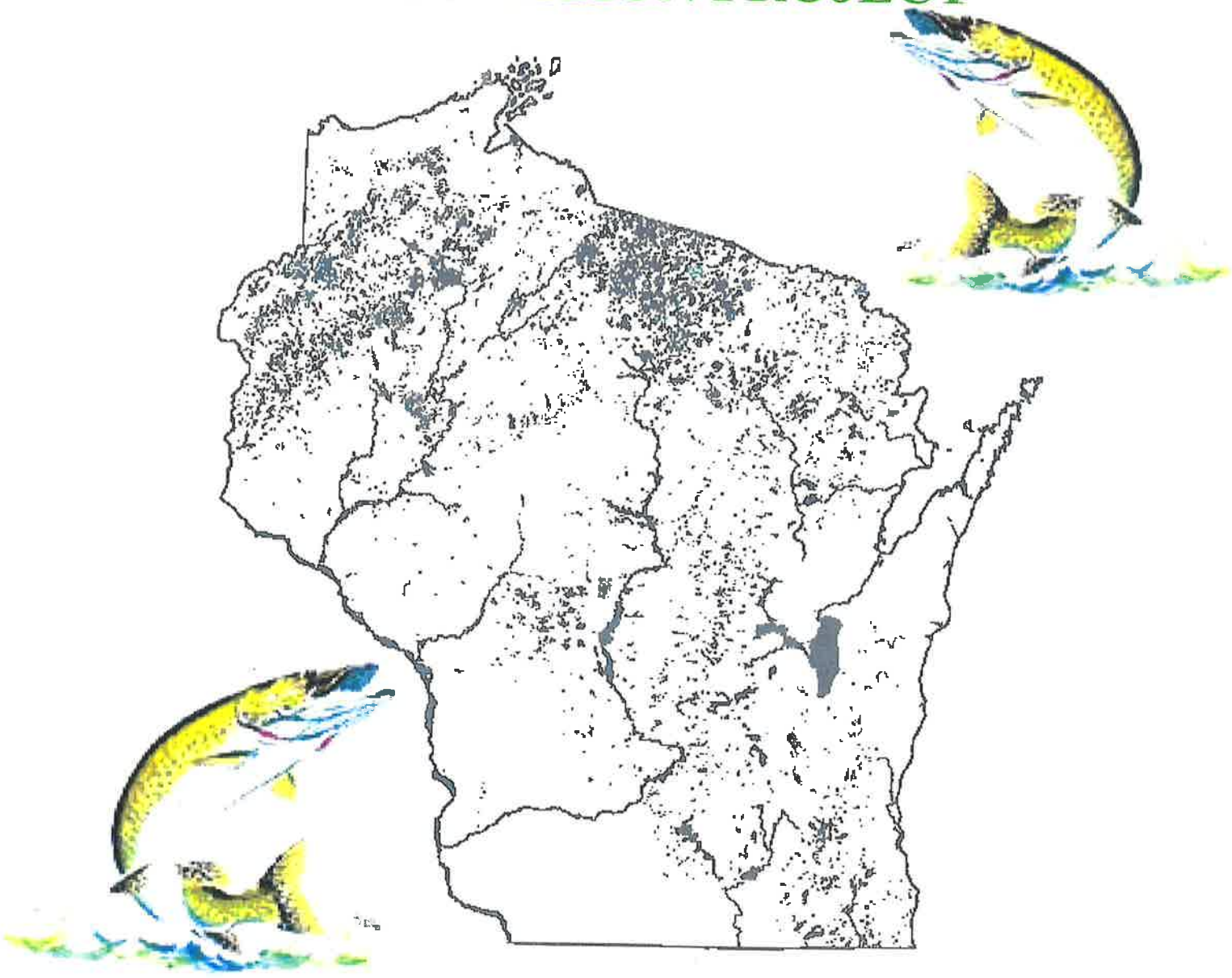
WISCONSIN MUSKELLUNGE RESTORATION PROJECT



Prepared By:

Robert Benson, First WI Chapter Muskie's Inc.

Larry Ramsell, Past President and Past Research Chairman, Muskie's, Inc. International and Research Editor, Musky Hunter Magazine

Eric Johnson, Board of Directors, First WI Muskie's Inc.

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The Future of Wisconsin Muskellunge Fishing

In trying to determine what may be the most advantageous way to enhance Wisconsin's Muskellunge fishery, it was decided that our first step would be to attempt to fully understand what has transpired in the past 100+ years of muskellunge management in Wisconsin. We also looked at other muskellunge areas of North America. We were pleased at the massive amount of scientific, and other data available, and think you will be very interested at what we have learned, when looking at the entire 100+ year picture.

Among the most interesting data we have researched, is historical and DNA information about muskellunge used in Wisconsin's stocking programs. During the past 100+ years, hatchery programs have ***un-intentionally*** utilized many genetically small strains of muskellunge. These several different, smaller strains used in hatchery operations, are incapable of growing to larger sizes (Schloemer 1936; Johnson 1971; Post et al 1982; Cholmondeley et al. 1991; Younk et al. 1992; Margenau et al. 1996; Margenau et al. 1997).

It appears that in the first two-thirds of the 20th century, these small strains of muskellunge were ***most often*** chosen for spring egg taking, due merely to their ability and excellent hatchery survivability. There were larger, faster growing strains of muskellunge readily available in the early part of the 20th century (Oehmcke 1969). These were also utilized at times, but the mixing of strains that occurred then, has greatly altered the native muskellunge stocks in Wisconsin, and this has had a negative impact in the latter part of the 20th century by reducing the numbers of available trophy class muskellunge. It is also a likely factor, combined with maladaptation of genes from the mixing of stocks (Phillipp no date), in a major decline of larger fish stocks in Wisconsin muskellunge waters. ***The ramifications of the mixing of muskellunge strains in Wisconsin with regard to historical hatchery propagation and stocking, are just beginning to be fully realized.***

The historic (pre-man) absence of pike *Esox lucius*, in many muskellunge waters, and the presence of both pike and muskellunge *Esox masquinongy*, in some waters is not accidental. The history of this can be traced back to 10,000 to 12,000 years BP (before present), following the retreat of the last Wisconsin glacier. Geological events of that time, and immediately following, adequately account for the muskellunge only populations, who were the first inhabitants in glacier pothole lakes. These strains were to later become landlocked with the

receding of the glacier's waters, prohibiting the invasion of pike (Greene 1935; Dunbar 1949; Lebeau 1992). Muskellunge populations co-existing with pike, evolved a different strategy with a distinct reproduction and life history (Lebeau 1992).

Muskellunge in waters without pike, select inshore locations and lentic habitats for spawning, as does pike in its native habitat. Muskellunge that co-exist in waters with pike, make use of offshore-spawning sites and lotic habitats, distant from inshore-spawning sites utilized by pike (Strand 1982; Lebeau 1992; Damman 1994). These two distinct populations of muskellunge do not naturally occur together (Lebeau 1992). Nor does either population become like the other due to changes in environmental conditions (Vincent and Legendre 1977; V'ezina 1979; Oehmcke et al. 1977; Dombeck et al.1986; Cholmondeley et al. 1991). The distinctive life traits of these two different animals (Strand 1982-Post et al. 1982), **have *valuable management implications*.**

The hatchery taking of muskellunge eggs on an ongoing basis for nearly 100 years from mixed stocks, and placing them in the states native muskellunge waters, combined with strain mixing from muskellunge stocked in state waters by commercial fish farms, has all but eliminated sustainable populations of larger muskellunge strains from their natural range. In addition, hatchery stocking of unknown mixed stocks has created, at times, an artificially high population of muskellunge in many water bodies, due to lack of harvest of these genetically small strains of fish stacked at and below the low size ranges. This creates a negative impact on these fisheries. While this was done by ***well intentioned, dedicated and hard working WI DNR Fisheries Managers*** without the scientific hindsight of today, the ramifications should be obvious.

When muskellunge eggs are gathered each spring for hatchery propagation from water bodies where this mixing has taken place, which is a normal, historically documented practice (Johnson 1968; Oehmcke 1969), **there is no possible way to discern which muskellunge strain the eggs are procured from for hatchery operations.** Preferred and possibly different thermal regimes for various muskellunge strains at hatchery egg taking time, and preferred offshore spawning of larger strains (Strand 1986; Younk et al. 1992; Damman 1994), **could conceivably dictate which strain of eggs is used for hatchery production.**

The vast majority of the time, the average size of the females that eggs were taken from, was 33.5 inches long. The list of named water bodies used indicates that the majority contained smaller muskellunge strains (Oehmcke 1969). Records indicate that occasionally, egg stripping took place in a water body that produced an average female size of 44.6 inches (Oehmcke 1969). Studies have shown that Wisconsin waters that historically produce faster and ultimate growth muskellunge have these size same longer length ranges (Liskauskas undated; Williams pers. comm 2004). The hatchery produced

progeny are then stocked indiscriminately in historical, native, muskellunge waterbodies, further mixing strains.

During our review, we learned that a slow growing strain of muskellunge were procured from Big Spider Lake in Sawyer County in 1956 (Johnson et al. 1971), and planted into Lac Court Oreilles Lake in Sawyer County, and Bone Lake in Polk County. These Big Spider Lake muskellunge had been previously diluted by stockings from "other lakes" (Johnson 1971), prior to stocking them in these two lakes.

Lac Court Oreilles was, and Bone Lake is, the current northwestern Wisconsin brood stock lake for the Tommy Thompson State Fish Hatchery in Spooner. Once in these two lakes, the "slow growth and exceptional survival" of this muskellunge strain was documented (Johnson et al. 1971). In addition to the previously mixed Big Spider Lake fish that had been put in Bone Lake, the Lac Court Oreilles muskellunge stocked in Bone Lake, had also been diluted while in Lac Court Oreilles with small growing strains, prior to stocking them into, and establishing Bone Lake as a brood lake (Johnson 1971). Review of available angling data finds that of 2885 muskellunge captured from Bone Lake by anglers, ***only two*** exceeded 50 inches, and one of those two was harvested.

