (year classes) were represented for both species, and 20 inch fish are not uncommon.

Northern pike remain the top predator in Fletcher Pond. Based on the 2005 survey, they comprised 2% of the total catch by number but a larger proportion by weight (Table 9). Northern pike growth (Table 7 and 9) remains very fast with fish growing nearly 3 inches faster than growth of this species statewide. Pike were aged with dorsal spines in 2005, which also give a much more accurate depiction of population age structure. Strikingly, only six year classes of northern pike were found with none older than age-6. Typically, pike in Fletcher Pond attain legal size (24 inches) between age-3 and age-4. However, as is also typical, female pike grow much faster than male northern pike. Pike up to 36 inches were collected during the fish community survey with 28-32 inch fish common (Table 6).

Bullhead species again comprised a significant portion of the recent survey catch by number (27%) yet this percentage has declined through three decades (Table 5). Common carp can still be found in the pond but in low numbers (Table 9). One brown trout was collected, which is not uncommon. Brook and brown trout have been captured in previous surveys and are most likely downstream migrants from the Upper South Branch Thunder Bay River, which has both wild and stocked fish. White suckers remain relatively uncommon in Fletcher Pond. Bowfin, or dogfish, have become a species of significance in Fletcher Pond today based on recent angler reports and the 2005 survey catch (Table 9). This species comprised 1% of the survey catch by number and a much more significant amount by weight. This species may currently be thriving due to the increased vegetation levels in Fletcher Pond. Bowfin were not collected in previous fish community surveys.

An angler survey was conducted at Fletcher Pond from late-April 2005 through March 2006. This was done as a follow-up to the fish community survey and was comparable to previous angler surveys. Total catch for this period was over 750,000 fish (Table 10) while angler hours was 210,459. Both of these numbers were comparable, but higher, than those from the angler survey done in the mid 1990s. Pressure estimates for this one-year period were 23.5 hours/acre which was slightly higher than the previous survey yet slightly lower than historical pressure estimates (Table 2). Nearly 56,000 angler trips were estimated during the recent creel period.

Fish harvest during the 2005-06 creel period was 174,384 fish. Most of the harvest (96%) was of panfish, with bluegill and yellow perch dominating the overall harvest. Panfish harvest was high in the early- to mid-summer and again increased in the winter months. Black bass and northern pike comprised the remainder of the harvest along with a few walleye and bowfin. Walleye are not typically found in Fletcher Pond, and it is not known how a few individual specimens entered the pond. Catches

of bass peaked in June and July. Nearly 50,000 largemouth bass were caught and released over the entire year.

A total of 2,125 northern pike (Table 10) were harvested while over 7,000 were released. This harvest also pales in comparison to the harvest numbers from previous decades (Table 2) and was also lower than the 1995/97 survey. This still can be explained by the differences in minimum size and bag limits through time. January was the peak harvest period for northern pike while catch and release was most significant in the late spring and early summer.

Analysis and Discussion

The current fish community of Fletcher Pond can be generally characterized as having the following: 1) a panfish community considered high in diversity, dominated by slow growing specimens which have the ability to attain large sizes on occasion (yellow perch and black crappie), 2) a panfish community dominated by bluegill and pumpkinseed, followed by yellow perch, black crappie, and rock bass, 3) a somewhat diverse predator population dominated by northern pike and largemouth bass, 4) a predator population (black bass and pike) which are fast growing, 5) a northern pike population which has changed significantly over time offering a highly popular fishery with spearing prohibited, 6) an abundant non-game fish community comprised mainly of bullheads, as well as white suckers, bowfin, and carp, 7) an increasing bowfin population, 8) a fish community that offers popular fishing all year and receives heavy fishing pressure. Management of Fletcher Pond has primarily been with the use of statewide regulations, a historical ban on northern pike spearing, maintenance of all species through natural reproduction, and federal oversight of water levels through implementation of run-of-river operational mode. It is questionable whether the spearing ban is more signficant from a biological or social perspective, especially with lowered daily bag limits (2 fish) and minimum size limits (24 inches) for pike today.

The Fletcher Pond panfish community is high in diversity and dominated by bluegill, pumpkinseed sunfish, black crappie, and yellow perch. All these species tend to thrive in the pond. Bluegill and pumpkinseed sunfish currently do not attain large sizes, but often attain sizes that anglers prefer to catch (6-8 inches). Black crappie have become very abundant in the pond and can attain older ages and larger sizes, often supplementing angler creel limits. Yellow perch offer a very popular fishery at Fletcher Pond and also attain very large sizes. These species add to the attractiveness of a diverse panfishery at Fletcher Pond.

