

**Fishery Management Plan**  
**Butternut Lake, Price County, Wisconsin**  
**July, 2005**



Prepared by:

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## FOREWORD AND ACKNOWLEDGMENTS

This is a long-term strategic plan that will guide our fishery management efforts at Butternut Lake for many years to come. We believe a good fishery management plan must be based upon a shared vision that can be acquired only after fishery managers and committed stakeholders have discussed angler preferences in light of what each aquatic ecosystem is capable of producing. We believe the goals of a good plan must reflect that shared vision, and that measurable objectives must be set so we know whether chosen strategies have succeeded or failed. We believe in making good tries and learning from failure. Part of that process involves amending plans when failure dictates that we either develop more realistic objectives or change our strategies to achieve them. This plan will be updated as needed in the decades that follow.

We call this a “long-term strategic plan” because there is no deadline or specific operational schedule for achieving the goals and objectives. We possess neither the wisdom nor the authority to commit DNR or partner resources to a specific operational schedule for funding and action. Each year will bring its own fiscal constraints and work priorities, so we must remain flexible in our implementation of proposed actions.

Our superiors are extremely busy people. We are producing more plans in the Upper Chippewa Basin than we can reasonably expect them to review and approve in a timely manner. Therefore, we have chosen not to secure upper level DNR approval of this document at this time. We do appreciate the review comments of DNR Northern Region Fisheries Expert, Steve AveLallemant, who offered a regional perspective that we have incorporated into this document. We will do our best to justify actions we believe necessary to realize the vision we share with local stakeholders to both DNR leaders and the general public (e.g., Conservation Congress) as time and circumstances permit. We promise only to consult this plan periodically as we allocate time and resources to the many important projects before us.

We want to thank the Butternut-Schnur Lake Association for advertising and hosting our local stakeholder visioning session at Flambeau Lanes in Park Falls on April 24, 2004. Their support for this process and this plan has encouraged us to pursue implementation.

We also want to thank the 24 local stakeholders who donated an afternoon to help us develop the vision that forms the backbone of this plan. We are very pleased to incorporate their input at this appropriate stage in the planning process; and we look forward to their continued support for actions we believe will be necessary to achieve our shared vision. We can settle for nothing less in an area where the quality of fishing means so much to our livelihoods and our quality of life.

## BACKGROUND

### Habitat Characteristics and Productivity

Butternut Lake is a 1006-acre drainage lake in northwestern Price County and southeastern Ashland County. Approximately 75% of its 11.2 miles of shoreline are in Price County. Average depth is 14 feet, and maximum depth is 32 feet. Substrate in the littoral zone (shallow area near shore) is comprised mostly of sand (75%), with smaller amounts of rock/rubble (15%), muck (5%), boulder (3%), and gravel (2%). The lake has five inlet streams of various sizes, including Butternut Creek, Spiller Creek, and Schnur Creek (Figure 1). The outlet is Butternut Creek, which flows into the North Fork Flambeau River with an average discharge of 16 cubic feet per second. There is no outlet structure, and lake level typically fluctuates 3 to 6 inches naturally during the open-water season.

A forested watershed with numerous wetlands contributes brown, tannin-stained water to the lake. This results in typical Secchi disk visibilities of only 3-5 feet, even at times when algae are scarce (cold-water seasons). Butternut is considered a softwater lake based upon its low alkalinity (30 parts per million in spring 2004) and low calcium hardness (36 parts per million). Its near neutral pH typically ranges between 6.8 and 7.4. High concentrations of total phosphorus (49 parts per billion in summer 2004) and chlorophyll *a* (22 parts per billion) – an index of algal biomass – allow us to classify Butternut Lake as eutrophic (very productive biologically). Prior to 1980, a poorly functioning sewage treatment plant on the Butternut Creek inlet stream contributed excessive nutrients that caused severe algae blooms in the lake throughout the open-water season. That problem has been corrected, and algal blooms have decreased in frequency and severity. But moderate blooms still occur occasionally, resulting in Secchi disk visibilities less than 2 feet.

Despite its high biological productivity, Butternut Lake rarely stratifies for prolonged periods of time. Its relatively shallow mean depth, combined with a north-south orientation, allows wind-induced currents to keep the lake well mixed. Subsequently, formation of a true hypolimnion (cold bottom layer of water deficient in dissolved oxygen) is rare.

### Human Development and Public Access

Butternut Lake has a rich history as a tourist destination, dating back to the 1870s when the first railroad line reached Butternut Creek. As recently as the early 1980s, there were nine resorts operating on the lake. As a result of changing socioeconomic conditions and possibly reduced fishing quality, many resorts have gone out of business, yielding to the interests of private citizens who have purchased former resort dwellings as condos or built their own homes around the lake. Currently only three resorts and one private campground remain, and there are approximately 170 private homes and cottages. We consider this to be a moderate level of development.

Only 0.1 mile of the Butternut Lake shoreline is in public ownership. There are four public access sites on Butternut Lake. The main landing – Hoffman's Rocks on the northwest shore – has parking for 25 vehicles with trailers, a courtesy boarding dock, and shoreline fishing access. A small gravel boat ramp is located on Butternut Creek on the northern end of the lake, and unimproved access exists on the both east and west sides of the lake.

## Historical Perspectives on the Fishery

Total angling effort was moderate, averaging 36 hours of fishing per acre per year, in creel surveys conducted at Butternut Lake in 1973, 1990, 1996, 1998, and 2003. Effort directed specifically toward walleye (51%) and musky (37%) accounted for 88% of the total hours of fishing in those surveys (Table 1), though the proportion of anglers fishing for these dominant species has been near equal in recent years.

Major fish population surveys were conducted in 1973, 1987, 1990, 1996, 1998 and 2003. High estimated adult walleye densities in 1973 (10 per acre) and 1987 (15 per acre) declined to moderate densities of approximately 4 adults per acre during the last decade (Table 2). Average length of harvested walleye was relatively low, ranging between 12.0 and 14.4 inches during all creel surveys (Table 1). Walleye were stocked in alternate years from 1992 through 2002 with the intention of supplementing natural recruitment.