From these brood stock lakes, it is likely that at least some fairly high percentage of these slow growing fish were spawned for eggs and propagated at the Spooner Hatchery most years. The resulting progeny were then distributed throughout the northwestern area of the state, again further contributing to mixing. The potential exists here, for the ongoing possibility to date, for various year classes of progeny, from Bone Lake egg taking, to cause entire year classes to be entirely made up of the Big Spider Lake strain of muskellunge, which have been documented to be genetically slow growing, smaller muskellunge (Johnson 1971). This could then continue to contribute to the stacking of smaller fish within those stocked fisheries with un-harvestable fish. This stacking may already be a problem within Bone Lake, which now has a minimum length limit of 40 inches.

In a very recent DNR study of 40 inch minimum length limits in Wisconsin, the increases in size limits did not increase the number of adult fish over 30 inches. This may also be compounded in Bone Lake, based on the following finding from that study: "The only significant drop in size structure we observed was for large female muskellunge" (Margenau et al. 2000). Whether or not angler harvest had much of a bearing on these findings, is unknown.

The size limits in lakes that these small strains are being stocked into, is protecting the majority of them from any measurable harvest by size limits that in some cases are as high as 50 inches. In Bone Lake, the current size limit in effect of 40 inches, virtually guarantees that none of the Big Spider Lake strain will be harvested, thereby occupying a niche in the fishery better served by the

larger Muskies desired by fisherman (Margenau et al. 1996; Margenau 2001; Simonson Mar. 2003).

In the recent Wisconsin DNR angler survey, 63% of muskie anglers and 40% of general anglers felt a trophy musky was 50 inches or longer (Margenau 2001), indicating the type of muskellunge anglers desire. Unfortunately both the past stocking practices and size limit restrictions put these larger strains at a significant disadvantage. In addition, due to the recently accepted practice of catch and release, the smaller, less desirable muskellunge are being released 99% of the time by catch and release anglers. Meanwhile harvest of the larger, more desirable strains, where any remain, continues. Muskie's, Inc. data indicates that on three of Wisconsin's best known muskie waters, Chippewa Flowage, Lac Court Oreilles and Bone Lake, the harvest rate on 50 inch and over muskies has been 44%; 33% and 50% respectively (Muskie's, Inc. 2004).

An additional down-side to this mixing of stocks is the real possibility of hybridization between strains of muskellunge (Phillipp undated; Lebeau 1998). While first generation offspring can utilize the best genes of both parents, subsequent year classes of backcross hybridization can dilute the gene pool with undesirable traits (Phillipp undated). It is believed that two muskellunge strains, from relatively the same geographic areas, will readily hybridize.

Another consideration is stocking small muskellunge strains from lakes not containing pike, into waters containing either native pike, or in muskellunge waters where native or non-native pike co-exist with native muskellunge. Due to similar use of spawning areas, earlier spawning pike can prey on the YOY (young of the year) muskies, severely limiting muskellunge spawning success (Threinen et al. 1950). Muskellunge x pike hybridization, an undesirable occurrence, can also occur more readily than if stocking was done with larger off-shore spawning muskellunge strains (Strand 1982; Lebeau 1992; Damman 1994).

As an aside here, it is suggested that perhaps the exclusive use of this larger growing, off-shore spawning strain of muskellunge could contribute to more self-sustaining populations of muskellunge (Damman 1994). This off- shore spawning trait may be especially valuable in water bodies where pike exist (Damman 1994), and where lakeshore development has destroyed inshore spawning areas.

This information, combined with additional available documentation, adequately shows the decline of larger sized muskellunge in Wisconsin over the past 20 to 50 years. This leads us to believe that Wisconsin must dramatically change the muskellunge management of fisheries in Wisconsin, and restore these waters with the larger growing strains where appropriate.

The current ***"Muskellunge Management Update"*** using baseline data from Muskie's, Inc. International members fishing contest to "evaluate trends in the catches of 'trophy' muskellunge in Wisconsin", states that an average of 38 muskellunge were caught in Wisconsin yearly, 48 inches and larger (Simonson Mar., 2003). This number was derived from a database of several thousand muskellunge captured by Muskie's, Inc. members from the state of Wisconsin over a recent, 13 year period of time of stable membership numbers. It is felt that this abnormally low number of trophy muskellunge from Wisconsin, at one time considered the world leader in trophy muskellunge production, is another good indicator of the decline in the capture of trophy sized muskellunge. It is felt that this is due in part to past and current hatchery egg taking and stocking practices, which has resulted in the near elimination of larger native muskellunge stocks from their native habitat.

As noted previously, the smaller documented strains of muskellunge, historically, do not normally attain the larger sizes considered to be trophies (Margenau et al. 1996). In fact, data exists showing the Sawyer County lakes of Mud/Callahan strain of muskellunge, have failed to reach the low legal size limit of 28 inches in Mud/Callahan in 14 years of growth.

Squirrel Lake in Onieda County was considered to have "an exceptionally high quality brood fish and consistently produce the best percentage of eggs and fry survival" (Oehmcke 1969). A genetic study (Post et al. 1982) found that the Squirrel Lake muskellunge, historically used as a stock of preference in the Woodruff hatchery (Oehmcke 1969), were genetically comparable with a genetically small strain of muskellunge from Shoepac Lake, Minnesota (Post et al. 1982).

This Shoepac strain is a strain that matures at a small size and earlier age (Younk et al. 2004), and rarely exceeds 42 inches (Bylander undated), and spawns at a lower water temperature (Younk et al. 1992). This is the strain used at one time by Minnesota in its hatchery and stocking program. These Shoepac fish, were found to have a problem with ..."maximum size attained", and were replaced by Mississippi River strain muskellunge. It was found via genetic study that the two strains were "...genetically ***two different animals***. That finding, in addition to previous data compiled, has led to a decision by Minnesota DNR to switch over completely to Mississippi (Leech) strain in its management efforts..." (Strand 1982). Jerry Younk (MN DNR) stated of the smaller growing Shoepac strain: "We used those eggs in our stocking for nearly 30 years, and our survey data, as well as angler reports, suggested that muskies just weren't attaining the sizes they had in the past."

The aforementioned, we feel, has a tremendous ***economical impact*** on the state of Wisconsin, as thousands of muskellunge anglers, realizing the near impossibility of capturing a trophy class muskellunge in Wisconsin, do not now come to Wisconsin to fish muskellunge, and bypass the state for places like

Minnesota and Ontario, and even Illinois. To quote DNR Fisheries Supervisor Mike Vogelsang of Woodruff, "A lot of anglers looking for big muskies are bypassing Wisconsin and going instead to Minnesota and Canada. Fifty years ago, Wisconsin was the destination for big muskies, but Wisconsin lakes no longer have the numbers of 40 and 50 pound fish they had back then" (Small 2004). Even when DNR personnel wanted to protect large fish (strains) with higher size limits, their hands were tied by the Conservation Congress process.

The relatively recent muskellunge restoration of waters in Minnesota, combined with the creation of new muskellunge fisheries there using Mississippi strain muskellunge (Minnesota DNR 1988), is heralded far and wide in the muskie world. Minnesota's success in restoration and creation of new muskellunge fisheries, using these muskellunge with maximum trophy potential, has created not only a fantastic trophy fishery, but fisheries that also produce muskellunge numbers in all size ranges for the muskellunge angler. "People from Illinois, Iowa, and Wisconsin drive...to go (muskie) fishing." (Williams 2004; Younk et al. 2004; R. Ramsell undated; Bylander undated: Muskie's, Inc.). These same Mississippi strain muskellunge are now known to reproduce in inland drainage water in Wisconsin (Damman 1994; Margenau et al. 1997).

It is thought that there are no "...genetically unique native strains in the St. Croix River Basin to protect..." (WDNR 1982), and present populations are a mixture of Lac Court Oreilles strain stocked by Wisconsin, and Shoepac and Leech Lake strains stocked by Minnesota (Damman 1994). It is our belief that the ***native*** strain of muskellunge in the St. Croix, which empties directly into the Mississippi River, were Mississippi strain fish originally, and have the best scientifically documented opportunity to survive there. Minnesota now stocks Mississippi River strain muskellunge exclusively in the St. Croix.

Management in Ontario for trophy muskellunge in larger water bodies via a protective 54 inch size limit (no stocking done there), too, has generated great favor with muskellunge anglers, as the result is more available trophy size muskellunge (Ontario 2000).

In Illinois, the numbers of trophy size muskellunge being caught by anglers, with limited available manageable water bodies, are being highly sought out by muskellunge anglers (Illinois DNR; Pallo, pers. comm. 2004).

Thanks to the hard working biologists, researchers and fisheries personnel at the Wisconsin and Minnesota DNR's, we find that there are both fast growing strains of muskellunge and slow growing strains of muskellunge in Wisconsin. It is believed that we have the ***moral*** responsibility to restore these native muskellunge waters. These waters have ***historically*** produced the largest group of muskellunge ever recorded, and can do so again, along with fish of all size ranges, with a commitment to this restoration project. We have learned that

restoration of larger muskellunge stocks works, and is a viable management option.

We believe that the Wisconsin DNR and the hatchery infrastructure that we have in place, is quite capable. Wisconsin can return to the glory days of muskellunge angling. According to the late famous and highly respected Wisconsin outdoor writer, Gordon MacQuarrie, "Muskies built the schools in northern Wisconsin."

Based on scientific DNA studies and the other documented scientific studies that we have found, it would be appropriate for the Wisconsin DNR and WI muskellunge anglers to join forces and begin a restoration project to isolate and re-introduce the larger muskellunge that once inhabited the major river drainage waters of our state. Studies in Minnesota (Younk et al. 199), and Wisconsin (Margenau et al 1996.; Belonger 1996) have shown that the larger strains of muskellunge will reach the historically large sizes possible in our state, in a relatively short amount of time. This type of project is proving effective today in Green Bay, Wisconsin (Naze 2004), and throughout the state of Minnesota (Williams 2004). Trophy fish are more desirable, and it is a thrilling time for fisherman and Tourism alike in those areas. In addition to being the proper moral thing to do, ***the positive economic impact for the state of Wisconsin is beyond calculation.***

An old University of Wisconsin School of Commerce research study showed that favorite activity of tourists in Wisconsin was fishing, and that 21 percent of the tourists preferred the mighty muskellunge. Another survey in 1955 indicated that muskellunge were preferred by over 8 percent of the resident fishermen. A sample of 1957 licensees indicated that 9.0 percent of the residents and over 10 percent of the non-residents had fished muskellunge. Since Wisconsin is one of the few states having extensive areas of muskellunge waters, the economic value of muskellunge fishing to resort(s), sporting goods and associated businesses is high. There is a much greater "specialized" fishing cost connected with muskellunge fishing than with other activities (Oehmcke et al. 1977). ***This 1950's study vastly understates the economic value of today's muskellunge fisheries to Wisconsin, when managed to their full potential.***

When we realize that budget shortfalls, with such examples as a Fishery Supervisor having to due double duty as supervisor and field biologist in 2004, and the fact that we currently have no Research Biologist in northwestern Wisconsin, this further compounds the fisheries management problem. The economic value to Wisconsin for a true trophy muskellunge fishery can help over come these shortfalls.

