



# **Opinions of anglers who fished muskellunge in Wisconsin, 1989. Report 163 [1994]**

Margenau, Terry L., et al.

Madison, Wisconsin: Wisconsin Dept. of Natural Resources, [1994]

<https://digital.library.wisc.edu/1711.dl/UYQCMYMLMXC5587>

<http://rightsstatements.org/vocab/InC/1.0/>

For information on re-use see:

<http://digital.library.wisc.edu/1711.dl/Copyright>

The libraries provide public access to a wide range of material, including online exhibits, digitized collections, archival finding aids, our catalog, online articles, and a growing range of materials in many media.

When possible, we provide rights information in catalog records, finding aids, and other metadata that accompanies collections or items. However, it is always the user's obligation to evaluate copyright and rights issues in light of their own use.

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

# RESEARCH REPORT 163

May 1994

## Opinions of Anglers Who Fished Muskeellunge in Wisconsin, 1989

by Terry L. Margenau, Larry R. Meiller,  
Edward B. Nelson, Richard C.  
Stedman and Donald E. Johnson\*

\*Affiliations on page 27.

### Abstract

A mail questionnaire was designed to gather information on muskeellunge fishing and regulation options in Wisconsin. Approximately 1,100 anglers who fish muskeellunge in Wisconsin participated. Anglers defined a trophy muskeellunge as at least 40 inches in length, and preferably greater than 45 inches. Anglers supported various regulatory options to varying degrees, with the greatest support shown for the current later season opening and high minimum size limits. Concern over Indian spear-fishing activities was identified by anglers as the biggest problem in muskeellunge fishing. Most anglers in this survey practiced catch-and-release fishing unless the fish was a trophy or badly injured.