The predator base of Fletcher Pond is dominated by northern pike and largemouth bass. Both of these species generate large amounts of angler hours each year at the pond due to the quality fisheries they provide. Northern pike size structure has significantly changed in a positive manner since the middle of the twentieth-century. Today, the pike population is apparently smaller than in the past, but is considered much healthier. Growth rates for this species are high and may have temporarily stabilized. It is not completely known how the future pike population will react to the potential for increasing Eurasian water milfoil levels and loss of native plant habitat within Fletcher Pond. Spawning habitat for northern pike remains abundant throughout the lake since this species lays adhesive eggs on flooded vegetation. Differences in dam operation may have reduced spawning habitat, yet that which remains is still highly abundant.

Largemouth bass remain a top predator in Fletcher Pond, and catch of this species is high each year. Tournament fishing for bass at the pond has increased in recent years according to resort owners and has helped to boost money into local economies. The black bass (largemouth and smallmouth) fishery is governed primarily by catch and release efforts, allowing many bass to attain older ages, and thus larger sizes.

The remaining non-game species in Fletcher Pond are common and include bullheads, bowfin, white suckers, carp, and golden shiners. These species all provide forage (when small) for the top predators of the pond, yet also compete with all species for food. Bowfin have become a significant part of the predator-prey balance in Fletcher Pond as aquatic vegetation populations become dynamic and provide conducive habitat for this fish. Bowfin feed primarily on the same forage that other top predators utilize, yet they are also important in ensuring a balanced panfishery.

Management Direction

1) The Fletcher Pond aquatic community is complex and should be monitored on a fairly consistent basis. Each game fish plays a vital role not only in the fishery, but also for overall ecosystem balance. Fish community surveys have recently been made on this pond in 1984, 1993, and 2005 while recent creel surveys have been done in 1995 (winter), 1997 (summer), and 2005-06. A complete fish community survey documenting changes should be accomplished again between 2010 and 2020 to follow the decade pattern of surveying. Changes in aquatic vegetation levels in the pond may ultimately lead to fish community structural changes, thus necessitating new management practices. Periodic angler surveys will also be a useful tool in helping decipher changes in the fishery.

2) Continue to rely on natural reproduction of all species in Fletcher Pond. Age and length-frequency analysis demonstrates that year class stability is good for many of the pond inhabitants.

3) Northern pike are native to Fletcher Pond and found in good numbers and sizes. It has been suggested (not based on survey catch numbers) by resort owners that the pike population appears lower in recent decades compared to the past. However, we (as well as resort owners) feel that the current population is healthier as growth rates have significantly increased since the 1940s. The pike population today offers tremendous quality where both small and large pike can commonly be caught by anglers. Harvest of this species is high compared to other inland lakes in Michigan, but remains significantly lower than in previous decades. The current 24 inch size limit and lower bag limit (2 fish) enables many northern pike to attain larger sizes. The northern pike spearing ban remains in effect since the 1960s and has support among resort owners for maintaining both an open-water and ice fishery for pike. The regulation itself may have more of a social basis today than a biological basis but will remain in effect. Though it is true that the pike population appears healthier today, it may be a partial product of current regulations which limit harvest and allow fast growing young pike to attain quality sizes. Various anglers have asked for the spearing ban to be lifted on Fletcher Pond in recent years. Any consideration to this thought, in the future, should go through a public scoping process which would completely involve lake residents and resort owners.

5) Largemouth bass and smallmouth bass are vitally important to Fletcher Pond. These species prey on slow growing forage such as sunfish and yellow perch, and help to maintain stable growth rates and reduce the potential for panfish stunting. Both species of bass grow well in the lake, although largemouth bass are much more abundant. Both species are important to the fishery as well, and many

tournaments at Fletcher Pond have focused on these fish. Standard State of Michigan fishing regulations for largemouth and smallmouth bass are currently appropriate for this waterbody.