The preparers trust that this document will be taken in the manner intended, and that is the betterment of muskellunge fishing in the state of Wisconsin.

The following time line illustrates what has transpired in Wisconsin since man arrived. Keep in mind that throughout the1900's the slower growing muskellunge strains within the mixed stocks, have been virtually protected due to size limits that exceed their nominal growth. The periodic size limit increases to 34, 40 and in some cases even 50 inches, virtually guarantee that few adult male muskellunge are harvested within size limits.

Wisconsin Muskellunge Time Line

1800 - 1858 Commercial Harvest of muskellunge. By 1858 Commercial harvest is reduced and is limited to waters 12 miles squared (Crossman - WI DNR 1986).

1899 Stocking begins in Wisconsin (Nevin 1901; Webster 1929; Johnson 1978).

1916 World record Era begins in Wisconsin (Ramsell 1982; Ramsell 1997).

1917 Sale of Muskies prohibited (Crossman - WI DNR 1986).

1919 World Record Hybrid Muskellunge caught, considered for many years to be the "Muskellunge" World Record (Ramsell 1982; Ramsell 1997).

1934 "Lack of knowledge is abysmal. No one has ever made a continuous and intensive study of this fish extending over a number of years." (Harkness 1934).

1936 Growth index of fish in Northern Wisconsin = 101%* (Schloemer 1936)

1956 Documented stocking of known mixed and slow growing Big Spider Lake fish into northwestern Wisconsin broodstock lake and future brood stock lake, Lac Court Oreilles & Bone Lakes. This stocking exhibited "slow growth and exceptional survival". (Johnson et al.1971).

1964 Largest fish netted in Bone Lake = 54 inches (Musky Hunter 1998).**

1965 Oehmke finds: "The average size of females (*used for spawning purposes*) in 1965 was 33.9 inches. The average growth rate was found to be 30 inches at five years, varying with forage, however five years was considered a good average for maturity. They also took viable sperm from 24 inch, four-year old males. Females were found at maturity to normally be 30 inches plus, and five years old, with their size range being 28 inches to 34 inches. Males were somewhat smaller at maturity, 24 inches to 28 inches." (Oehmcke1969).

1969 Esocid Culture Workshop, Sept. 1969 Oehmcke states: "Records not only show best size range, but also show that fish from one lake in Onieda County consistently produced the best percentage hatch and fry survival. This was not a case of preferential care of eggs or fry, Squirrel Lake fish produced better eggs." (Oehmcke 1969). Squirrel lake was later learned to have smaller growing Shoepac like muskellunge in an 1982 DNA study (Post et al. 1982). Oehmcke's speculation as to the reason for Squirrel Lake egg success was that this lake was not stocked for many years, other lakes were stocked indiscriminately and strains were mixed. Oehmcke, without the benefit of the considerable number of scientific studies that have been done more recently, personally felt that all muskellunge, Wisconsin, Great Lakes, Ohio, Chautauqua were the same reproductive animal, and hence he had no reason for concern (Oehmcke1969). While in the strict genetic sense, all muskellunge were derived from the same ancestor, and all muskellunge strains may be considered as one species, their life history, spawning traits and growth potential, are indeed very different, and require different management techniques.

1971 Growth Index of Muskies in Lac Court Oreilles, Bone and Big Spider = 86%*(Johnson 1971). This is a 15 % reduction from the 1936 index for Wisconsin.

1982 DNA samples using electrophoretic analysis, found that Squirrel Lake and Minocqua muskellunge are the same strain as slow growing Shoepac muskellunge in Minnesota (Post et al. 1982), and per Phillipp, electrophoretic analysis is the only way possible to get accurate genetic information with accuracy (Phillip undated).

1982 Minnesota begins using Riverine (Mississippi) strain exclusively for their brood stock program (Strand 1982).

1984 Minnesota Begins Performance Evaluation of Four Muskellunge strains in Two Minnesota Lakes (Younk et.al. 1992) Study ends in 1992 finding that Mississippi strain grows fastest, reaching the largest sizes.

1985 Mississippi strain muskies stocked in Nancy Lake in Washburn County, too were found to have faster than average growth rates reported for Wisconsin muskellunge in 1985 (Margenau et al. 1997). The first season Nancy Lake was open to angling, a ten+ year old 54+ inch 38 pound muskellunge was harvested, along with several other 50 inch muskellunge harvested and/or released.

1989 Minnesota begins stocking of Mississippi strain fish exclusively. (MN DNR stocking records), excluding Wisconsin Border waters. Wisconsin border waters would start receiving Mississippi strain muskellunge in 1992).

1994 Mississippi strain muskellunge are known to reproduce in Nancy Lake in Washburn County (Damman 1994).

1995 Largest Muskie surveyed in Bone Lake = 46 inches long (Musky Hunter. 1998).**

1996 Wis DNR finds that Great Lakes strain Muskies in Long Lake , are "growing considerably faster than the Wisconsin Average. Six year old males averaged 34.3 inches, while females of the same age averaged 41.1 inches.(Belonger 1996; Musky Hunter 1996). DNR crews have taken muskellunge to 53 inches and 48 pounds during fall walleye population surveys (Small 2004).

1996 Minnesota stocking program begins producing 50 pound fish. Younk states "those two 50-pound fish caught recently were probably about 12 years old." (Musky Hunter 1999).

1996 Wis DNR documents "genetic factors also contribute to the small size of fish". (Margenau et al. 1996)

2000 Minnesota becomes premiere Muskie fishing Destination, dominating big fish catches in Muskie's, Inc. records over WI and even Ontario, thru 2004 (Muskies Inc. data).

*Compare 1936 with 1971
** Compare 1964 with 1995

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LUNGE LOG DATA

This document contains data and statistics compiled from the Muskies Inc. International's Lunge Log. The Lunge Log is the most extensive database available, recording information on over 200,000 muskie catches throughout the United States and Canada.

This information is provided to support our Restoration Project by showing Wisconsin's potential to produce numbers of quality size muskies has been limited due to our past and current stocking practices, and that Minnesota's decision in 1987 to stock only Mississippi Strain Muskellunge has already produced a world class fishery.

We believe that by restoring the right strains of Muskellunge to its native waters in Wisconsin we too can restore Wisconsin's trophy fishery to its true potential.

Historical Data

Total Wisconsin and Minnesota 50" catches since 1970

State	Total number of fish reported (all sizes)	Total number of 50" and larger reported
Wisconsin	65,519	213
Minnesota	23,077	704

Total Number of fish 50" and larger from Wisconsin and Minnesota from 1986 to 1995

State	Total number of 50" and larger reported
Wisconsin	51
Minnesota	38

Total Number of fish 50" and larger from Wisconsin and Minnesota from 1996 to 2003

(1996 was the year Minnesota began to reap the benefits of the changes in its choice of Muskie Strains)

State	Total number of 50" and larger reported
Wisconsin	65
Minnesota	438

Total Number of fish 50" and larger from Wisconsin and Minnesota in 2004

State	Total number of 50" and larger reported
Wisconsin	15
Minnesota	163

Data from WI Brood Stock Lakes

45" and Larger Catches Recorded From WI Past and Current Brood Stock Lakes

Lake	Total of all sizes reported	All Time 45 and Larger	2000 45 and Larger	2001 45 and Larger	2002 45 and Larger	2003 45 and Larger	2004 45 and Larger
Bone	2885	47	2	0	2	0	0
Lac Court Oreilles	306	35	2	2	1	2	3
Squirrel	174	5	0	0	0	0	0
Big Arbor Viate	520	3	0	0	0	0	1

50" and Larger Catches Recorded From WI Past and Current Brood Stock Lakes

Lake	Total of all sizes reported	All Time 50 and Larger	2000 50 and Larger	2001 50 and Larger	2002 50 and Larger	2003 50 and Larger	2004 50 and Larger
Bone	2885	2	0	0	0	0	0
Lac Court Oreilles	306	6	0	0	0	1	1
Squirrel	174	0	0	0	0	0	0
Big Arbor Viate	520	0	0	0	0	0	0

Plantagenet, a 2,529 acre brood stock lake in Minnesota, has produced 126 muskies 45" and larger and 27 muskies 50" and larger to date. This single lake not only produced more 45" and larger, but also more than 3 times as many 50" muskies as all 4 of Wisconsin's brood stock lakes combined

Comparisons of WI (Several Mixed Stains) and MN (Mississippi Strain) of Muskellunge

Comparison of 40" Size Limit Lakes

State	Lake	Total Fish	% 40+	% 45+	% 50+	State	Lake	Total Fish	% 40+	% 45+	% 50+
WI	Holcombe	1361	24%	8%	0.7%	MN	Bemidji	558	67%	26%	5.2%
WI	Bone	2885	19%	2%	0.07%	MN	Vermilion	1486	65%	31%	8%
WI	Deer	2796	19%	2%	0.04%	MN	Miltona	1060	54%	21%	3.2%
WI	Potato	1184	16%	2%	0.08%	MN	Cass	1240	54%	24%	5.5%
WI	Big Siss.	449	10%	2%	0.4%	MN	Leech	3271	50%	19%	4.1%
WI	Winter	940	9%	1%	0.0%	MN	Wabedo	322	44%	13%	1.9%
WI	Moose	619	7%	1%	0.0%	MN	Detroit	1054	44%	13%	1%

In the 10 year period from 1986 - 1995 a total of 89 fish over 50" were caught between WI & MN.

57% were caught in WI. 43% were caught in MN.

After the change in strains took effect in Minnesota, in the following 8 year period from 1996 – 2003, a total of 503 fish over 50" were caught between WI & MN.

13% were caught in WI. 87% were caught in MN.

In 2003 alone there was a total of 125 fish over 50" caught between WI & MN.

4% were caught in WI. 96% were caught in MN.