---

## **Contents**

**Introduction, 3**

**Methods, 4**

    The Sample, 4

    Questionnaire Design and Sampling, 4

**Results and Discussion, 4**

    The Muskellunge Angler in Wisconsin, 4

        Demographics, 4

        Type and Amount of Fishing, 5

        Muskellunge Fishing, 5

        Catch-and-Release Fishing for Muskellunge, 6

        How Big is a "Trophy" Muskellunge?, 7

        Changes and Problems in Muskellunge Fishing, 8

        Muskellunge Waters Fished and Why, 9

        Opinions on Muskellunge Management, 9

            Muskellunge Season Opening Date, 10

            Season Bag Limit, 10

            Muskellunge Registration, 11

            Motor Trolling, 11

            Increased Minimum Size Limit, 11

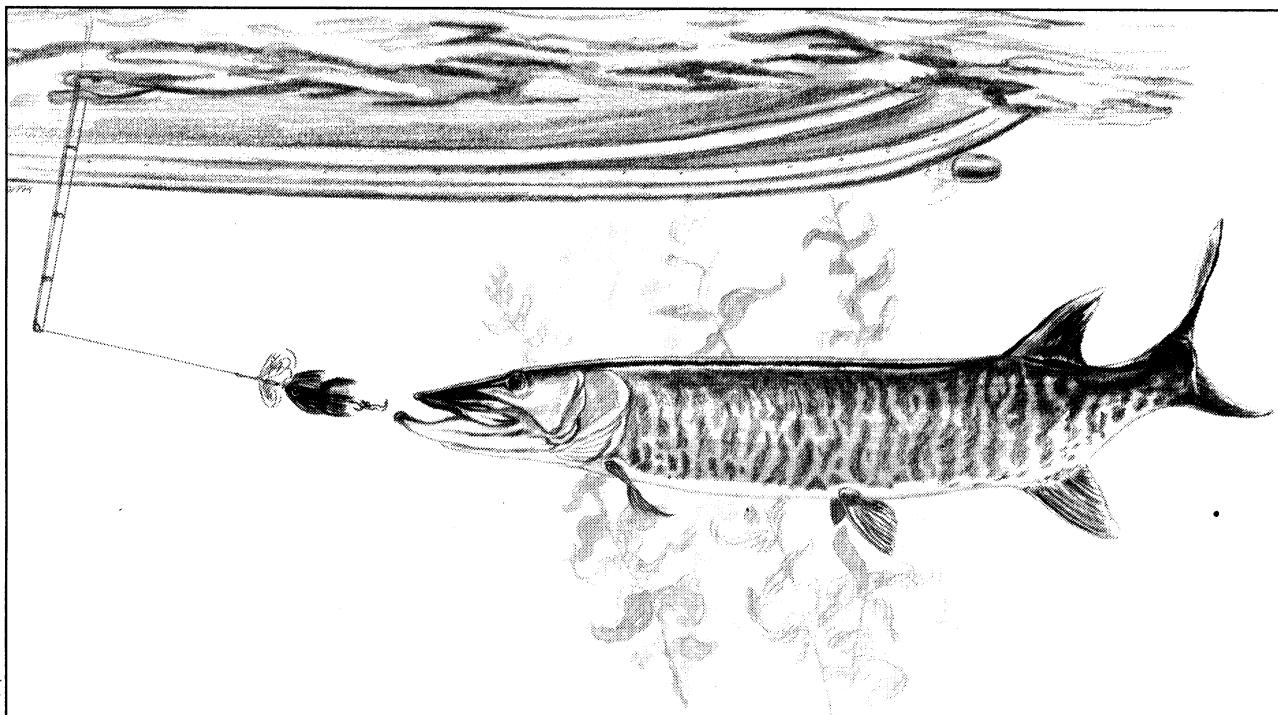
            Muskellunge Stamp, 12

**Summary, 14**

**Management Implications, 15**

**Appendix A: The Survey Questionnaire, 16**

**Literature Cited, 26**



## Introduction

The muskellunge (*Esox masquinongy*) is a prized and highly coveted game fish for many anglers. Its large size, explosive fighting ability, and unpredictable behavior have created a mystique that has led anglers to relentlessly pursue this fish. Many anglers have endured weeks, months, and even years of fishing without landing a muskellunge. Because of this, success of a muskellunge fishing trip is often measured by intangibles such as seeing a fish, or "follows." Nevertheless, muskellunge occur at low densities, and overharvest of populations has been cause for concern, even with low exploitation rates (Hanson 1986).

Despite the increased popularity of catch-and-release fishing among muskellunge anglers, a percentage of the muskellunge catch is still harvested. Estimated annual catch and harvest of muskellunge in the ceded territory<sup>1</sup> of northern Wisconsin from 1980-89 averaged 58,000 and 9,454 fish, respectively (U.S. Department of the Interior 1991). Median size of harvested muskellunge was 33 inches and 75% of the harvest was of fish less than 40 inches. Hanson (1986) found an inverse relationship between exploitation rate

and quality of the size structure in 8 northern Wisconsin lakes. He suggested exploitation rates of 25% may be too high to maintain population quality.

Management strategies to protect fisheries from exploitation often include season, bag, and size limits. Regulation criteria have been established to manage the muskellunge as a trophy fish in Wisconsin. However, in the face of changing social and environmental trends that may cause the muskellunge resource increasing stress, new or modified regulations need to be considered. The objective of this study was to determine how anglers who fish muskellunge in Wisconsin felt about regulatory options for management of muskellunge.

Inevitably the success of a fisheries management program depends on cooperation from anglers (Peyton 1987). The Wisconsin Department of Natural Resources (DNR) considers citizen perceptions of any regulation changes, thus allowing citizens to participate in the management of a resource. This approach has been used for all types of resources, including fisheries. Research personnel embarked on an integrated citizen participation effort that combined public opinion

<sup>1</sup>The northern portion of Wisconsin (22,400 square miles) was ceded by Chippewa tribes to the United States in treaties of 1837 and 1842. In this area muskellunge are found in 603 lakes that cover 277,432 acres (U.S. Department of the Interior 1991).

research with informal meetings with muskellunge anglers. A mail questionnaire was written in 1989 to determine the acceptability of specific management proposals intended to protect the muskellunge. We intended to gauge concern and support, and to identify policies that protect the resource and enjoy the most support among those who fish muskellunge. Previous to this study, angler opinions on similar policies regarding muskellunge were rarely quantified or unpublished. Hence, results from this study serve to form a foundation of quantified angler opinions on muskellunge management for the future.