Estimated adult muskellunge density increased dramatically from 0.18 per acre in 1973 (when Butternut Lake was considered one of the area's best musky fisheries) to 0.66 per acre in 1998 and 1.02 per acre in 2003 (Table 2). Muskellunge density higher than 0.5 adult per acre is considered high by Upper Chippewa Basin biologists, and at Butternut Lake has resulted in high catch rates of 1 fish for every 19 to 28 hours of musky fishing effort since 1990 (Table 1). High muskellunge density is probably a result of increased catch-and-release, natural reproduction, and high stocking density (2 per acre) and frequency (stocked annually from 1952 through 1991 and semi-annually from 1992 through 1999).

Butternut Lake lies within the Ceded Territory, and the fishery is shared with Ojibwe tribal harvesters -- primarily members of the Lac du Flambeau tribe. Harvest of walleye by spear ranged from 0 (1993-1995) to 218 fish (2001), averaging 101 fish (0.1 per acre) per year between 1987 and 2004. Tribal harvest accounted for less than 3% of the average adult walleye population of the past decade. Tribal harvesters have indicated this is a difficult place to spear because of low visibility (stained water) and widely distributed walleye spawning habitat. Nevertheless, tribal harvesters have taken near their Total Allowable Catch in the last four years, triggering a conservative reduction in the sport fishing daily bag limit from 5 to 3. This virtually eliminates any risk of exceeding the estimated safe harvest level of 35% for the combined methods of harvest.

Approximately 50 log fish attractors, commonly called cribs, were installed at various locations around the lake in the late 1960s and early 1970s. Those structures were mostly degraded or gone by 1990. Because of a perceived need for woody cover for a variety of species, 110 additional log fish attractors were installed from 1996 through 2002.

## Aquatic Community Overview

The predominant fish species in Butternut Lake during recent decades have been walleye, muskellunge, black and yellow bullhead, yellow perch, and black crappie. Other sport fish and panfish are present in lower numbers, including northern pike, smallmouth bass, largemouth bass, lake sturgeon, rock bass, bluegill, and pumpkinseed. Nongame fish include white sucker (especially important as prey), redhorse, burbot, common shiner, golden shiner, creek chub, johnny darter, and mottled sculpin. Crayfish are also important as prey. Rusty crayfish have been documented in the lake, but they have not noticeably affected the aquatic ecosystem.

Aquatic macrophytes generally are light to moderate in abundance and are found in scattered areas around the lake. Common plant species include yellow and white water lily, pondweeds (Potamogeton sp.), elodea, coontail and milfoil. Sandy substrate and limited light penetration in the tannin-stained water generally restricts macrophyte growth below the 5-foot depth contour.

### **Developing a Vision for the Butternut Lake Fishery**

On April 21, 2004, DNR representatives Skip Sommerfeldt and Dave Neuswanger met with 24 local stakeholders who were willing to volunteer their time to help develop a long-term vision for the Butternut Lake fishery. Objectives of the meeting were to prioritize species of interest, and then to identify for those species the relative importance of numbers versus size and catch versus harvest. Attention was then focused on identifying the desired conditions (goals and objectives) that appear in this plan. Time constraints precluded in-depth group visioning for panfish, but goals and objectives for walleye and muskellunge were developed by consensus of local stakeholders in consultation with Skip Sommerfeldt, who served as technical advisor to the group on what was possible. However, no attention was given to methods for achieving goals and objectives (management strategies such as harvest regulations, fish stockings, and habitat preservation or enhancement). It was understood and agreed that professional fishery managers would select the most appropriate strategies once goals and objectives had been developed with input from local stakeholders in light of what is known about statewide angler preference and the capacity of Butternut Lake to produce what is desired.

Detailed results of the visioning session appear in the Appendix (Tables A1 and A2). In summary, local stakeholders in the Butternut Lake fishery ranked walleyes first among species of interest, and they were determined to maintain a moderately high density and sustainable harvest of walleye while improving walleye size structure if possible. This emphasis on walleye is consistent with statewide angler priorities and Butternut Lake habitat characteristics, so efforts to achieve walleye population objectives will assume a prominent role in future management.

There was also enthusiasm for creating and maintaining good fishing for panfish, particularly black crappie and yellow perch. On average, local stakeholders placed more emphasis on size than on number of panfish, but many still wished to optimize panfish harvest in a sustainable fashion. These desires may not be mutually exclusive, but maintaining good size structure while optimizing sustainable harvest (pounds/acre/year) may require special harvest regulations that shift the harvest from predominately medium-size panfish to fewer but larger panfish.

Muskellunge were of medium to high importance to two-thirds of local Butternut Lake stakeholders. (We also know that the Butternut Lake musky fishery is important regionally.) Participants clearly preferred a balance between numbers and size, desiring neither a strictly “numbers” fishery nor a strictly “trophy” fishery. Because Butternut Lake muskellunge have demonstrated the capacity to reproduce naturally and grow to a large size when density is not excessive, it should be possible to achieve an adult population density and size structure that meets local stakeholder desires while providing excitement for local and non-local musky anglers alike.

Northern pike were of medium to low importance to the local stakeholders who attended our visioning session. Other species, such as bullhead, bass, and rock bass generated little or no interest among participants.

## THE PLAN

The following goals and objectives were developed with significant input from local stakeholders in the fishery. We agree they are desirable and achievable. Stakeholders were not consulted about management strategies. Recommended strategies represent a consensus agreement among Plan authors regarding actions necessary to achieve the goals and objectives.

**GOAL 1:** A walleye population of moderate to high density with a moderate proportion of quality-size fish

**Objective 1.1:** 4 to 8 adult walleye per acre in spring population estimates (Adult walleye are defined by DNR as all fish over 15 inches long and all smaller fish for which gender can be determined.)

**Objective 1.2:** Of all walleye 10 inches and longer captured by fyke netting in early spring, 30-50% should be 15 inches or longer (PSD = 30-50%).

### Walleye Status and Management Strategies (Local DNR Recommendations):

In 2003, Butternut Lake contained a moderate-density population of adult walleye (4 per acre) and a very high density of walleye of all sizes (31 per acre). The population was dominated by abundant 8- to 12-inch fish, and few walleye exceeded 15 inches in length (PSD = 19%; Figure 2). There is no clear consensus among biologists on the primary cause of unsatisfactory walleye population size structure in Butternut Lake. Slower-than-average walleye growth rate (Figure 3) and selective angler harvest of the fastest-growing walleye in the absence of a length limit are likely factors. Anecdotal observations (walleye scarring) and bioenergetics modeling by Skip Sommerfeldt also raise questions about the role of abundant muskellunge in reducing growth and/or survival rates of adult walleye, either indirectly or directly. Regardless of uncertainty regarding mechanisms, biologists agree that unsatisfactory size structure of the walleye population is likely the result of complex community interactions. If our knowledge and hunches about these interactions are correct, a reduction in adult walleye harvest combined with a reduction in adult muskellunge density will be necessary to achieve walleye population objectives. Focusing angler harvest on small, slow-growing walleyes also should reduce predation on young black crappie and bluegill, thus improving our chances of achieving panfish density goals.