In 2004 alone, Lake Vermilion produced as many 50" fish (41) as the entire state of WI has produced in the last 4 years combined.

In 2004 alone, Lake Mille Lacs produced more 50" fish (37) than the entire state of WI has produced in the last 3 years combined.

In 2004, Lake Miltona at only 5,800 acres, produced more 50" fish than the entire state of Wisconsin produced.

Lake Miltona 18 50" fish Wisconsin (entire state) 15 50" fish

Current Trends

Total number of trophy (50" and larger) Muskies from Wisconsin and Minnesota in each of the last 10 years

Year	Wisconsin	Minnesota
1995	8	7
1996	6	13
1997	10	18
1998	8	43
1999	7	27
2000	11	51
2001	7	88
2002	14	90
2003	5	120
2004	15	163
Total	**91**	**620**

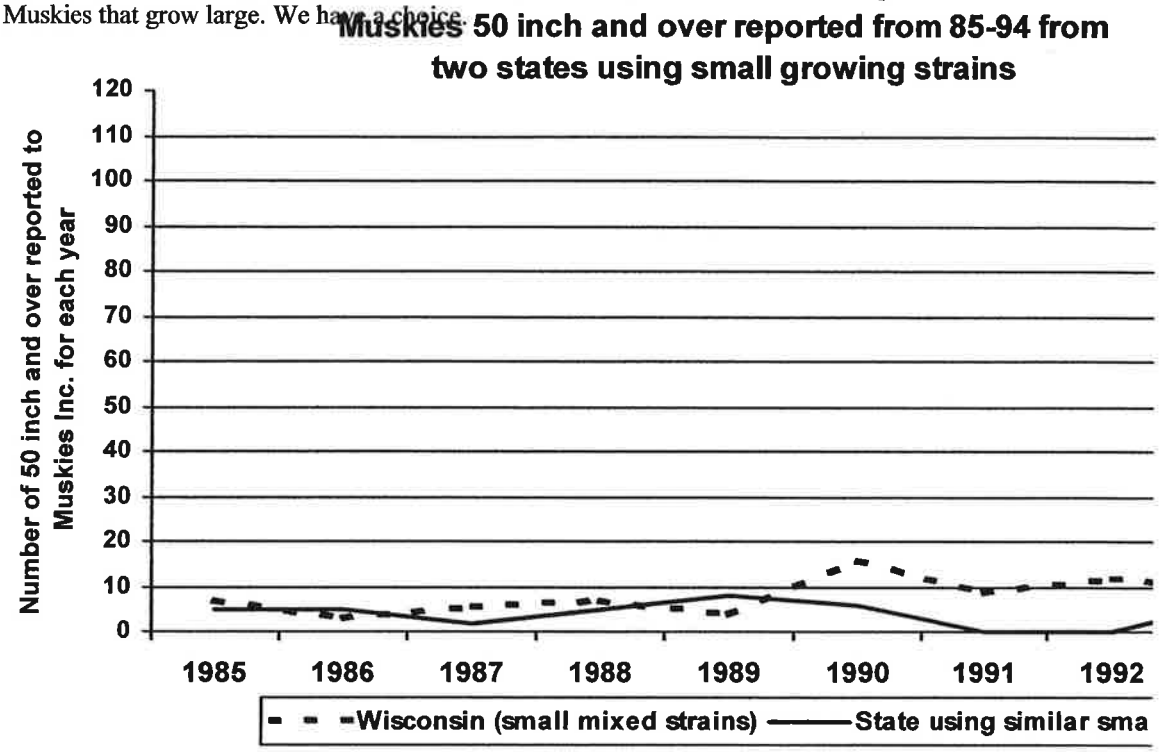
See Fig. #1

In the past 10 years 1995-2004 the number of 45" fish reported from all waters in Bayfield, Sawyer and Washburn Counties has declined by 11% when compared to the previous 10-year period 1985-1994.

In the past 10 years 1995-2004 the number of 50" fish reported from all waters in Bayfield, Sawyer and Washburn Counties has declined by 12.5% when compared to the previous 10-year period 1985-1994

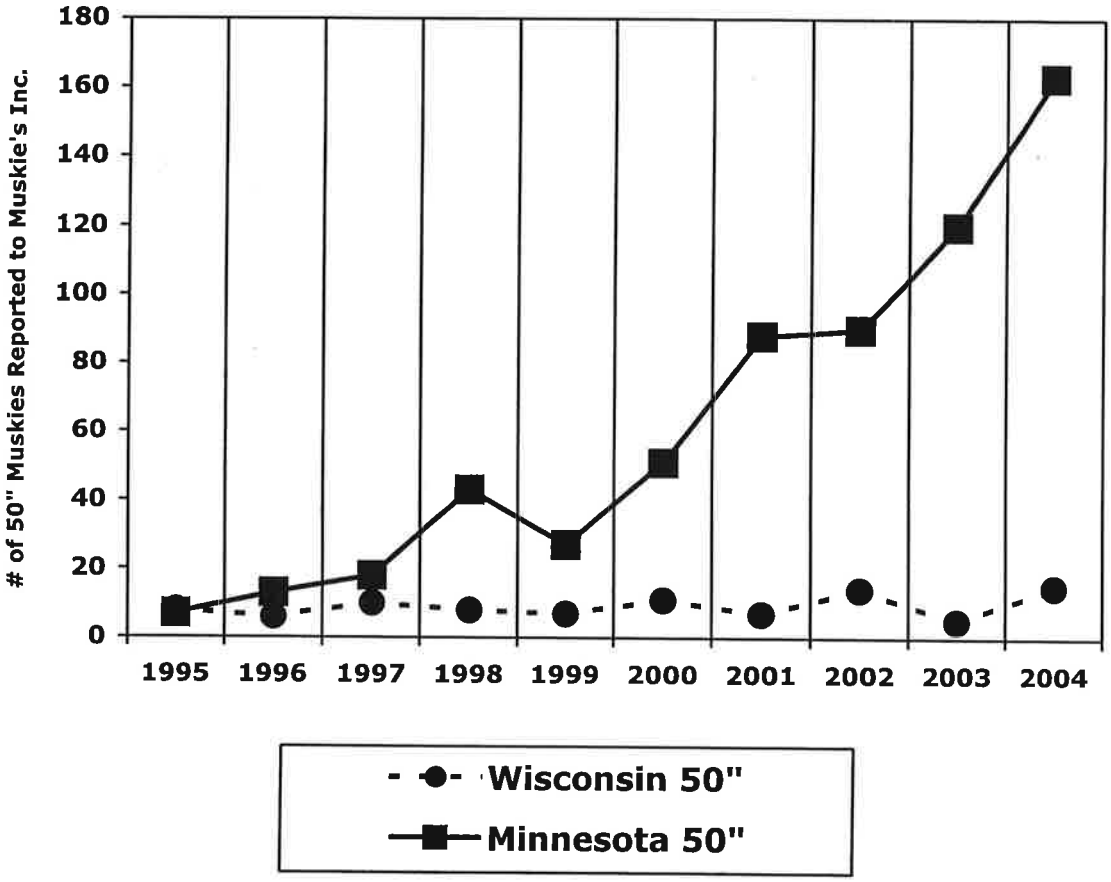
The top 5 WI waters have reported a total of 23 50" fish between 1999 and 2003. The top 5 MN lakes reported a total of 289 50" fish during the same time period.

ther locations and the genes of Louis Spray's world record. It's a choice between Spider Lake Muskies and Muskies that grow large. We have a choice.



Trends of 50 Inch Fish in Waters That Use Large Strains vs. Waters That Use Smaller Strains

Figure 1



Interesting Statistics

- 66% of all muskellunge waters in Sawyer Co. have never had a fish over 45" reported.

- In 2004 there were 3 lakes in MN that each had more 50" fish reported than the entire state of Wisconsin.

- Minnesota produced 283 50" fish in the last 2 years while Wisconsin produced only 213 50" fish in the last 34 years.

- Minnesota has produced 42 muskies 54" and larger in the history of Muskies Inc.

- Wisconsin has produced only 16 muskies 54" and larger in the history of Muskies Inc.

- Minnesota has produced 19 muskies 55" and larger in the history of Muskies Inc. 12 of them were in the last 10 years alone.

- Wisconsin has produced only 2 muskies 55" and larger in the history of Muskies Inc. 1 of them was in the last 10 years.

- Of the 65,519 muskies reported to Muskies Inc. from Wisconsin, only 0.03% were 50" or larger.

Minnesota-Wisconsin Trophy Muskie Waters Comparison
Muskies Registered By Muskies, Inc Members

Lake Acres	State	% 40+"	#50+" since 2000	Largest" Since 2000	Total Registered
Bemidji 6,420	MN	70	23	56.5	557
Mille Lacs 132,516	MN	68.3	79	55.5	970
Vermilion 40,557	MN	65	107	55	1,486
Plantagenet 2,529	MN	57	25	55.25	464
Miltona 5,838	MN	54	31	53.5	1,058
Mississippi River	MN	52.5	2	50.5	219
Cass 15,596	MN	49.8	20	54	1,342
Minnetonka 13,834	MN	48	24	54	613
Leech 110,527	MN	48	39	55.5	3,271
Wisconsin River (Oneida County)	WI	40.2	6	52	442
Trout 3,816	WI	40	1	54	173
Turtle-Flambeau Flowage 13,545	WI	37.5	0	47	96
Lake Namekagon 3,227	WI	36.4	2	51.5	377

Minnesota-Wisconsin Trophy Muskie Waters Comparison
Muskies Registered By Muskies, Inc Members

Lake	State	% 40+"	#50+" since 2000	Largest" Since 2000	Total Registered	Acres
Wisconsin River (All reported)	WI	34.8	11	53	2,086	
Flambeau Chain	WI	29.2	1	52.5	195	9,339
Lac Court Oreilles	WI	27.5	2	52	306	5,039
Round (Sawyer)	WI	22.7	0	47	277	3,054
Holcombe Flowage	WI	25.4	0	49.5	1,363	3,890
North Twin	WI	23	0	49	1,267	2,788
Manitowish Chain	WI	21.8	3	55.5	624	4,106
Chippewa Flowage	WI	21	4	51	4,259	15,300
Grindstone	WI	19.1	0	49.5	162	3,111
Wissota	WI	17.3	0	49.75	1,966	6,300
Minocqua Chain	WI	16.1	0	50.5	1,526	5,838
Pewaukee	WI	16	3	52.5	3,001	2,493