## Methods

### The Sample

This study targeted anglers most likely affected by any changes in the regulation of muskellunge fishing. We therefore used purposeful sampling of information-rich cases (Patton 1990): anglers who fish muskellunge in Wisconsin. The sample was partitioned into local and nonlocal muskellunge anglers, muskellunge club and nonclub members, and a random sample from fishing license sales from 4 northern counties in the state's muskellunge range. We defined local anglers as those who lived near the state's primary muskellunge waters. To separate local from nonlocal anglers, we used an arbitrary line passing from Eau Claire to between Wausau and Rhinelander. Anglers who lived in Wisconsin on the north side of that line were considered local; those who lived in Wisconsin on the south side of the line or lived in another state were considered nonlocal. The list of anglers to contact was assembled from the following sources:

1. License sales records ( $n = 300$ ): This group of anglers was randomly selected from fishing license sales (resident fishing, resident husband-and-wife fishing, and sports) in Washburn, Price, Vilas, and Oneida Counties. Participants in this group could have been local anglers or nonlocal anglers who purchased their licenses in these counties.
2. Muskellunge club anglers ( $n = 500$ ): Muskellunge clubs from across the state provided membership lists from which 250 local club members and 250 nonlocal club members were randomly selected.
3. Nonclub muskellunge anglers ( $n = 539$ ): Fisheries personnel from northern Wisconsin provided the names of local muskellunge anglers ( $n = 225$ ) who were not known to belong to a

muskellunge club. This list was supplemented from resort registration lists (nonlocal,  $n = 314$ ) on muskellunge lakes in the study area. For this sample, resort owners identified clients who came to their resort to fish muskellunge.

### Questionnaire Design and Sampling

Each participant in this study received a 19-page questionnaire divided into 8 sections (Appendix A). The questionnaire was intended to summarize angler attitudes and practices following the 1989 open-water fishing season. Questions dealt with anglers' fishing activities, their concerns about muskellunge fishing, reactions to potential regulation changes, and their personal background (age, education, income). The questionnaire also provided space for anglers to add comments or concerns regarding muskellunge management.

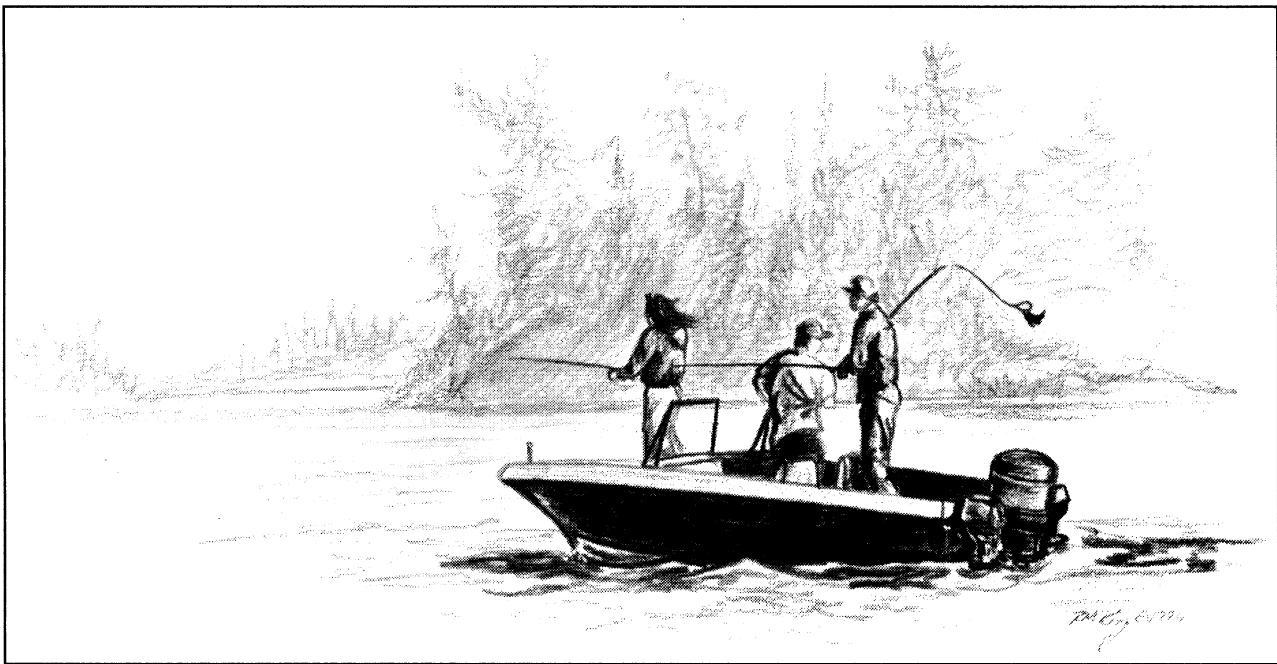
Distribution of questionnaires was done according to the Dillman total design method (Dillman 1978). A maximum of 4 contacts was made with respondents: an advance letter announcing the study, a questionnaire with cover letter, a postcard reminder, and a follow-up questionnaire and reminder letter to nonrespondents. Questionnaires were mailed during April 1990. Of the 1,339 questionnaires mailed, 64 were returned as undeliverable and 1,084 completed questionnaires were received. The final response rate, excluding undeliverable questionnaires, was 85%; highest response rate (91%) was from the local club members while lowest (70%) was from the license sales sample.