With sensitivity to the balanced but somewhat harvest-oriented preferences of local stakeholders, we recommend keeping the daily bag limit of three walleye, but restricting that harvest to only one fish daily over 14 inches long. If this restriction and other near-term measures fail to achieve Objective 1.2, then we should consider even more restrictive regulatory options. One such option would be a 14- to 18-inch slot length limit. In any event, shifting angler harvest toward abundant small walleye has the additional advantage of minimizing consumption of mercury, which has been measured at more than 0.5 part per million in Butternut Lake walleyes over 14 inches long. As long as natural reproduction remains satisfactory, we see no need to stock walleye in Butternut Lake anytime in the near future. In fact, stocking may only exacerbate the current walleye population imbalance.

Another potentially important strategy for improving walleye population size structure is to achieve the objectives for reduced muskellunge density and improved muskellunge size structure under Goal 2.

**GOAL 2:** A muskellunge population of moderate density with a moderately high proportion of preferred-size fish

**Objective 2.1:** 0.2 to 0.3 adult muskellunge per acre in population estimates

**Objective 2.2:** Of all muskellunge 20 inches and longer captured by fyke netting in early spring, 25-50% should be 38 inches or longer (RSD-38 = 25-50%).

### **Muskellunge Status and Management Strategies (Local DNR Recommendations):**

In 2003, Butternut Lake contained a high-density population of adult muskellunge (1 per acre), despite the fact that muskellunge have not been stocked since 1999. Natural recruitment has been documented in every survey since 1984. In 2003, the population was characterized by large numbers of 28- to 38-inch muskellunge and few fish longer than 38 inches (RSD38 = 9%; Figure 4). The average muskellunge caught by Wisconsin anglers is 37 inches long. The average fish in Butternut Lake currently is only 33 inches long, despite the lake's historical reputation for producing large muskellunge.

Our estimates of muskellunge growth rate in Butternut Lake matched the statewide average during 1984-1987 but had fallen dramatically by 1998 despite high overall lake productivity (Figure 5). Condition factor (relative plumpness) of muskellunge also has decreased over time and is low in relation to statewide averages (Figure 6). Both of these observations corroborate our assessment that muskellunge density has increased to the point where prey often preferred by adult muskellunge (large yellow perch and white suckers) are no longer available in sufficient numbers (Table 3). This may impact many other species of importance in Butternut Lake, including walleye and other non-game fishes that comprise a healthy, diverse fish community.

The muskellunge length limit at Butternut Lake has coincided with the statewide minimum length limit, which increased from 30 to 32 inches in 1983 and from 32 to 34 inches in 1995. Because more than half of the excessive number of adult muskellunge in Butternut Lake currently is protected by the 34-inch minimum length limit, we recommend changing the management strategy altogether. In addition to a moratorium on stocking, we recommend exempting Butternut Lake from the statewide minimum length limit and implementing a voluntary 40- to 45-inch protected length range for muskellunge. These steps may help to shift size structure toward Objective 2.2 over time, but a strong catch-and-release ethic among ardent musky anglers may prove difficult to overcome in generating enough harvest of fish under 40 inches long to reduce adult density to the level of Objective 2.1.

Therefore, we recommend experimental removal of up to 500 adult muskellunge (0.5 per acre, 50% of all adults) less than 38 inches long from Butternut Lake in spring of 2006. We propose to capture these fish in early spring fykenets, tag them, and transfer all except extremely plump fish to another lake where muskellunge density is lower than desired. Project approval will hinge upon favorable health test results from a sample of 20 fish (completed in spring 2005) and favorable test results for genetic compatibility with the receiving water (50 samples collected in spring 2005).

We will ask resort owners and the Butternut-Schnur Lake Association to encourage some harvest of muskellunge less than 40 inches long, and to strongly encourage voluntary release of 40- to 45-inch fish until we determine whether density and size structure objectives have been achieved. Local partners can also help by encouraging participation in our volunteer musky angler diary program, which would aid our evaluation of musky angling success. If 6-8 years of evaluation reveal that the voluntary protected length range fails to allow achievement of Objective 2.2, a mandatory slot length limit will be considered. All parties should support the use of quick-strike rigs rather than single-hook rigs while live-bait fishing for muskellunge in order to minimize delayed mortality of fish caught and released within the voluntary protected length range.

In its 2004 publication, *A Health Guide for Eating Fish in Wisconsin*, the Department of Natural Resources advised certain people to limit or avoid consumption of muskellunge in order to minimize or avoid risks associated with mercury contaminants. When anglers are encouraged to harvest muskellunge from Butternut Lake, they should also be advised of the health risks.

Lastly, in all publicity regarding this plan, anglers should be reminded that these management strategies are not meant to eliminate muskellunge from Butternut Lake, but rather to restore the moderate-density population of preferred-size fish that once characterized this fishery.

**GOAL 3:** A **black crappie** population of low to moderate density with a significant proportion of preferred-size fish.

**Objective 3.1:** It is difficult to accurately assess crappie abundance with our traditional survey methods, but we believe that a fall electrofishing catch rate of 30 to 50 crappies per hour ( $\geq 5$  inches) may indicate a crappie population consistent with the above goal. This range is based upon past electrofishing data from Butternut Lake. As more accurate methods are developed for assessing crappie abundance, we will update this objective with appropriate parameter values.

**Objective 3.2:** Of all black crappie 5 inches and longer captured by fall electrofishing or fyke netting in late spring or mid fall, 30-50% should be 8 inches or longer (PSD = 30-50%) and 5-15% should be 10 inches or longer (RSD-10 = 5-15%).

### **Black Crappie Status and Management Strategies (Local DNR Recommendations):**

Local stakeholders held crappie in high regard (Table A1) and had a slight bias toward size over number (Table A2). The black crappie population has been very low since the mid-1990s (Table 3). Crappie anglers who once caught 10 to 15 quality-size fish per trip might catch a third that number these days. Crappie populations can be cyclical, but we believe excessive predation by overabundant small walleye on young (age-0) crappie is consistently repressing crappie recruitment and will not allow desirable crappie density to develop. Therefore, the first step toward a more desirable crappie population will be to achieve our objectives for walleye, thereby reducing the number of small walleyes targeting age-0 crappie as prey.