6) Panfish diversity is high at Fletcher Pond and provide many angler hours annually. Having appropriate bag limits for panfish allows against overharvest by individual anglers. Panfish rely on predators in Fletcher Pond in order to keep their numbers in check and to keep from having stunted populations. Increased eutrophication of the pond may lead to reduced predation on such forage. In this case, winter- and spring natural fish kills may play a role in reducing over-populated panfish communities.

7) Two invasive aquatic species currently in Fletcher Pond include Eurasian water milfoil and zebra mussels. Both invasives will have important roles in the future on the fish community and lake limnology. Zebra mussels have the ability to filter out large amounts of plankton from waterbodies in which they live. These invaders have recently become established in Fletcher Pond and will most likely thrive. It is possible that they will compete with important game fish for the base of the food chain, thus necessitating future fish community surveys.

Eurasian milfoil has established itself in Fletcher Pond within the last couple decades. It has become apparent that this invasive has changed the vegetation dynamics in the lake. The Fletcher Pond Improvement Association (FPIA) was formed around 2002 with this problem in mind. Control of this plant could only be accomplished through biological or chemical means. Both scenarios would require large amounts of money, and it is doubtful that either technique would be effective for the long term without having various deleterious effects (especially chemical means). The FPIA raised enough money in 2005 to stock 15,000 native weevils into the pond. This weevil lives at naturally low densities in most Michigan waterbodies and is known to feed on the invading milfoil plant. This number of weevils (size of a pinhead) is a low number for such a large body of water, yet they are very expensive to purchase. It is unknown how well the stocking did, but it is presumed that there was no significant change in milfoil densities. Future stocking efforts would require vast amounts of money to purchase significant numbers of weevils.

Fisheries Division has and will continue to make recommendations to the Michigan Department of Environmental Quality to conduct aquatic vegetation surveys at Fletcher Pond in order to gain baseline (although delayed) information on macrophyte diversity and coverage. The spread and dominance of this non-native aquatic plant could have long term effects on the Fletcher Pond fish and plant community.

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Table 1. Species of aquatic vegetation observed during a routine inspection of Fletcher Pond on July 15-16, 2003. Survey was done by Aquatic Control, Inc. and information was shared with the Michigan DNR. An asterisk* denotes that more than one species may have been observed.

Common name	**Latin name**
Eurasian water milfoil	Myriophyllum spicatum
Chara sp.*	-
Northern or common water milfoil	Myriophyllum sibiricum
Whorled water milfoil	Myriophyllum verticillatum
Two-leaf water milfoil (not confirmed)	Myriophyllum heterophyllum
Common naiad*	Najas flexilus
Eel grass or Tape grass	Vallisneria Americana
Largeleaf pondweed	Potamogeton amplifolius
Floatingleaf pondweed	Potamogeton natans
Illinois pondweed	Potamogeton illinoensis
Coontail	Ceratophyllum demersum
Water buttercup*	Ranunculus sp.
Sago pondweed	Potamogeton pectinatus
Curlyleaf pondweed	Potamogeton crispus
Common waterweed	Elodea Canadensis
Bladderwort*	Utricularia spp.
Small pondweed	Potamogeton pusillus
Flatstem pondweed	Potamogeton zosteriformis
White waterlily	Nymphaea odorata
Spatterdock*	Nuhpar sp.
Becks water-marigold (not confirmed)	Bidens beckii

Table 2.-Fletcher Floodwater historical creel statistics and catch, growth, and population information for northern pike. (Laarman 1976, Schneider and Lockwood 1979, Ryckman and Lockwood 1985, and Lockwood 2000).

Year	Regulations	Fishing pressure (hrs)	Fishing pressure/acre	Harvest			Mean length[3] (in)	Growth index[4] (number aged)	Population estimate
				winter	summer	total			
1948	14” size; 5/day; spear in winter	258,373	28.9	14,504	34,470	48,974	19.8	+0.3 (224)	
1954	14” size; 5/day; spear in winter							-1.6 (85)	
1955	14” size; 5/day; spear in winter	245,412	27.4	23,500	15,280	38,780		-1.8 (995)	
1956	14” size; 5/day; spear in winter	196,530	21.9	19,500	17,930	37,430	17.5	-2.6 (580)	97,000
1959	14” size; 5/day; spear in winter							-1.4 (19)	
1961	20” size; 5/day; spear in winter	77,950	8.7	1,200	980	2,180	23.4	-2.3 (97)	
1962	20” size; 5/day; spear in winter	99,008	11.0	1,210	581	1,791		-5.1 (88)	
1963	14” size; 10/day; no spear in winter	241,529	26.9	18,426	27,256	45,682	17.1	-4.9 (311)	
1964	14” size; 10/day; no spear in winter	269,817	30.1	10,258	18,800	29,058	17.4	-5.2 (200)	
1965	14” size; 10/day; no spear in winter	435,256	48.5	10,430	114,600	125,030	17.3	-5.4 (330)	

Table 2.-Continued.