Returned completed questionnaires were coded and entered into a computer database for analysis. Data was summarized as a whole or by angler group and reported as frequencies, percents, medians, or means, using SAS (SAS Institute 1987). Chi-square analysis was used to compare observed differences between responses.

## Results and Discussion

### The Muskellunge Angler in Wisconsin Demographics

The average age of respondents in this survey was nearly 44 years but ranged from 8 to 83 years. The greatest number (44%) of respondents were between the ages of 31 and 45. Eighty-nine percent of the people surveyed were male. Ninety-five percent of respondents had completed high school and 67% had at least some post high school education. Twenty-seven percent had completed at least one college degree. Seventy-nine percent of all respondents were married.



Most (72%) of the people responding were employed full-time and 35% had a family income of \$30,000 to \$50,000. Twenty-two percent indicated family incomes from \$50,000 to \$75,000.

Sixty-five percent of respondents lived in rural areas or small towns of less than 10,000 people. In addition, 30% owned vacation property or second homes.

#### Type and Amount of Fishing

Most (88%) respondents fished for muskellunge but virtually all respondents fished for other species as well. Walleye, panfish, northern pike and bass were heavily pursued. One third of the sample fished the Great Lakes for trout and salmon.

Respondents were asked to identify their favorite and second-favorite fish to pursue; 53% listed muskellunge first, while 19% listed them second. The next most popular fish was the walleye. Twenty-four percent of the sample listed walleye first, and another 29% listed it as the second-most popular fish. Nine percent of respondents mentioned panfish first and 18% listed them second.

The respondents in this survey were active anglers. The median response for number of days fished in Wisconsin was 35. The range was large, from 1 day to more than 100 days (13% of the respondents indicated they fished more than 100 days).

The average time spent fishing out of Wisconsin was 7 days. However the most frequent response was zero days. Fifty-two percent of the anglers did

not fish outside Wisconsin during 1989.

Note that the definition of "days fished" was not explicit. We tend to think of a day as about 8 hours. However, anglers could count a "day" as comprising either a longer or a shorter time period. As such, someone who fished 1 or 2 hours after work could list that time as a "day of fishing." Perhaps a more accurate way to view these data is to think of "days fished" as the number of times a respondent went fishing, whether it was for 1 or 10 hours.

#### Muskellunge Fishing

The average respondent had fished muskellunge for 17 years, with a range of zero to 65 years. A considerable percentage of local anglers surveyed had fished muskellunge for more than 30 years. For example, 20% of local nonclub members and 16% of local club members had fished muskellunge for more than 30 years, while 7% of the license sales group and 9% of respondents in the nonlocal groups (club and nonclub) had fished them more than 30 years.

Survey respondents caught muskellunge. Twenty-seven percent of the entire sample reported catching more than 50 legal muskellunge in their lifetimes; 15% reported catching 26-50, 19% reported 11-25; 10% reported catching 6-10 legal muskellunge, and 19% reported catching 1-5. Only 10% of the entire sample reported catching no legal muskellunge in their lifetimes. Some anglers reported catching more than 100 legal muskellunge.