Given the relatively low number of crappie and other panfish, we believe it will be impossible to meet expectations for both density and size structure of crappie unless harvest regulations become more restrictive than the current statewide daily bag limit of 25 for all panfish combined.

Therefore, we recommend implementing a reduced daily bag limit of 10 for all panfish combined, including black crappie. If this strategy fails to protect enough adult crappie to achieve Objective 3.2 after a few years of evaluation, we reserve the option to recommend even more restrictive panfish regulations, including a minimum length limit for black crappie. Stocking small (2") crappie fingerlings into existing fish communities has not proven effective. However, if the lake association wishes to do everything possible to improve crappie fishing in the shortest time possible, we would approve a permit application to purchase and stock large black crappie (4-6") from a disease-free source in northern Wisconsin. Complex woody structure in the form of additional log fish attractors (i.e., cribs) is not thought to be a critical habitat need at this time. In fact, inadvertently expediting harvest by concentrating crappies at cribs in known locations could work against strategies to increase crappie density.

**GOAL 4:** A yellow perch population of moderate density with a significant proportion of preferred-size fish.

**Objective 4.1:** It is difficult to accurately assess perch abundance with traditional survey methods, but we believe that a fall electrofishing catch rate of 150 to 200 perch per hour ( $\geq 5$  inches) may indicate a perch population consistent with the above goal. This range is based upon past electrofishing data for Butternut Lake. As more accurate methods are developed for assessing perch abundance, we will update this objective with appropriate parameter values.

**Objective 4.2:** Of all yellow perch 5 inches and longer captured by fall electrofishing or early spring fyke netting, 30-50% should be 8 inches or longer (PSD = 30-50%) and 5-15% should be 10 inches or longer (RSD-10 = 5-15%).

#### **Yellow Perch Status and Management Strategies (Local DNR Recommendations):**

Perch were third only behind walleye and crappie in generating angling interest among local stakeholders (Table A1). Yellow perch have maintained a population with adequate recruitment and growth to 8 inches. However, few perch longer than 9 inches are found in Butternut Lake currently, despite its high productivity and potential to produce larger perch. We believe excessive predation on quality-size perch by overabundant muskellunge is a major contributor to poor perch population structure. Low density of large female perch may indirectly affect the number of young perch produced for consumption by walleye and other predators. Our recommended reduction in muskellunge density and implementation of a reduced daily bag limit of 10 for all panfish (including perch) combined should improve our chances of achieving Objective 4.2. No additional strategies are recommended at this time.

**GOAL 5:** A bluegill population of low density with a significant proportion of preferred-size fish.

**Objective 5.1:** Currently we lack an effective method to assess the relative abundance of bluegills. For the time being, our broader objective is to find a method by which bluegill density can be indexed accurately and efficiently. Then we will choose parameter values consistent with the above goal.

**Objective 5.2:** Of all bluegill 3 inches and longer captured by fyke netting in late spring or mid fall, 10-30% should be 8 inches or longer (RSD-8 = 10-30%).

### **Bluegill Status and Management Strategies (Local DNR Recommendations):**

Bluegill exist in such low numbers that their contribution to the Butternut Lake fishery is viewed as insignificant at this time. We know very little about the bluegill population, but local stakeholders were quite interested in having a bluegill fishery, at least to the extent that Butternut Lake (better suited for a walleye/perch community than a bass/bluegill community) will allow (Tables A1 and A2). We do not believe anything other than a low-density bluegill population is possible in light of the existing and proposed walleye population structure. But it may be possible to achieve desirable bluegill population size structure (Objective 5.2) if we are able to implement a reduced daily bag limit of 10 for all panfish (including bluegill and pumpkinseeds).

**GOAL 6: A diverse native fish community that fluctuates in species composition but generally experiences no net loss of native fish species and provides adequate forage for sport fish populations.**

**Objective 6.1:** No net loss of native fish species as documented in periodic baseline lake monitoring surveys.

**Objective 6.2:** Adequate forage, as reflected by satisfactory growth rates and condition factors of sport fish populations managed under Goals 1-5.

### **General Ecosystem Management Strategies (Local DNR Recommendations):**

A diverse and stable forage base comprised of suitable-size prey is vital to maintain sport fish populations with acceptable growth rate and size structure. In Butternut Lake, the most important non-game forage species are white sucker, black bullhead and yellow bullhead. Common shiner and golden shiner also are valuable as prey for medium-size and small predators.

Data are lacking on abundance or size of bullhead and white sucker prior to 1995. But for many years Butternut Lake was well known for its bullhead fishery and its large sucker runs into the tributary streams. Recent data and anecdotal evidence indicate that the bullhead fishery has all but disappeared. White suckers have maintained a moderate population with adequate recruitment to adulthood, but few suckers longer than 14 inches are found. We believe excessive predation by overabundant muskellunge is a major contributor to the lack of larger suckers in Butternut Lake. Our recommended reduction in muskellunge density and a shift upward in walleye population size structure should relieve some pressure on forage species of various sizes and thereby improve the odds that sport fish growth rates will improve.

Introduction of invasive exotic species should be discouraged by the Butternut-Schnur Lake Association via their newsletter and appropriate signing at resorts and public access areas. Support for good shoreland management would help to prevent high nutrient levels from increasing further to a point where nuisance algae blooms become commonplace. Diligence in maintaining wild shorelines and wide buffer strips between managed lawns and the lake will be rewarded with the quality fishery envisioned in this plan. The less phosphorus and nitrogen that reaches the lake, the more favorable conditions will be for maintenance of a fish community dominated by walleye. Wild shorelines can exist on well-managed private properties as well as public lands. But the more undeveloped land that can be purchased and placed into public ownership, the greater the likelihood that Butternut Lake will remain a special place for our children's children.