Possible Stocking Sources

Lake Acres	State	% 40+"	#50+" since 2000	Largest" Since 2000	Total Registered
Bone 1,781	WI	18.9	0	47	2,885
Squirrel 1,352	WI	12.6	0	43.5	174
Big Arbor Vitae 1,090	WI	10.5	0	45	543
Spider (Sawyer) 1,606 (chain)	WI	6.9	0	45.5	389
Callahan/Mud 586	WI	3	0	40	34

Comparison of Hayward area lakes with MN lakes of equal sizes

State	Lake	Acres	Total Fish	% 40+	% 45+	% 50+
WI	Chippewa Flowage	15,000+	4,259	22	4.5	0.4
MN	Minnetonka	14,000	613	48	19	4.2
MN	Cass Lake	15,500	1,279	54	24	5.5

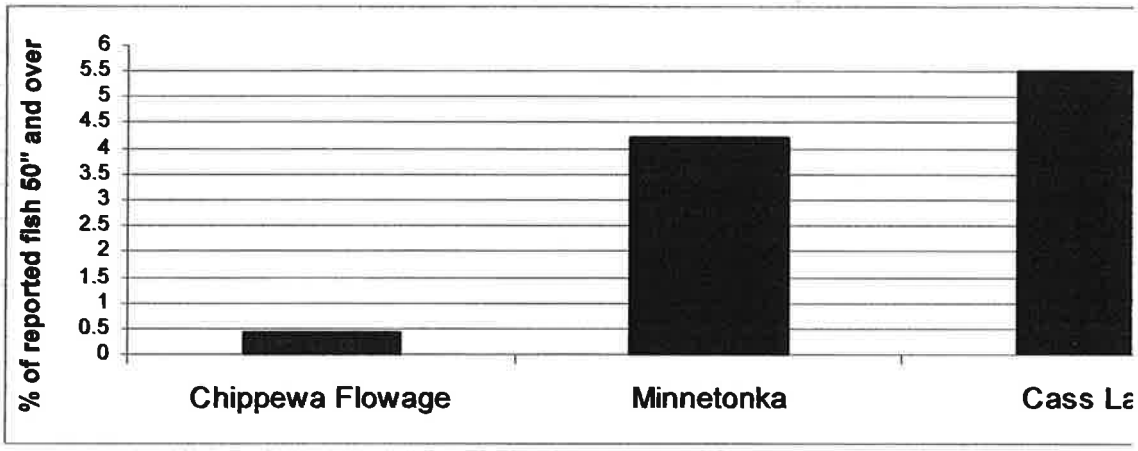
State	Lake	Acres	Total Fish	% 40+	% 45+	% 50+
WI	Lac Court Oreilles	5,040	306	30	11	2
MN	Lake Miltona	5,800	1,060	54	21	3.2
MN	Lake Bemidji	6,420	558	67	26	5.2

State	Lake	Acres	Total Fish	% 40+	% 45+	% 50+
WI	Grindstone	3,100	162	19	6	none
WI	Namekagon	3,230	377	36	13	1.6
WI	Round Lake	3,050	277	23	8.3	1
WI	Lost Land / Teal	2,350	1,360	9	1.3	0.1
MN	Pelican	3,990	188	49	23	5.9
MN	Plantagenet	2,530	464	57	27	5.8
MN	White Bear Lake	2,400	203	44	18	3.9

State	Lake	Acres	Total Fish	% 40+	% 45+	% 50+
WI	Spider Lake	1,600	333	7	1.5	0.3
WI	Sand Lake	930	111	8	0.0	0.0
WI	Whitefish	920	142	9	3.5	none
WI	Sissabagama	720	738	10	1.5	0.4
MN	Inguadona	1,080	92	42	12	5.4
MN	Lake Owasso	349	18	78	33	16.7

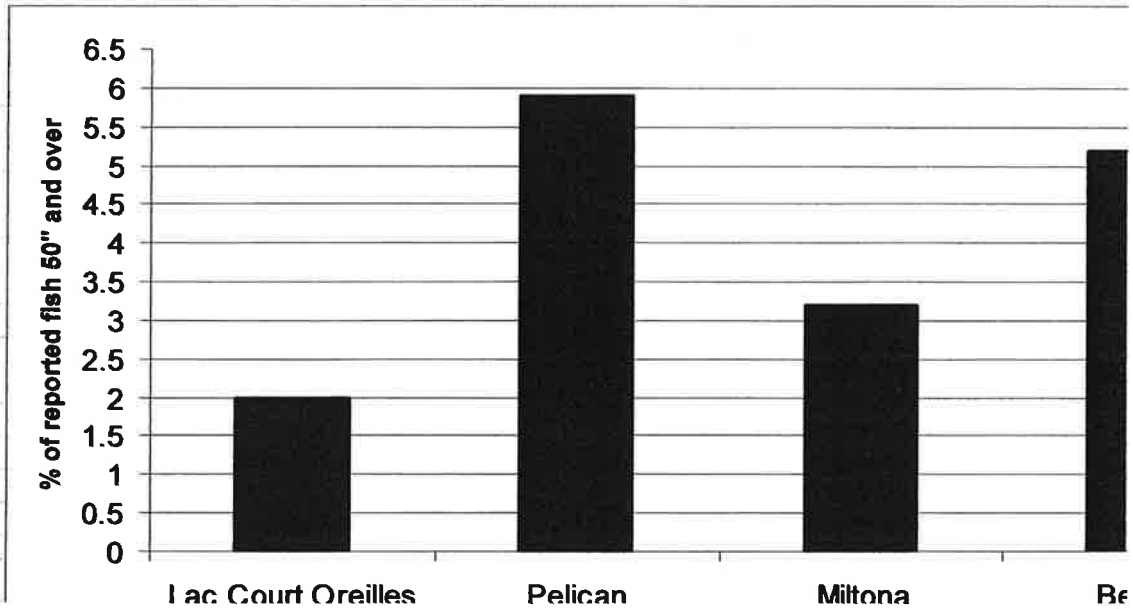
% of total fish reported exceeding 50 inches from lakes 14,000 to 15,500 acres

State	Lake	Acres	Total Fish
WI	Chippewa Flowage	15,300	4,259
MN	Minnetonka	14,000	613
MN	Cass Lake	15,500	1,279

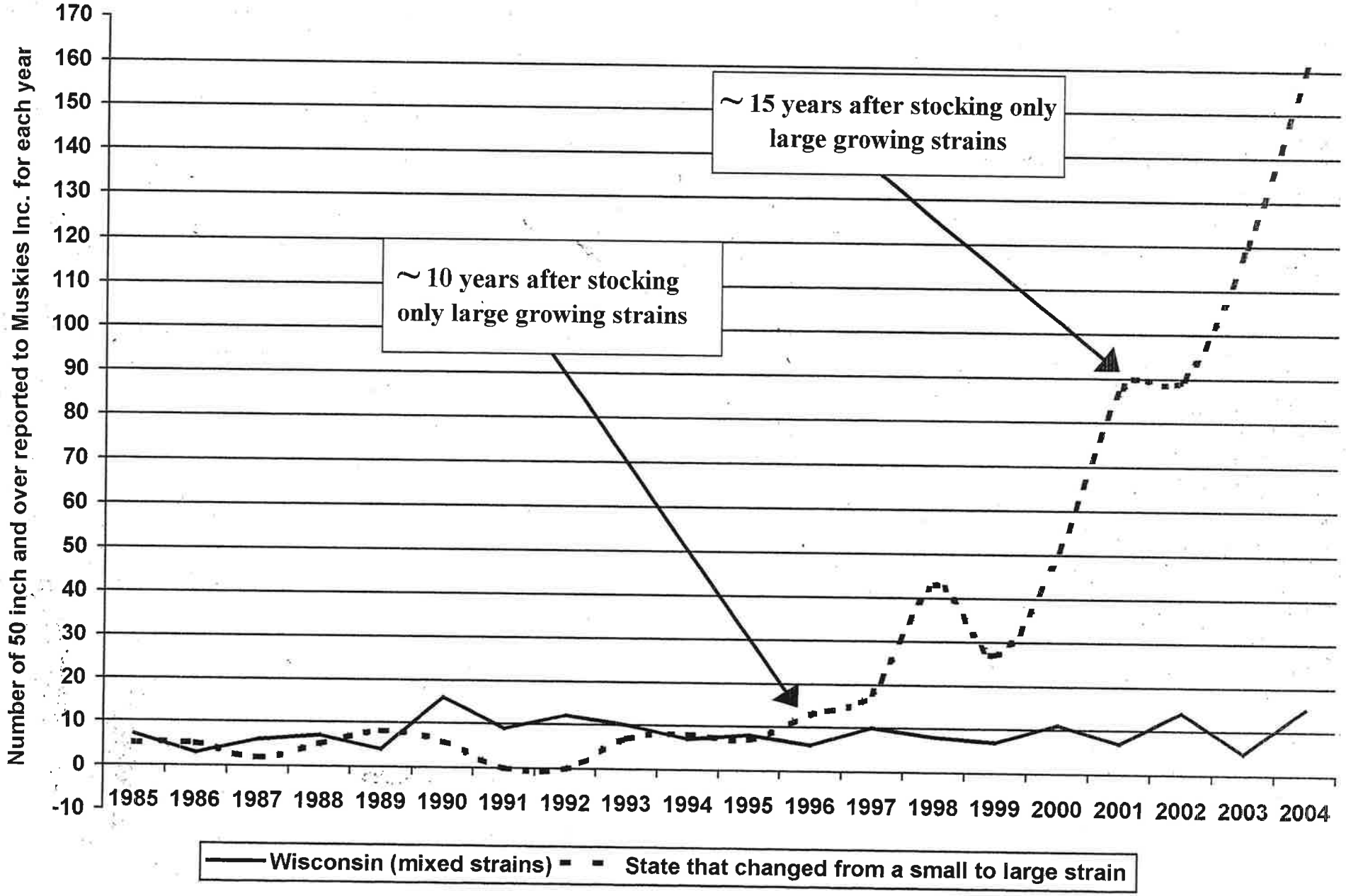


% of total fish reported exceeding 50 inches from lakes 4,000 to 6,500 acres

State	Lake	Acres	Total Fish
WI	Lac Court Oreilles	5,040	306
MN	Pelican	4,000	188
MN	Miltona	5,800	1,060
MN	Bemidji	6,400	558