Local muskellunge anglers were more likely to have caught large numbers of legal fish. Fifty-two percent of local nonclub members and 38% of local club members reported catching more than 50 legal fish. Nonlocal club and nonclub anglers reporting more than 50 legal fish were 21% and 12%, respectively. About 7% of the license sales group reported catching more than 50 muskellunge.

Respondents fished muskellunge an average of 29 days in 1989; the median response was 19 days. Time spent muskellunge fishing varied considerably between the license sales group and the other groups. Fifty-four percent of the license sales group reported fishing for muskellunge at least once in the past 3 years, while the percentage who reported fishing for muskellunge in the other groups ranged from 91-99%.

Most (78%) of the anglers in this study caught at least one muskellunge (any size) in 1989. The average number of legal-sized fish was 6; however the median response was 2. The average number is somewhat misleading for the typical angler because a few anglers reported catching a lot of legal fish. Less than 4% of the anglers ( $n = 38$ ) reported catching 1,665 legal muskellunge, an average of nearly 44 legal fish per angler. The minimum size limit for muskellunge in most Wisconsin waters during 1989 was 32 inches.

The average number of sublegal-size muskellunge caught during 1989 was 10, but as above, high catches by a few anglers inflated the average. The median number of sublegal fish caught in 1989 was 4.

Some of the respondents indicated a high commitment to muskellunge fishing. They were asked to consider all outdoor activities, and then indicate how many substitutes they had for muskellunge fishing. Thirteen percent of the entire sample reported having no substitutes for muskellunge fishing; 22% reported having only a few, 32% had some, and 34% had many substitutes.

Magazines and fishing clubs were the most popular sources of information for muskellunge anglers. Because magazines come as part of a club membership, the majority of club members listed them as an important source. Fifty-four percent of club members indicated they often read magazines devoted to muskellunge fishing, compared with 15% of nonclub members. Club members were also twice as likely to rent videos on muskellunge fishing as compared with nonclub members.

### Catch-and-Release Fishing for Muskellunge

Angler attitudes have recently shifted from fishing for food to fishing for sport. A logical result of this shift is catch-and-release fishing. Anglers completing the questionnaire were asked about their catch-and-release practices for muskellunge.

Most (78%) anglers indicated they are more likely to release than to keep a muskellunge. Release practices were generally similar among groups with the exception of the license sales group; only 44% of this group indicated they are more likely to release a legal muskellunge ( $P = 0.01$ ,  $\chi^2 = 109.3$ ,  $df = 12$ ; Table 1). Only 7% of anglers indicated they generally keep the muskellunge they catch. Most anglers (98%) felt that a high percentage of their released fish survived. In fact, anglers decisions to keep or release a legal muskellunge were based on its potential to survive or its trophy status. High compliance with catch-and-release practices and subsequent survival of released muskellunge has likely resulted from extensive efforts from angling groups and government agencies to educate anglers about proper release procedures and potential benefits to the fishery (Dent 1986, Gasbarino 1986, Richards and Ramsell 1986).

Angler opinions on length of muskellunge kept varied among the angler groups surveyed. With the exception of the license sales group, most anglers indicated a muskellunge would have to be more than 45 inches before they would keep



PHOTO: TERRY L. MARGENAU

*A muskellunge angler prepares to release a muskellunge. Catch and release was commonly practiced among muskellunge anglers surveyed; most felt their released fish survived.*

it ( $P = 0.01$ ,  $\chi^2 = 171.4$ , df = 20). Responses from the license sales group were distributed relatively equally from 32 through 50 inches (Table 2). Local club members had the highest size standards; 65% of the anglers in this group would only keep muskellunge 50 inches or larger (Table 2).

To land legal fish they planned to release, most anglers left the fish in the water to remove hooks (35%), or netted and brought the fish into the boat (33%). Other techniques included netting the fish but leaving it in the water (21%), shaking the fish off the hook without handling it (6%), and gaffing (1%). Five percent of anglers responding indicated the question did not apply to them as they rarely release legal muskellunge.

### How Big is a "Trophy" Muskellunge?

Almost all (98%) anglers felt a trophy muskellunge was at least 40 inches long. The most common lengths reported were 50 inches (36%) and 45 inches (20%) (Figure 1).