### Summary of Local DNR Recommendations and Action Items

- Maintain the daily bag limit of three walleye, but implement a change in regulation to restrict that harvest to only one fish daily over 14 inches long. Consider a 14- to 18-inch slot length limit if the “one-over” regulation fails to achieve desired population size structure and angler exploitation is thought to be the primary cause.
- Stocking walleye anytime in the near future would be counter-productive and should be discouraged.
- Stocking muskellunge anytime in the near future would be counter-productive and should be discouraged.
- Exempt muskellunge from the statewide minimum length limit of 34 inches, and implement a voluntary 40- to 45-inch protected length range for muskellunge. Mechanically remove 500 adult muskellunge under 38 inches long in the near future. Encourage some angler harvest of muskellunge less than 40 inches long, with appropriate precautions about mercury consumption. Encourage participation in volunteer musky angler diary program.
- Encourage the use of quick-strike rigs rather than single-hook rigs while live-bait fishing for muskellunge in order to minimize delayed mortality of fish caught and released within the voluntary protected length range.
- Implement a reduced daily bag limit of 10 for all panfish combined, including black crappie, yellow perch, bluegill and pumpkinseeds. If this strategy fails to protect enough adult panfish to achieve population size structure objectives after a few years of evaluation, we reserve the option to recommend even more restrictive panfish regulations, including minimum length limits. Stocking of large (4-6”) black crappie by the lake association may be permitted if disease-free Wisconsin fish are available.
- Deployment of additional fish cribs is not considered necessary or desirable at this time.
- Resort owners and the Butternut-Schnur Lake Association can play an important role in supporting and encouraging angler compliance with all the new regulations (mandatory and voluntary) that will be needed in order for this plan to succeed. Encourage continued citizen participation in the walleye watch program for Schnur Creek during the walleye spawning period.
- Butternut Lake property owners and the Lake Association should intensify efforts to protect wild shorelines, enhance shoreland buffers, and reduce nutrient input (particularly phosphorus) into Butternut Lake. This would minimize nuisance algae blooms and favor a fish community dominated by walleye and yellow perch.

**Table 1. Fishing Pressure Comparisons**

Butternut Lake, Price Co. (1006 acres)

<b>Season</b>	<b>Total Angling Pressure</b>	<b>Walleye Pressure</b>	Estimated Walleye Harvest	Walleye Average Length	<b>Musky Pressure</b>	Catch Rate Hours per
<b>1973</b>	<b>45.3 hrs/A</b>	<b>29 hrs/A</b> Estimated	<b>3,632</b> (3.6 /A)	<b>12.6"</b>	<b>9 hrs/A</b> Estimated	<b>40??</b>
<b>1990</b>	<b>30 hrs/A</b>	<b>14.4 hrs/A</b>	<b>779</b> (0.8 /A)	<b>14.4"</b>	<b>10.6 hrs/A</b>	<b>19.3 hrs</b>
<b>1996</b>	<b>36.3 hrs/A</b>	<b>16.1 hrs/A</b>	<b>1,307</b> (1.3 /A)	<b>13.6"</b>	<b>16.6 hrs/A</b>	<b>26.9 hrs</b>
<b>1998</b>	<b>29.4 hrs/A</b>	<b>11.9 hrs/A</b>	<b>1,180</b> (1.2 /A)	<b>12.7"</b>	<b>14.9 hrs/A</b>	<b>17.6 hrs</b>
<b>2003</b>	<b>37.7 hrs/A</b>	<b>18.9 hrs/A</b> 12.4 hrs Open-water 6.5 hrs Ice	<b>2,125</b> (2.1 /A)	<b>12.0"</b>	<b>15.5 hrs/A</b>	<b>27.8 hrs</b>

**Table 2. Walleye & Musky Population Estimates**

Butternut Lake, Price Co. (1006 acres)

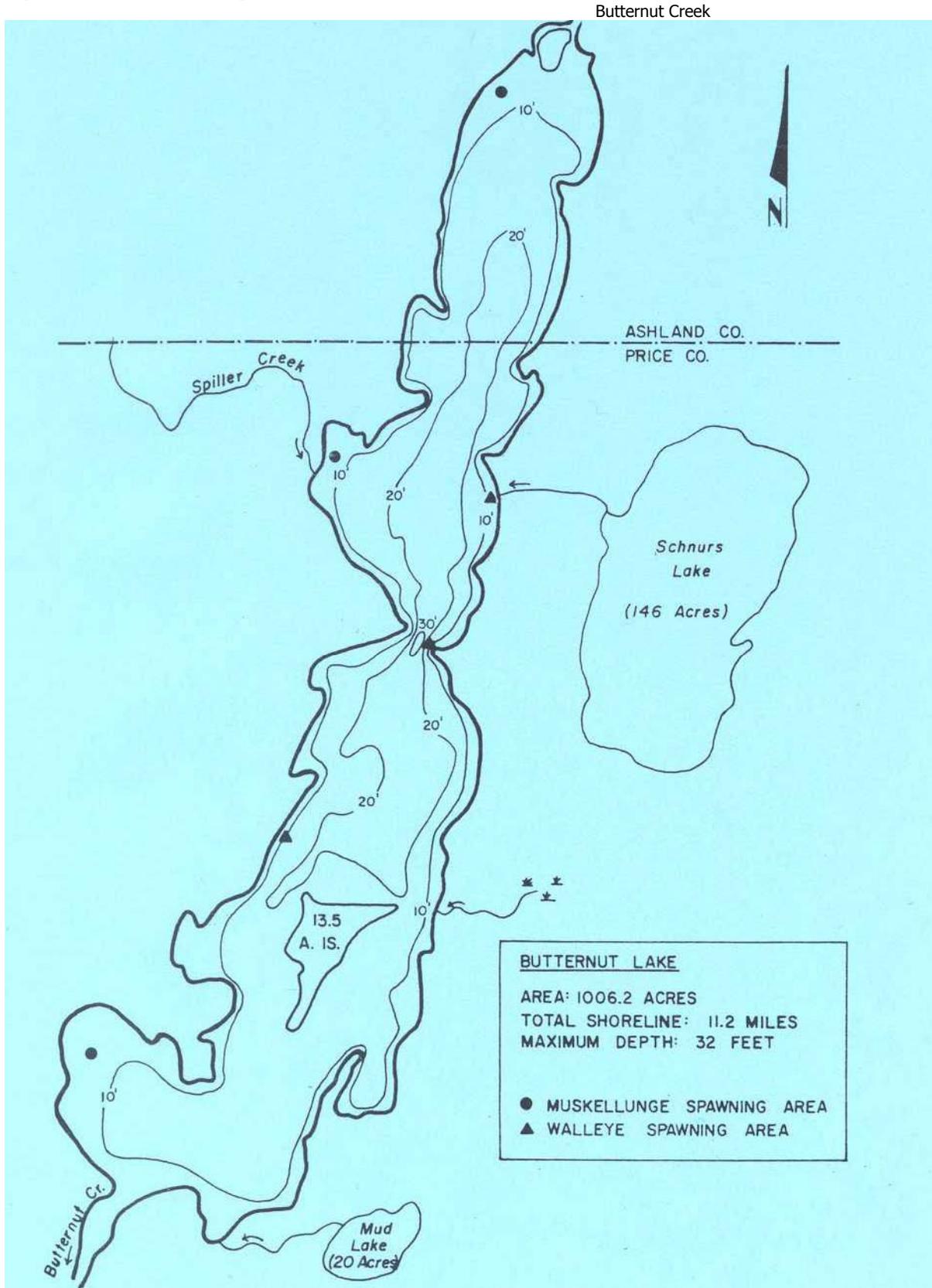
<b>Year</b>	Adult Walleye Estimate	Density (No./Acre)	Total Walleye Estimate	Density (No./Acre)	Adult Musky Estimate
<b>1973</b>	<b>10,441</b> (9" plus)	<b>10.4 /A</b>	Not Completed		<b>185</b> <b>0.18 /A</b>
<b>1987</b>	<b>14,846</b> (9.5" plus)	<b>14.8 /A</b>	Not Completed		Not Completed
<b>1990</b>	<b>1,999</b>	<b>2 /A</b>	<b>5,930</b>	<b>5.9 /A</b>	Not Completed
<b>1996</b>	<b>4,165</b>	<b>4.1 /A</b>	<b>29,397</b>	<b>29.2 /A</b>	Not Completed
<b>1998</b>	<b>3,577</b>	<b>3.6 /A</b>	<b>32,581</b>	<b>32.4 /A</b>	<b>667</b> <b>0.66 /A</b>
<b>2003</b>	<b>4,075</b>	<b>4.1 /A</b>	<b>31,129</b>	<b>30.9 /A</b>	<b>1,028</b> <b>1.02 /A</b>