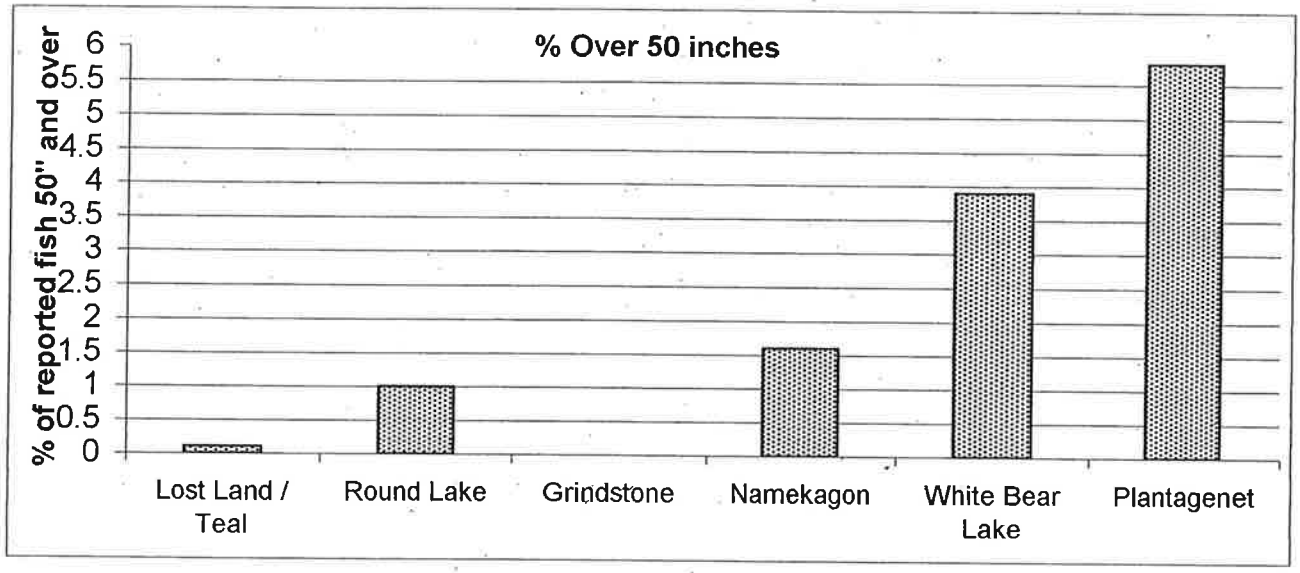


Number of 50 inch fish reported to M.I. the last 20 years from Wisconsin using mixed strains of small growing fish and a state changing from a small growing strain to a large growing strain for stocking



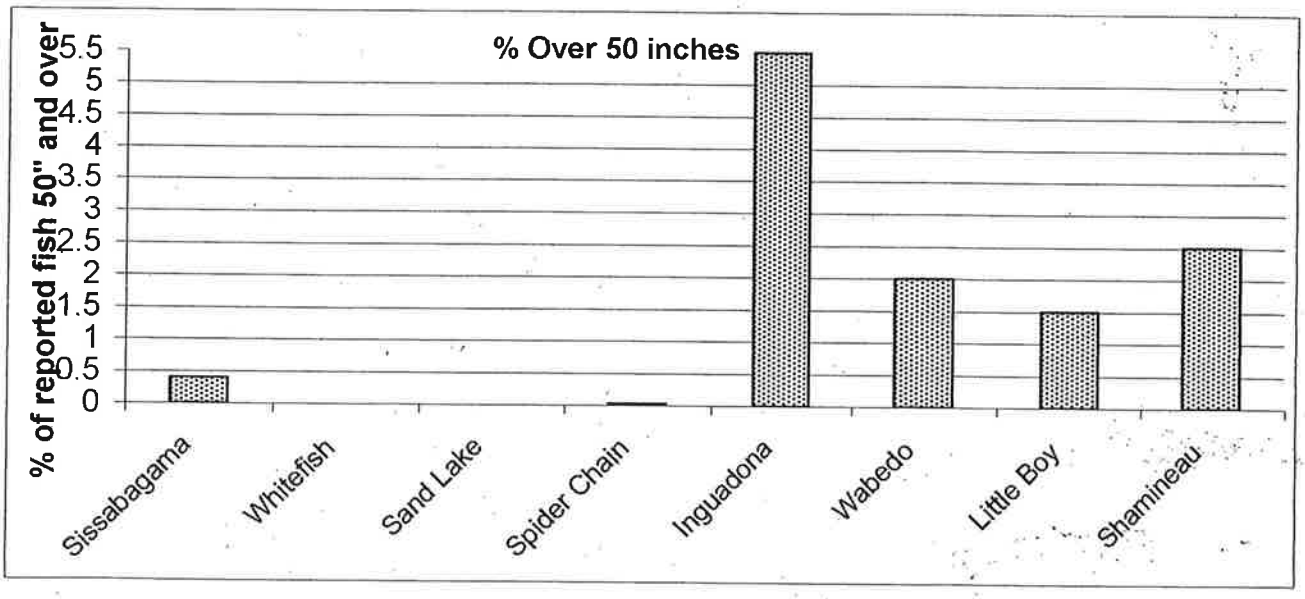
% of total fish reported exceeding 50 inches from lakes 2,000 to 3,500 acres

State	Lake	Acres	Total Fish	% 50+
WI	Lost Land / Teal	2,350	1,360	0.1
WI	Round Lake	3,050	277	1
WI	Grindstone	3,100	162	0
WI	Namekagon	3,230	377	1.6
MN	White Bear Lake	2,400	203	3.9
MN	Plantagenet	2,530	464	5.8



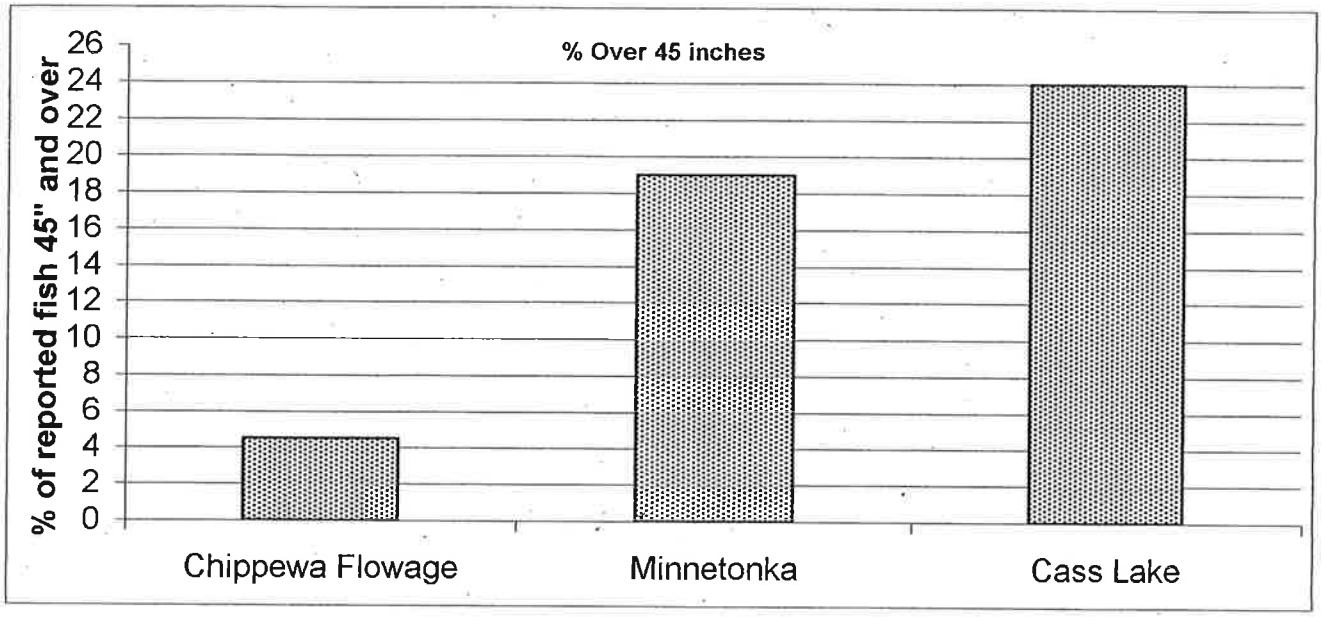
% of total fish reported exceeding 50 inches from lakes 700 to 1,600 acres

State	Lake	Acres	Total Fish	% 50+
WI	Sissabagama	720	738	0.4
WI	Whitefish	920	142	0
WI	Sand Lake	930	111	0
WI	Spider Chain	1,600	333	0.03
MN	Inguadona	1,080	42	5.5
MN	Wabedo	1,185	322	2
MN	Little Boy	1,372	260	1.5
MN	Shamineau	1,600	81	2.5