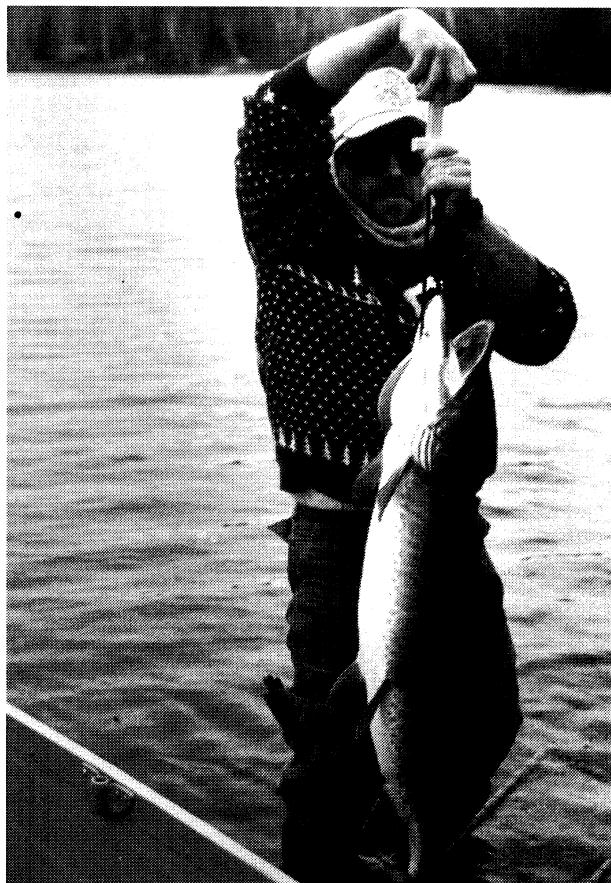


PHOTO: TERRY L. MARGENAU

*A muskellunge angler checks the weight of a 48-inch trophy. Most muskellunge anglers surveyed felt a trophy muskellunge was at least 40 inches in length. Fifty inches was the most common response.*

**Table 1.** *Muskellunge release tendencies.*

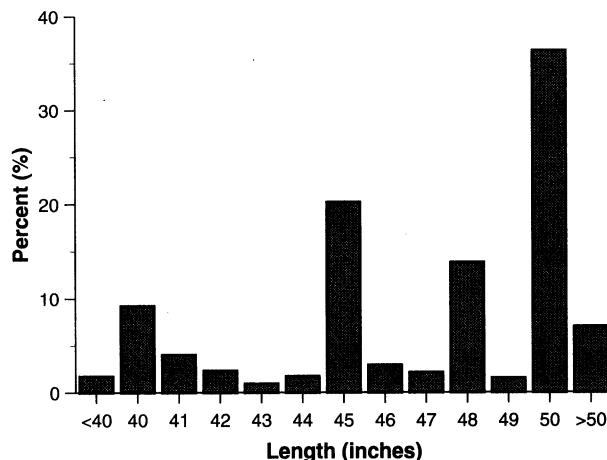
Group	Percent (%) of Anglers			
	Kept More Often	Kept/Released Same	Released More Often	Does Not Apply <sup>a</sup>
License sales	22	9	44	25
Local (nonclub)	13	2	81	4
Local (club)	2	3	86	8
Nonlocal (club)	3	2	84	11
Nonlocal (nonclub)	6	7	74	13

<sup>a</sup>Never caught a legal size muskellunge.

**Table 2.** *Angler opinion on length of muskellunge kept.*

Group	Percent (%) Respondents That Would Keep Muskellunge in Length (inches) Category					
	32	33-39	40-44	45-49	50	>50
License sales	19	16	26	20	14	5
Local (nonclub)	2	13	11	25	31	18
Local (club)	1	3	7	24	43	22
Nonlocal (club)	1	5	12	34	33	15
Nonlocal (nonclub)	3	11	19	35	23	9

Anglers were also asked the size of their largest muskellunge ever caught. The average size of the largest fish caught was 41.6 inches. Local muskellunge anglers reported catching larger fish than nonlocal anglers or anglers from the license sales group. Sixty-three percent of local nonclub anglers reported their largest muskellunge was greater than 45 inches, while 50% of local club members had caught a muskellunge larger than 45 inches ( $P = 0.01$ ,  $\chi^2 = 182.9$ , df = 20; Table 3).