Table 3. General Population Trends for the Major Fish Species - 1984 to 2004\*.  
Butternut Lake, Price Co.

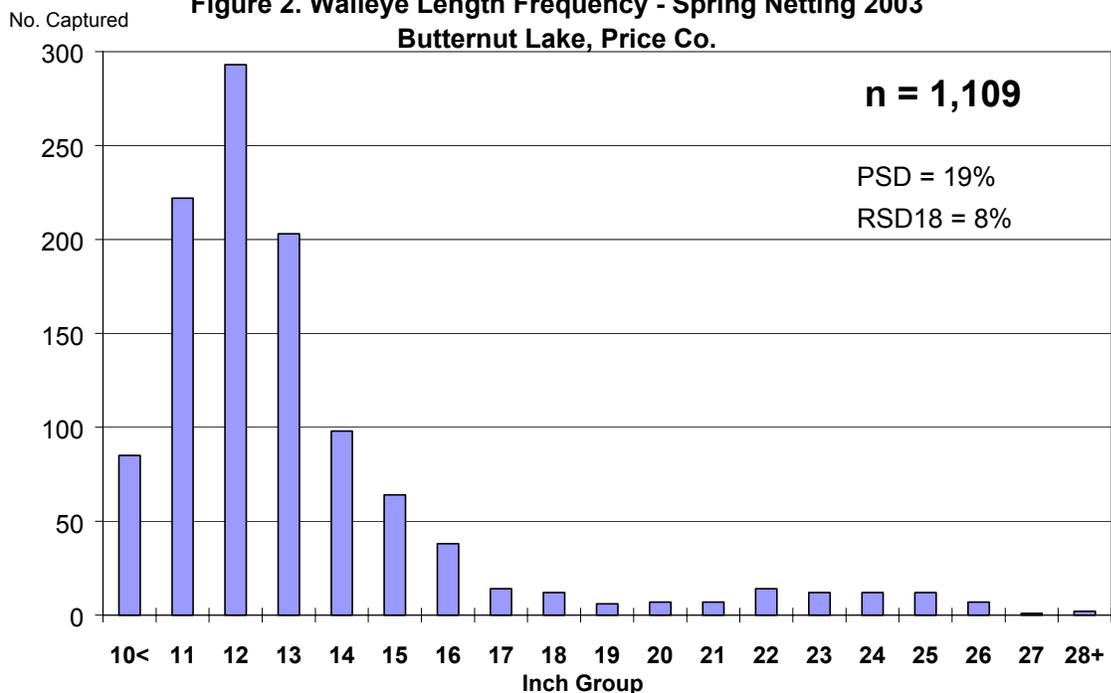
<b>Fish Species</b>	<b>Abundance Trend</b>	<b>Size Trend</b>	<b>Comments</b>
<b>Walleye - Adult Population</b>	<b>Down 2x</b>	<b>Down</b>	<b>Most walleye 8" to 12", few &gt; 15"</b>
<b>Walleye - Total Population</b>	<b>Up 2x</b>	<b>Down</b>	<b>No shortage of small walleye, low recruitment past 14 inches</b>
<b>Musky</b>	<b>Up 2-3x</b>	<b>Down</b>	<b>Most 28" to 38", fewer &gt;42", poorer condition.</b>
<b>Northern Pike</b>	<b>Down 3x</b>	<b>Same</b>	<b>Pike numbers are down.</b>
<b>Smallmouth Bass</b>	<b>Low (Up abit)</b>	<b>Unknown</b>	<b>Not good SMB habitat in lake (rock, wood, sharp drop-offs).</b>
<b>Largemouth Bass</b>	<b>Low</b>	<b>Unk.</b>	<b>Always been low population - not good lmb habitat.</b>
<b>Crappie</b>	<b>Down</b>	<b>Same</b>	<b>Been low since mid-1990's</b>
<b>Yellow Perch</b>	<b>Same-Up?</b>	<b>Same?</b>	<b>Few &gt; 10 inches, good forage for walleye and musky</b>
<b>Rock Bass</b>	<b>Same-Up?</b>	<b>Same</b>	<b>Cribs seem to benefit rock bass</b>
<b>Bluegill</b>	<b>Low</b>	<b>Unk.</b>	<b>Will always be low with high walleye population</b>
<b>Bullhead</b>	<b>Down</b>	<b>Unk.</b>	<b>Numbers way down, good forage for walleye and musky.</b>
<b>White Sucker</b>	<b>Down</b>	<b>Down</b>	<b>Decent numbers but few &gt; 12", best food for musky.</b>

\* From S. Sommerfeldt (April 2004) and based on data analysis, observations during surveys since 1987, angler accounts, and personal angling records compiled from 1984 to 2004.