Year	Regulations	Fishing pressure (hr)	Fishing pressure/acre	Harvest			Mean length[3] (in)	Growth index[4] (number aged)	Population estimate
				winter	summer	total			
1966	14” size; 10/day; no spear in winter						18.5	-3.3 (112)	
1967	20” size; 5/day; no spear in winter						19.5	-3.0 (93)	
1968	20” size; 5/day; no spear in winter						19.6	-2.0 (119)	
1983	No size limit; 5/day no spear in winter						21.9	0.0 (89)	
1984	No size limit; 5/day no spear in winter							+1.1 (80)	
1989	20” size; 5/day; no spear in winter							+1.4 (24)	
1990	20” size; 5/day; no spear in winter							+2.8 (32)	
1992	20” size; 5/day; no spear in winter							+4.0 (15)	
1993	24” size; 5/day; no spear in winter							+3.8 (51)	

Table 2.-Continued.

Year	Regulations	Fishing pressure (hr)	Fishing pressure/acre	Harvest			Mean length[3] (in)	Growth index[4] (number aged)	Population estimate
				winter	summer	total			
1995	24" size; 5/day; no spear in winter	15,114[1]		1,126[1]					
1997	24" size; 5/day; no spear in winter	171,521[2]			3,332[2]				
2005	24" size; 5/day; no spear in winter	210,459	23.5	1,188	936	2,124	-	+2.9 (158)	

[1]Winter creel estimate (January through March)
[2] Open water creel estimate (May through September)
[3] Based on harvest in both creel and non-creel years
[4] Growth rates are compared to the statewide average growth for northern pike
* 1948-1965 creel censuses for both open water and winter

Table 3.-Species catch and relative abundance of fishes collected during the Fletcher Pond fish community survey, May 14-June 8, 1984.

Species	Number	Percent by number	Length range (in)
Bullhead species	19,427	80	
Rock bass	2,019	8	3 – 10
Pumpkinseed	938	4	2 - 9
Bluegill	462	2	2 – 10
Yellow perch	403	2	3 - 12
Largemouth bass	390	2	4 – 20
White sucker	275	1	9 – 20
Black crappie	125	less than 1	4 – 13
Northern pike	62	less than 1	11 – 38
Smallmouth bass	46	less than 1	5 – 20
Common carp	29	less than 1	11 – 30
Golden shiner	13	less than 1	2 – 6
Brown trout	1	less than 1	14
Channel catfish	1	less than 1	15
Total	**24,401**		

Table 4.-Species catch and relative abundance of fishes collected during the Fletcher Pond fish community survey, May 10-28, 1993.

Species	Number	Percent by number	Length range (in)
Bullhead species	9,031	52	5 - 12
Pumpkinseed	3,368	19	4 - 7
Bluegill	3,076	18	4 – 8
Rock bass	707	4	3 – 11
White sucker	334	2	9 – 18
Black crappie	284	2	4 – 15
Largemouth bass	260	2	8 – 20
Yellow perch	161	1	4 – 11
Northern pike	40	less than 1	19 – 35
Common carp	32	less than 1	9 – 24
Smallmouth bass	25	less than 1	7 – 19
Golden shiner	18	less than 1	4 – 7
Brook trout	1	less than 1	9
Total	**17,337**		

Table 5. Comparison of 1984, 1993, and 2005 fish community survey data at Fletcher Floodwaters. Effort was variable between years (1984=179 fyke-net lifts; 1993=153 fyke-net lifts; 2005= 20 large-mesh fyke net lifts, 5 small-mesh fyke net lifts, 8 mini-fyke net lifts, 23 large-mesh trap net lifts, 10 experimental gill net lifts, and 30 minutes daytime electrofishing).