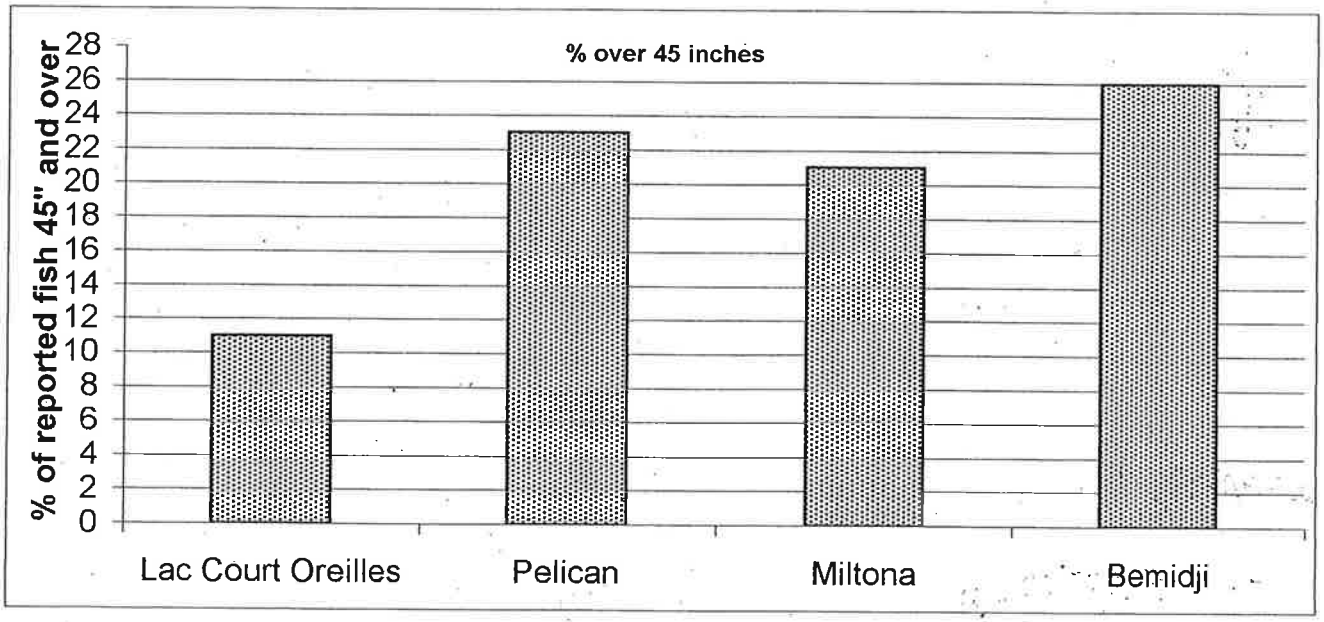
% of total fish reported exceeding 45 inches from lakes 14,000 to 15,500 acres

State	Lake	Acres	Total Fish	% 45+
WI	Chippewa Flowage	15,300	4,259	4.5
MN	Minnetonka	14,000	613	19
MN	Cass Lake	15,500	1,279	24



% of total fish reported exceeding 45 inches from lakes 4,000 to 6,500 acres

State	Lake	Acres	Total Fish	% 45+
WI	Lac Court Oreilles	5,040	306	11
MN	Pelican	4,000	188	23
MN	Miltona	5,800	1,060	21
MN	Bemidji	6,400	558	26



Looking Forward

Does Wisconsin provide muskie fisherman with a quality fishing experience? That may very well depend on your interpretation of "quality".

While Wisconsin offers over 711 lakes and streams with fishable populations of muskellunge, it lags in the production of large fish.

Due to the decline of the right strains of muskellunge in WI waters we have been left with a population of fish with reduced chances of growing to trophy size. Restoration of the larger growing strains of muskellunge in it's native Wisconsin waters, could show in as little as ten years, an increase in the amount of trophy fish available to anglers while restoring these same waters to their original state.

Most anglers seeking opportunities to catch large muskellunge currently travel to Minnesota and Ontario. The restoration of Wisconsin fisheries will add Wisconsin back to the list of destinations where trophy muskies are pursued.

The data in this document was compiled by MI members:
Eric Johnson, Fred Johnson, Larry Ramsell, and Bob Benson

Meeting of the Statewide Musky Committee

February 22, 2005 at Schmeeckle Reserve
Stevens Point, Wisconsin

Wisconsin Muskellunge Restoration Project Team

An *Addendum* to the *Wisconsin Muskellunge Restoration Project* document presented to the DNR in Madison on January 17, 2005

For approximately 74 years, Minnesota used small growing strains of muskellunge (and at one time, "silver muskies"-actually mutant northern pike) in their hatchery muskellunge stocking programs. The most recent small growing strain, used for about 30 years, was from one lake in northern Minnesota, which was thought to be "pure". An 1982 genetic study by Post and LeGrande, demonstrated that those fish were **a very different performing animal** than the Mississippi River strain of muskellunge, which were known to have large growth capabilities, as well as a different reproductive strategy, even though of the same species. These factors, combined with their newly found ability to capture the latter strain for hatchery use, the Minnesota DNR immediately switched to the use of the Mississippi River strain muskellunge for all their hatchery operations. The result of that change has been dramatic in the production in lakes stocked of **all** size classes of muskies, and that strains ability to grow to maximum trophy class sizes, is now the envy of the muskie world.

The most fantastic muskie fishing encountered since the early 1900's is occurring there and in the restored waters of Green Bay. The muskie fisherman in Wisconsin and elsewhere have watched these results very closely, and eagerly await the opportunity to share statewide in Wisconsin, in the fantastic musky fishing possible in our state waters.

We sincerely hope that as you assimilate the material that you already have, and the material we are presenting today, that we can come to a meeting of the minds today, on how best to proceed to take the great State hatchery system that we have, and redirect some of those efforts toward the restoration of our native muskellunge waters, with the historical strains of large growth muskies, which are now mostly absent from those waters.

We realize that some of our statements may appear hypothetical, but before you dismiss them, we insist that you consider the fact that the same thing has been done within scientifically conducted, peer reviewed and published, research papers. "Science" hasn't always been "exact," especially when the use of the words; "likely," "believe," "believed," "presumably," "generally," "suggests," and "probably," among others, were freely used therein. Consider too, the researchers use of "building blocks." Most studies refer to several other studies previously done. If one of the early "building block" studies is in error, everything subsequent, using that data, too, is in error. Some researchers have found errors in previous studies and have so noted in their new work. Minnesota's propagation supervisor considered muskellunge to be a race or sub-species of northern pike for many years from about 1915 to 1932 and beyond. He then co-authored the book "Northern Fishes." in 1943. Newly learned information, too, has changed some previously held beliefs. No, science is not perfect. Most research work done on muskellunge thru the major portion of the 20th century, has been done without due consideration of life history and reproductive strategy, missing the very important differences applicable to "two very different animals within the species!"

We strongly believe that the lack of big muskies currently in Wisconsin, is not the result of the many reasons given. Quite simply gentlemen, we are sick and tired of hearing the same old "excuses" and being told that "it needs to be studied". It HAS been "studied to death," and excuses like we don't have big muskies in Wisconsin because of small lakes, harvest, tribal spearing; lack of forage, live bait; single hook rigs; insufficient hatchery production; budget shortfalls, ad nauseum, no longer get it. When any or all of these factors have been removed, the

fact remains that the fish we are currently stocking still do not grow big. Why? **It's the fish!** The absolute reproductive differences and growth capability, between the large and small strains of muskellunge, can simply no longer be overlooked or ignored.

We are tired of being the laughing stock of the musky world on the Internet, in video's and in print media. Resorts, guides, businesses, and entire economies of small towns that rely on tourism dollars, are being damaged financially the way things are going. The economic benefits of this proposed restoration project to the State of Wisconsin, and its people, is far too great to even calculate. State and visiting sport anglers wholeheartedly support this proposed change.

One of the great things to be said for a project of this nature is that it provides Wisconsin's fish managers the proper or necessary "tool" they are in need of to do this restoration. We see this as a win/win/win situation, and one that can make the DNR look great, regardless of the unintentional mistakes of the past by their predecessors. We prefer not to point fingers at the hard working individuals of past years who did the best they could with limited knowledge of Muskellunge strains and their management ramifications. We'd like our focus to be on making sure we use everything we know today to make Wisconsin's Muskellunge Fishery as good as it can be, starting now and into the future. We should strive for nothing less than the best Muskellunge Fishery in North America where the Muskellunge is the State Fish! We've had it before, and we can have it again - if we stock the right strain of fish.

Wisconsin's "Trophy Management Goal and Objective" to "Manage Class A1 waters to increase the catch of 50" and larger muskellunge," simply cannot be attained under current stocking practices, utilizing the current mixed brood stocks.

The vast majority of Wisconsin's 711 muskellunge lakes, and dozens of rivers and streams are part of the Chippewa, St. Croix and Wisconsin River drainages. ALL were originally inhabited by muskellunge from the Mississippi River. Some of these adapted to be strains with limited growth potential, due mainly to the absence of, and lack of competition with, pike. The balance, which have historically co-existed with pike, adapted a different reproductive strategy to compete, and became the larger growing strains vastly preferred.

Water bodies that had the smaller strains originally, but have since been invaded by pike, present an additional consideration for overstocking with the larger strains that can co-exist with pike, and possibly re-develop a self-sustaining population. This would ease the burden on state hatcheries that must currently stock these former self-sustaining waters. The use of the Mississippi River strain of muskellunge has been successful wherever it has been done; in Minnesota, Wisconsin, Michigan, Illinois, Missouri, Indiana and even New Jersey. To our knowledge, there have been few, if any, lakes where Mississippi River strain muskies have been stocked, that have failed to produce trophy fish, including a 7 (seven) acre pond in Illinois that is producing 50-inch fish!

We believe the evidence provided in our Muskellunge Restoration Project Document clearly indicates that over the past 105 years, our Wisconsin hatchery system has inadvertently, and progressively, used more and more of the smaller strains to strip, rear and stock in muskellunge waters statewide. In the mid 1900's, the reverse occasionally happened, mixing stocks in both directions. These stocking practices, along with harvest of the larger specimens, and size limit regulations that serve only to protect the smaller strains for their entire life span, has nearly eliminated the larger native strains from our waters. Considerable additional evidence, gathered since the writing of that document, references which follow, only serve to add additional credence to our findings.

In the 50's, 60' and 70's, the muskellunge fisheries in Wisconsin were in near collapse due to excessive over-harvest, progressively from over 50,000 up to 100,000 legal muskies harvested per year. Wisconsin's hatchery system became the envy of North America, when it developed the ability to compensate for that harvest and save our muskellunge fisheries from total collapse.

Being unaware of what we know today, regarding the growth ability differences of the two reproductively differing animals, DNR selection of lakes to use for egg taking was based upon

ease of access, proximity to the hatcheries, and, seemingly rightly so at the time, lakes with fish that provided maximum egg and fry survival. This strategy saved our muskie fisheries and Wisconsin was considered the "go to" destination of muskie anglers worldwide. Numbers, as well as some trophy class fish, were then still readily available to anglers.

The unintended downside to what has occurred, is that in the latter part of the 1900's thru today, Wisconsin has had an increasing-decrease in the production of trophy class muskies. Remnant giants still occur infrequently from many state water bodies, but it is the exception, rather than the rule. The occasional giant from small lakes never thought to have big muskies, can be attributed to "reverse" hatchery "mixing" as a result of the "occasional" use of eggs taken from the larger strain of muskies and used for stocking everywhere.