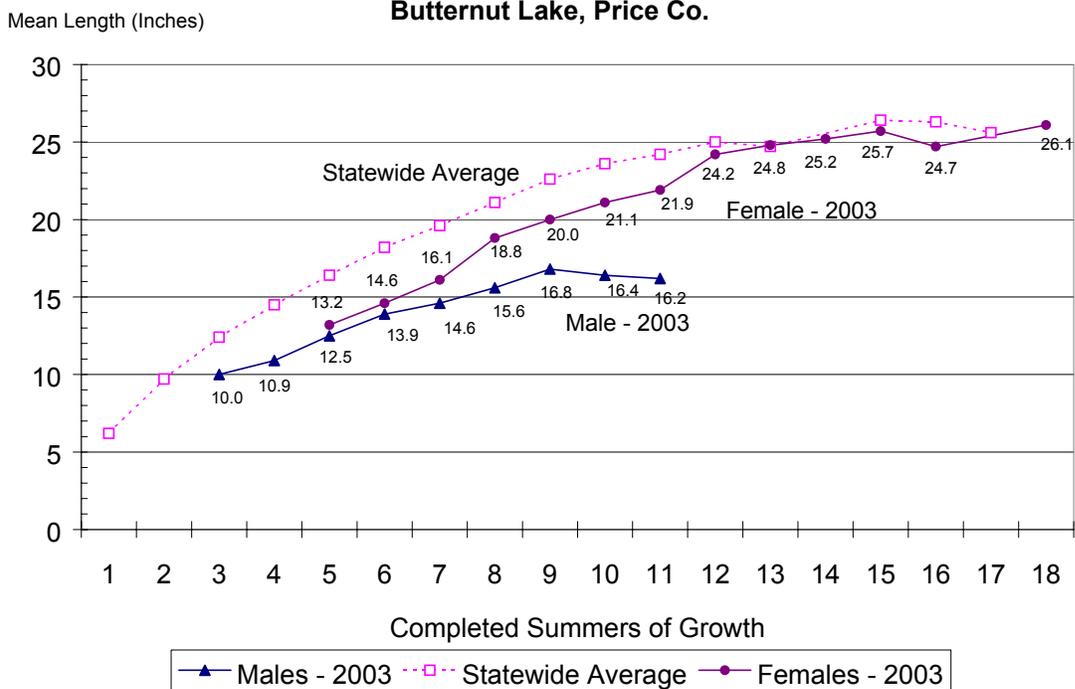
Figure 1. Butternut Lake Map



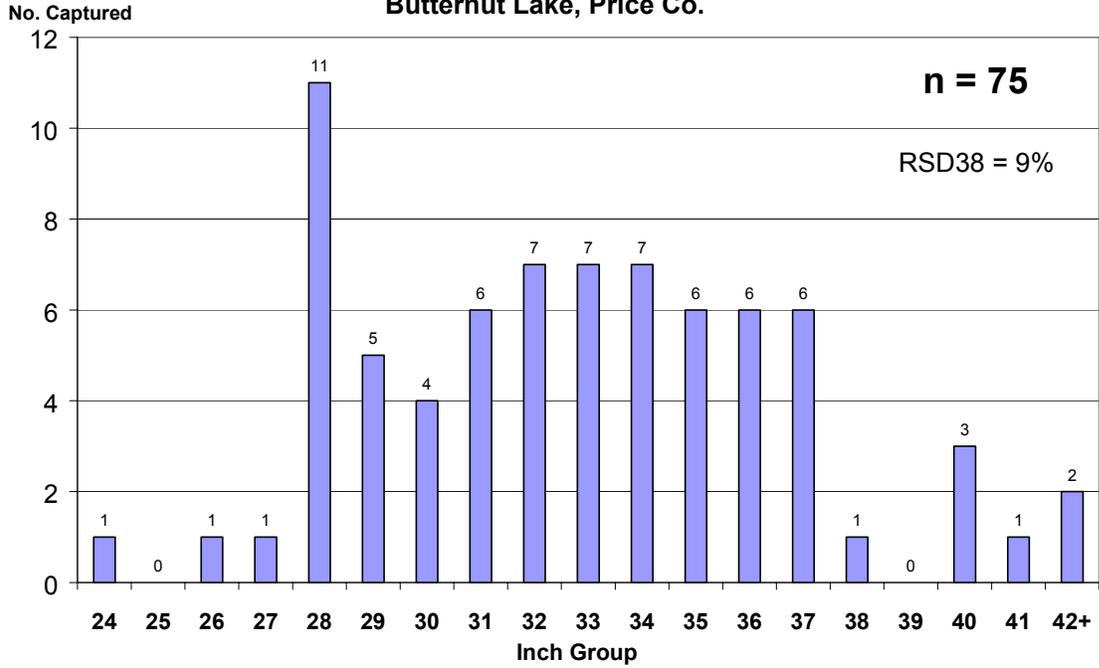
**Figure 2. Walleye Length Frequency - Spring Netting 2003  
Butternut Lake, Price Co.**