	Total Catch			**Percent of Catch No.**			**Average Length (in)**		
Species	**1984**	**1993**	**2005**	**1984**	**1993**	**2005**	**1984**	**1993**	**2005**
Largemouth bass	391	260	131	1.6	1.5	1.3	8.8	13.8	14.8
Bluegill	462	3,076	1,454	1.9	17.7	14.9	6.8	6.5	5.7
Pumpkinseed	938	3,368	1,445	3.8	19.4	14.8	5.3	6.1	5.8
Northern pike	62	40	160	0.3	0.2	1.6	21.6	27.1	25.6
Yellow perch	403	161	98	1.7	0.9	1.0	6.6	8.7	7.2
Black crappie	124	284	3,501	0.5	1.6	35.9	8.8	7.9	8.2
Rock bass	2,019	707	139	8.3	4.1	1.4	6.7	5.8	6.1
Smallmouth bass	46	25	39	0.2	0.1	0.4	12.4	12.1	17.8
Carp	29	32	19	0.1	0.2	0.1	20.6	17.2	18.6
Bullheads	19,427	9,031	2,447	79.6	52.1	26.9	8.7	9.8	-
White sucker	275	334	5	1.1	1.9	0.1	17.2	18.6	19.3
Bowfin	0	0	109	0.0	0.0	0.0	-	-	24.7

Table 6.-Length-frequency distribution of certain game fishes collected during the various netting surveys at Fletcher Pond. Note: gear not comparable between years.

Length (in)	Northern pike 84	Northern pike 93	Northern pike 05	Largemouth bass 84	Largemouth bass 93	Largemouth bass 05
1						
2						
3						
4				1		
5						
6						3
7				126		5
8				217	6	14
9				19	30	4
10				2	38	7
11	2			1	10	4
12	6			1	25	11
13	4			2	27	4
14	2		1	2	25	10
15				3	20	7
16	1			1	14	12
17			1	5	22	7
18	1		4	3	15	14
19	1	2	13	3	14	11
20	4	1	8	4	5	15
21	2	3	14			1
22	13	1	13			1
23	9	4	15			
24	5	5	7			
25	4	2	6			
26		2	11			
27	3	2	9			
28	1	2	12			
29	1	1	14			
30		4	16			
31		5	10			
32	1	3	1			
33		1	2			
34			1			
35		1	2			
36	1					
37						
38	1					
39						
40						
41						
42						
43						

Table 6.-Continued

Length (in)	Yellow perch 84	Yellow perch 93	Yellow perch 05	Black crappie 84	Black crappie 93	Black crappie 05
1						
2						
3	5					
4	214	2	2	4	12	32
5	56	1	22	16	18	119
6	15	5	20	20	43	725
7	14	29	34	10	56	725
8	11	63	9	25	99	1071
9	18	36	7		43	529
10	18	19	2	18	7	118
11	36	5		17	3	91
12	16		2	14	1	52
13				1	1	32
14						7
15					1	
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						

Table 6.-Continued

Length (in)	Bluegill 84	Bluegill 93	Bluegill 05	Pumpkinseed 84	Pumpkinseed 93	Pumpkinseed 05
1						
2	2		6	1		
3	46		32	81		13
4	96	21	279	158	142	143
5	35	335	534	607	1273	746
6	65	2489	541	75	1795	512
7	13	203	56	5	158	34
8	103	31	6	10		
9	97			1		
10	5					
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						

Table 7.-Comparison of mean length (inches) at age for various game fishes of Fletcher Pond from 1984 to 2005. Number in parentheses represents number aged. Growth comparison in last column was across all ages for 2005.

Species	Age group	1984 May-June	1993 May	2005 May	2005 growth compared to state average
Yellow perch	I				-0.3 inches
	II	4.4 (12)		5.1 (15)	
	III	5.7 (19)		5.9 (17)	
	IV	7.4 (11)		7.3 (29)	
	V	8.5 (11)		8.3 (8)	
	VI	9.4 (6)		8.5 (3)	
	VII	10.4 (12)		10.6 (1)	
	VIII	11.3 (6)			
	IX	12.1 (13)		11.6 (3)	
	X	13.0 (6)			
Northern pike	I	13.6 (20)		14.0 (1)	+2.9 inches
	II	19.6 (5)	21.0 (2)	20.5 (26)	
	III	22.3 (26)	24.9 (7)	22.1 (37)	
	IV	24.0 (12)	27.3 (19)	27.5 (52)	
	V	25.3 (6)	28.3 (12)	28.6 (28)	
	VI	28.3 (8)	30.5 (5)	31.6 (14)	
	VII		34.5 (5)		
	VIII	32.0 (1)	36.0 (1)		
	IX	36.1 (1)			
	X	39.0 (1)			