Trophy class muskies caught in recent years in Wisconsin, are cause for celebration, rather than being the norm, as is currently the case in Minnesota. A "big deal" has been made out of about a dozen trophy class muskies caught in the Hayward area in 2004. With the stocking of the "right strain of fish", this should be the norm for EACH OF THE LARGER LAKES THERE, as well as other waters of the state!

While we understand, and have no problem with the concept of Genetic Preservation, and these are now the "buzz words" among fisheries scientists, it is impossible to preserve something that no longer exists as it once was. Man's intervention in Wisconsin fisheries since at least 1874, leave little to doubt on that front.

During the Esocid Technical Committee meeting in July of 1996, proposed boundaries denoting separate genetic stocks of muskellunge were defined. One proposed "zone" delineated the Wisconsin River drainage, and another, the Upper Chippewa River and the St. Croix River drainages combined. We believe that these arbitrary zone boundaries, while probably indicative of the "reality" of the "current" muskellunge genetic stocks, respectively, due to 105 years of stocking, do not accurately reflect the "historical-native" genetic make-up therein. Rather, they indicate the "created zones of convenience" due to "stock mixing," while currently encompassing the states watersheds, and hatchery responsibilities therein.

Dr. Post's 1982 genetic study more closely aligned Lac Court Oreilles muskellunge stock with the Minnesota Leech Lake strain, even though that study seemingly also indicated that LCO fish were more likely 1/2 and 1/2 mixes of the native, larger growing, Mississippi River riverine strain, and the smaller, allopatric Wisconsin strains. This would likely be as a result of less mixing of stocks in the Upper Chippewa/St.Croix River zone historically, than has taken place over a longer concentrated period of time in the Wisconsin River zone, whose most commonly used allopatric stocks were more closely aligned with the documented small growing Shoepac, Minnesota allopatric strain.

When review of the capture records for angler caught muskie's from northwestern Wisconsin's only used Brood Stock lake, Bone Lake, indicates that ONLY 2 (two) of 2,885 (two-thousand eighty hundred eighty-five) muskies captured attained the length of 50 inches, it is UNREASONABLE to assume that ANY lake stocked with fish raised from eggs obtained there, would provide any different results! And indeed they have not.

It is claimed by WI DNR personnel that "mixing" of stocks *between* drainages should not be done, yet in direct opposition to that edict, it is STILL being done, again as recently as the fall of 2003 in the Chippewa Flowage, and 2004, in Sawyer County's Round and Lac Court Oreilles lakes, with the stocking of Wisconsin River drainage fish into these Chippewa River drainage lakes. In addition, Big Mackenzie Lake in the St. Croix River drainage was stocked in the fall of 2003 with Chippewa River drainage fish and is scheduled again for 2005. When queried about this, the Upper Chippewa Basin, Northern Region Fisheries Supervisor, commented, that "It was done 'within' the state.", presumably making it all right.

Also, there is currently a project proposal in the works within the Upper Chippewa Basin, to move 500 adult fish from Butternut Lake in Price County, to Lac Court Oreilles Lake in Sawyer County.

Since Butternut Lake, a Chippewa River drainage lake, has been stocked with the documented small muskellunge strain from Minocqua Lake of the Wisconsin River drainage, this could only serve to further confound the distressed Lac Court Oreilles muskellunge fishery.

A Wisconsin DNR personnel, citing the "Wisconsin Muskellunge Waters Pub. 1-3600(82)," claimed that there were "no genetically unique native muskie strains in the St. Croix River basin to protect. While this may be true for the "upper" St. Croix River drainage above Taylors Falls, the St. Croix River below Taylors Falls is now being restored and stocked "exclusively" with native Mississippi River strain muskellunge by the Minnesota DNR. To compliment that native restoration, we feel it is irresponsible to further stock any of Wisconsin's upper St. Croix River drainage waters, that can give any emigrating muskellunge access to the main St. Croix River, with anything other than Mississippi River strain muskellunge, preventing further mixing. Such mixing could conceivably cause dilution of muskellunge fisheries throughout entire St. Croix and Mississippi River systems, due to emigration, up into Minnesota over time. Further stocking there by Wisconsin, should be done only with Mississippi River strain muskellunge.

In addition, stocking of Bone Lake muskellunge into the Great Lakes drainage (St. Louis River and other north draining waters), too, is a serious mixing of stocks. And please consider this, stocking Bone Lake mixed strain fish into the St. Louis River causing further mixing with Great Lakes strain muskellunge, endangers not only the Green Bay, Lake Michigan Restoration program now ongoing by the Wisconsin DNR due to emigration, but could conceivably cause dilution of muskellunge fisheries throughout the entire Great Lakes system and into the Niagara and St. Lawrence River over time. Michigan does not stock "northern" (lacustrine) muskellunge into Great Lakes muskellunge waters. Further stocking in St. Louis River drainage waters by Wisconsin, should be done only with Great Lakes strain muskellunge.

In our Wisconsin Muskellunge Restoration Project meeting in Madison, on January 17, 2005, at the highest levels of the DNR, it was admitted by them that it was known that the Wisconsin muskellunge fisheries were "mixed", but it was stated that, "We want to protect what we now have." The recent and scheduled stockings noted above, flies in the face of that statement. Further, holding to that mantra, means that the Wisconsin DNR is prepared to admit to the world that they wish to continue to protect the smaller growing muskie fisheries that they have inadvertently "created," encouraging anglers seeking the larger, trophy class fish, to look elsewhere, to the detriment of tourism.

We have been told by a fisheries supervisor that it would "be irresponsible" to stock Mississippi River strain muskellunge in Wisconsin without proper genetic testing. Based on what we have learned to date about our Wisconsin propagation history, we feel that it would be "irresponsible" to continue stocking using today's available hatchery brood stocks with the single exception of the Green Bay restoration program using Great Lakes strain muskellunge, in state drainage waters, as has been done in the past.

We know Mississippi River strain muskellunge do just fine in Wisconsin, as has recently been proven in northwestern Wisconsin's Nancy Lake. They grew fast and big and have had natural reproduction. According to a local district biologist, these FACTS have been down played, and the "experiment" was not considered a success in an 1997 study. We feel that one primary assessment in that study, based on lack of YOY (young of the year) sampling in a limited number of early years, was insufficient data, based on a similar, earlier, study with more years of baseline data.

Consider too, that there is NO natural reproduction of Bone Lake stocks in any western Wisconsin non-native lake that has been stocked with those fish. Shouldn't this send out an ALARM? Especially when the one lake there that was stocked with Mississippi River strain fish did have successful reproduction? This begs the question about whether or not Bone Lake stock stocking in native muskellunge waters is successful, and if so, to what extent? Have we created a put-and-take fishery using these fish? Could this be one of the reasons that Lac Court Oreilles has had little on no natural reproduction for over 50 years?

We feel that the 74 year "mistakes" that Minnesota made, has been for the most part, taking place in Wisconsin for over 105 years, from the stand point of muskellunge management. Of course, we must not forget angler harvest and short-term evolution, which also factors into our current degraded situation. Corrective measures can be taken immediately to correct it. We must begin now!

As we see it, the only available DNR options available for muskellunge propagation and stocking in 2005, are:

1.) Capture and select ONLY large males >45" and females >52" from Lac Court Oreilles, Grindstone or the Chippewa Flowage, to take the necessary (Neubich pers. comm.) 500,00 eggs (5 to 10 females) for the Spooner hatchery operation. A like event would be required for the Woodruff hatchery from an appropriate water body, such as perhaps an previously un-stocked section of the Wisconsin River or other suitable candidate.

2.) Repeat #1, and remove the captured "brood stock" to a lake currently without muskellunge to create a "new" brood stock lake.

We are prepared to offer organized support in both money and manpower to assist in these endeavors, and insist at the very least, on "observing" the process. We feel monumental forward progress can be made in the annals of Wisconsin Muskellunge management with forward thinking and cooperation between the DNR and the muskellunge user groups.

3.) Capture Mississippi River strain fish from Nancy Lake in Washburn County, near Minong, to obtain sufficient eggs to supply both the Spooner and Woodruff hatcheries.

4.) If an insufficient number of eggs can not be obtained from Nancy Lake, procure Mississippi River strain eggs from the Minnesota DNR or other sources if necessary.

5.) Stock ONLY Mississippi River strain muskellunge in the St. Croix River drainage waters with emigree access to the main St. Croix River, ceasing the mixing that has been done by stocking Bone Lake fish there. Such stocking endangers not only the Mississippi River strain restoration program now being done in the St. Croix below Taylors Falls by the Minnesota DNR due to emigration, but could conceivably cause dilution of muskellunge fisheries throughout entire St. Croix and Mississippi River systems up into Minnesota over time. Further stocking there by Wisconsin, should be done only with Mississippi River strain muskellunge.

6.) Stock ONLY Great Lakes strain muskellunge in ALL Great Lakes drainage waters, including the Lake Superior and Lake Michigan drainages, expanding the State's current "restoration" program in the Green Bay drainage, and immediately cease stocking Bone Lake mixed strain fish into the St. Louis River. Such stocking endangers not only the Green Bay, Lake Michigan Restoration program now going on in Wisconsin by the Wisconsin DNR due to emigration, but could conceivably cause dilution of muskellunge fisheries throughout the entire Great Lakes system and into the St. Lawrence River over time. Michigan does not stock "northern" (lacustrine) muskellunge into Great Lakes muskellunge waters. Further stocking there by Wisconsin, should be done only with Great Lakes strain muskellunge.

If one or more of the above options is not done in 2005, for whatever reason, CEASE all hatchery production of muskellunge in Wisconsin for drainage waters, with the exceptions of the current Green Bay drainage restoration program, or for landlocked seepage lakes, until satisfactory genetic sampling, if feasible, can be completed. If said genetic testing is, as we believe, not feasible, then allow the use of options 1, 2, 3 or 4 in Mississippi River drainage waters where applicable.

Respectively submitted,
Wisconsin Muskellunge Restoration Project Team
Robert Benson, Project Team Leader

Larry Ramsell, Project Team
Eric Johnson, Project Team
Supported by the Wisconsin Alliance of Musky Clubs, including the Wisconsin Chapters of Muskie's, Inc.

--SUPPORTING SLIDE PRESENTATION--

Following are additional **References** supporting the statements in our original ***Wisconsin Muskellunge Restoration Project*** document, and the statements made in this ***Addendum***. We have taken the liberty of adding pertinent quotes or information not contained in the ***Addendum***, into these references where applicable:

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