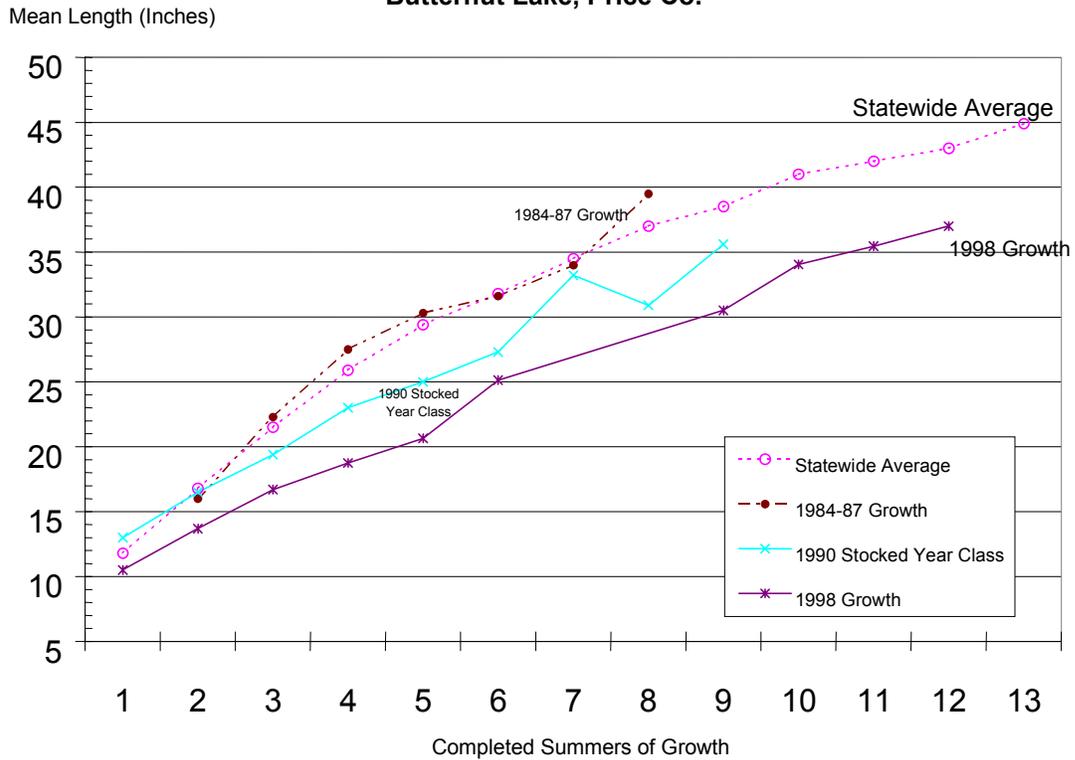
**Figure 3. Walleye Growth Rates - Spring 2003  
Butternut Lake, Price Co.**



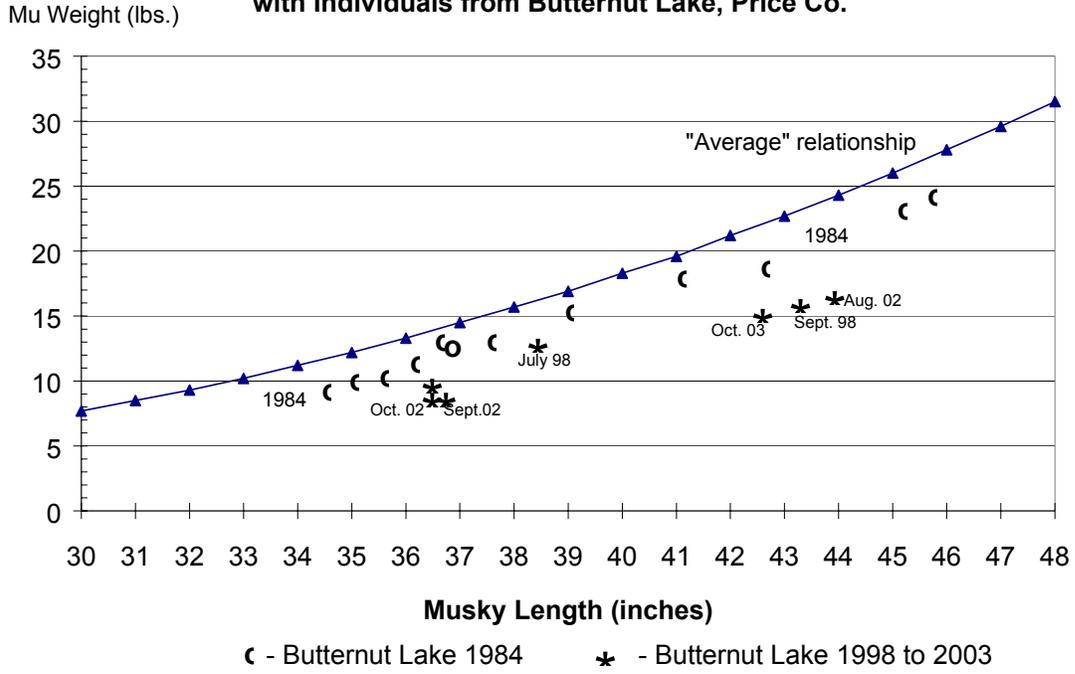
**Figure 4. Adult Musky Length Frequency - Spring Netting 2003  
Butternut Lake, Price Co.**



**Figure 5. Muskellunge Growth Rates - 1998  
Butternut Lake, Price Co.**



**Figure 6. Musky Condition Chart - Length vs. Weight  
with Individuals from Butternut Lake, Price Co.**



# APPENDIX

## Results of Visioning Session for Stakeholders in the Fishery of Butternut Lake in Price County, Wisconsin

**Date:** April 21, 2004

**Time:** 1:00 p.m. to 4:00 p.m.

**Place:** Flambeau Lanes in Park Falls, Wisconsin

**Facilitator:** Dave Neuswanger, Fisheries Supervisor, Upper Chippewa Basin, WDNR

**Technical Advisor:** Skip Sommerfeldt, Senior Fisheries Biologist, Park Falls, WDNR

**Profile of 24 Participants:**

Lakeside Landowners – 16

Park Falls Area Anglers – 5

Fishing Guides – 0

Campground Managers – 2

Other Business Owners – 1

**Table A1. Levels of sport fishing interest among visioning session participants in Butternut Lake fish species nominated for consideration.**

Fish Species Nominated	Level of Participant Fishing Interest			
	High	Medium	Low	None
Walleye	19	2	1	0
Black Crappie	14	5	4	0
Yellow Perch	12	5	4	0
Bluegill and "Seeds"	8	12	1	0
Muskellunge	7	7	5	2
Northern Pike	2	11	8	1
Bullhead	2	2	6	9
Bass	0	2	6	11
Rock Bass	0	0	7	11

**Table A2. Preferences for numbers versus size and catch versus harvest among visioning session participants for fish species perceived to be most important at Butternut Lake.**

Important Fish Species	Preference for Numbers versus Size			Preference for Catch-and-Release versus Harvest		
	Emphasis on Number over Size	Prefer Balance	Emphasis on Size over Number	Emphasis on Catch and Release	Prefer Balance	Emphasis on Maximum Sustainable Harvest
Walleye	4	18	0	0	14	8
Black Crappie	1	13	6	0	12	8
Yellow Perch	0	15	5	0	11	7
Bluegill	0	10	1	0	5	6
Muskellunge	0	10	1	3	4	2
Northern Pike	0	8	3	2	4	3