Table 7.-continued

Species	Age group	1984 May-June	1993 May	2005 May	2005 growth compared to state average
Rock bass	I				-0.9 inches
	II	3.7 (12)			
	III	4.7 (8)		4.2 (10)	
	IV	5.3 (7)		5.5 (8)	
	V	6.5 (15)		6.1 (13)	
	VI	7.3 (15)		7.0 (10)	
	VII	9.2 (7)		7.1 (8)	
	VIII			8.2 (3)	
	IX			8.8 (5)	
Smallmouth bass	I	5.8 (2)			+1.0 inches
	II	8.3 (13)			
	III	11.3 (11)			
	IV	12.9 (4)		13.0 (1)	
	V	14.7 (3)		15.8 (3)	
	VI	15.6 (3)		15.7 (5)	
	VII	17.0 (4)		18.0 (8)	
	VIII	18.1 (3)		18.3 (6)	
	IX			18.9 (5)	
	X				
	XI			20.0 (2)	
	XII			20.3 (1)	
Largemouth bass	I	4.7 (1)			+0.3 inches
	II	8.2 (25)		7.2 (4)	
	III	9.8 (7)		8.5 (22)	
	IV			11.0 (16)	
	V	14.4 (3)		12.9 (12)	
	VI	15.6 (4)		15.0 (22)	
	VII	17.4 (3)		17.3 (22)	
	VIII	17.9 (2)		18.6 (11)	
	IX	19.0 (6)		19.7 (12)	
	X	20.2 (5)		20.4 (8)	
	XI			21.8 (2)	

Table 7.-continued

Species	Age group	1984 May-June	1993 May	2005 May	2005 growth compared to state average
Bluegill	I	2.2 (2)			-0.7 inches
	II	3.9 (20)		3.9 (4)	
	III	4.4 (26)	4.8 (2)	4.3 (16)	
	IV	7.4 (12)	5.6 (2)	5.1 (14)	
	V	8.4 (8)	6.3 (16)	6.0 (14)	
	VI	9.2 (12)	6.8 (14)	6.8 (8)	
	VII	10.1 (3)	8.5 (1)	7.0 (4)	
Pumpkinseed	I				-0.1 inches
	II	3.7 (12)		3.2 (2)	
	III	4.8 (12)		4.6 (8)	
	IV	5.9 (8)		5.6 (21)	
	V	6.4 (11)		6.4 (15)	
	VI	8.1 (8)		6.6 (8)	
	VII	8.8 (5)			
Black crappie	I				-0.8 inches
	II	5.0 (8)		4.2 (2)	
	III	7.0 (39)		6.2 (20)	
	IV	9.6 (11)		7.4 (19)	
	V	10.6 (6)		8.7 (20)	
	VI	11.4 (7)		9.7 (11)	
	VII	12.7 (22)		9.4 (14)	
	VIII			11.7 (9)	
	IX			11.9 (2)	
	X			12.6 (3)	
	XI			13.7 (4)	

Table 8.- Estimated fish harvest and release, angler hours, and angler trips for Fletcher Pond during the 1995 winter season (Jan through March) and 1997 open water fishing season (May through September). Includes species not listed where * indicated.

Species	May 97	June 97	July 97	Aug 97	Sept 97	Jan 95	Feb 95	Mar 95	**Total**
Harvest									
Bluegill	1,831	9,007	13,607	7,621	7,620	6,769	2,064	8,048	56,567
Pumpkinseed	588	3,910	5,442	2,097	2,097	1,063	31	1,778	17,006
Black crappie	772	865	644	401	400	3,408	213	929	7,632
Rock bass	73	2,154	1,620	564	565	7	4	0	4,987
Yellow perch	2,126	12,533	15,420	8,457	8,457	6,354	3,865	4,550	61,762
Smallmouth bass	67	160	247	136	136	-	-	-	746
Largemouth bass	327	1,355	1,000	445	445	-	-	-	3,572
Northern pike	284	472	953	811	812	528	451	147	4,458
Released									
Bluegill	1,927	21,527	32,132	12,063	12,063	-	-	-	-
Pumpkinseed	1,226	15,016	18,387	8,777	8,777	-	-	-	-
Black crappie	380	1,706	2,329	1,060	1,060	-	-	-	-
Rock bass	1,185	19,252	11,543	2,362	2,362	-	-	-	-
Yellow perch	4,605	45,774	67,119	36,529	36,530	-	-	-	-
Smallmouth bass	168	744	818	292	292	-	-	-	-
Largemouth bass	1,039	6,178	4,629	1,546	1,547	-	-	-	-
Northern pike	936	3,432	4,283	2,776	2,776	625	196	104	15,128
Other statistics									
Total catch*	17,580	144,449	181,874	86,186	86,186	18,129	6,938	15,452	556,794
Angler hours	19,391	49,199	56,103	23,414	23,414	6,220	3,848	5,046	186,635
Angler trips	4,533	11,093	13,784	5,656	5,657	1,455	1,065	1,277	44,520

Table 9.-Species catch and relative abundance of fishes collected during the Fletcher Pond fish community survey, May 16-25, 2005. Weight is calculated. Growth is compared to the statewide average for that species.

Species	Number	Percent by number	Weight (lb)	Length range (in)	Growth Index (in)
Black crappie	3,501	36	152.4	4 – 14	-0.8
Bullhead species	2,624	27	--	6 – 14	
Bluegill	1,454	15	69.8	2 – 8	-0.7
Pumpkinseed	1,445	15	72.4	3 – 7	-0.1
Northern pike	160	2	654.3	14 – 35	+2.9*
Rock bass	139	1	23.3	3 – 9	-0.9
Largemouth bass	131	1	265.3	6 – 22	+0.3
Bowfin	109	1	589.6	18 – 27	
Yellow perch	98	1	15.1	7 – 11	-0.3
Smallmouth bass	39	less than 1	84.3	13 – 20	+1.0
Golden shiner	26	less than 1	1.2	5 – 7	
Common carp	19	less than 1	60.0	14 – 24	
White sucker	5	less than 1	14.2	18 – 20	
Brown trout	1	less than 1	1.9	16	
Total	**9,751**				

*dorsal spines were used to age the sample; statewide comparisons for all species utilized scales

Table 10.- Estimated fish harvest and release, angler hours, and angler trips for Fletcher Pond during the 2005 open water season (late-April through September) and 2006 winter fishing season (January through March). Includes species not listed where * indicated.

Species	April / May 05	June 05	July 05	Aug 05	Sept 05	Jan 06	Feb 06	Mar 06	**Total**
Harvest									
Bluegill	2,512	14,771	20,572	10,396	2,907	4,696	6,479	6,737	69,069
Pumpkinseed	1,471	11,752	18,757	8,409	2,144	4,531	3,659	7,678	58,402
Black crappie	3,092	871	125	403	23	565	725	2,075	7,880
Rock bass	63	183	67	26	0	0	60	142	541
Yellow perch	1,135	3,816	6,421	3,609	2,146	3,080	2,766	9,143	32,115
Smallmouth bass	22	88	74	39	32	0	0	0	254
Largemouth bass	371	1,440	1,047	748	176	0	0	0	3,782
Northern pike	136	214	200	239	147	800	303	85	2,125
Walleye	0	0	0	0	0	187	0	0	187
Bowfin	0	29	0	0	0	0	0	0	29
Released									
Bluegill	11,575	42,363	70,970	41,543	11,412	18,582	21,336	22,493	240,275
Pumpkinseed	5,493	35,968	62,991	30,245	11,476	12,084	17,170	23,202	198,629
Rock bass	584	1,297	744	8	213	0	60	151	3,056
Yellow perch	3,140	8,181	18,935	9,754	5,002	6,929	7,589	13,912	73,442
Smallmouth bass	554	1,718	690	509	310	221	83	140	4,226
Largemouth bass	3,810	21,878	10,100	9,652	3,311	170	391	271	49,582
Northern pike	1,017	1,911	1,876	1,259	482	588	248	95	7,476
Bowfin	8	180	14	0	0	0	0	0	202
Other statistics									
Total catch*	35,004	146,688	213,738	116,996	39,942	52,443	60,877	86,123	751,810
Angler hours	15,486	39,565	47,245	41,512	13,219	20,101	18,672	14,659	210,459
Angler trips	4,273	8,892	12,868	13,812	3,464	4,512	4,713	3,661	56,194