**Figure 1.** Length of muskellunge considered a trophy by surveyed anglers.

### Changes and Problems in Muskellunge Fishing

Anglers were asked what changes, if any, they had observed in fishing for muskellunge on their favorite body of water during the last 5 years. Respondents saw increases in angling pressure and the percentage of legal fish released by other anglers. Anglers also thought the amount of good muskellunge habitat and the average size of muskellunge remained the same (Table 4). Opinions were mixed regarding changes in the number of legal muskellunge during the past 5 years. Nineteen percent of the anglers polled felt legal muskellunge numbers increased, 38% reported numbers the same, and 32% thought numbers decreased.

Any recreational activity has problems that can limit an individual's enjoyment; muskellunge fishing is no exception. Anglers were given a list of potential problems with their sport and asked to indicate the extent to which they believed each limited individual enjoyment. Of 15 potential problems, the issue of Indian treaty rights was considered the biggest. Other problems included conflicts with speedboats and water skiers, high levels of fishing pressure, interspecific competition from the closely related northern pike, and low levels of natural reproduction (Table 5). Certain problems identified by muskellunge anglers were similar (e.g., speedboats, crowding) to problems

**Table 3.** Length of largest muskellunge caught by survey respondents.

Group	Percent (%) of Anglers Reporting Largest Muskellunge in Each Length (inches) Category					
	<32	32-35	36-39	40-45	46-50	>50
License sales	20	14	21	31	10	3
Local (nonclub)	1	5	6	24	40	23
Local (club)	6	6	12	27	36	14
Nonlocal (club)	8	9	26	28	24	5
Nonlocal (nonclub)	11	8	27	39	11	3

**Table 4.** Changes anglers noticed at their favorite water in the last 5 years.

Change	Percent (%) of Anglers Indicating Change			
	Increased	Same	Decreased	Not Sure
Number of legal muskellunge	19	38	32	11
Number of undersized muskellunge	29	39	20	12
Average size of muskellunge	19	44	27	10
Fishing pressure from other anglers	60	30	4	6
Amount of good muskellunge habitat	5	70	20	5
Percent of legal fish released by others	51	16	7	26
Number of northern pike in the lake	31	33	16	20

identified by all recreational boat users in Wisconsin (Penaloza 1992). Areas not considered much of a problem included liberal bag limits, fishing tournaments, illegally keeping undersized fish, and liberal size limits.

#### **Muskellunge Waters Fished and Why**

More than half of the people in the sample reported fishing for muskellunge on 1 to 4 bodies of water over the last 2 years. Club members were twice as likely to have fished more than 4 bodies of water as were nonclub members.

Anglers selected a lake based on its natural beauty, or its potential for big fish. However, anglers had a variety of reasons for fishing a particular body of water. Its reputation as a good

fishery for other species, reputation for producing many muskellunge, fish caught on past trips, and tradition all played important roles (Table 6).

#### **Opinions on Muskellunge Management**

Survey participants were asked to assess current or proposed rule changes for muskellunge in Wisconsin. Each option represented a means by which the resource could be or is currently being regulated. We considered possible regulations that could protect the muskellunge resource on a broad geographical basis (e.g., season or bag limit), and/or could offer additional protection to specific populations (e.g., registration or size limits). The concept of a muskellunge stamp to generate additional revenue for management was also examined.

**Table 5. Problems in muskellunge fishing.**

Problem	Percent (%) of Anglers Indicating Extent of Problem			
	Big	Somewhat	Not Much	Not Sure
Indian treaty rights	61	19	16	5
Conflicts with speed boats and water skiers	29	35	35	1
Too much fishing pressure	28	42	26	5
Competition with northern pike	24	32	35	10
Poor natural reproduction	22	31	29	18
Size limits too liberal	21	24	51	3
Not enough muskellunge stocking	19	37	31	13
Decline in water quality	19	32	37	12
Loss of weed beds and cover	19	30	47	4
Accidental injuries to muskellunge to be released	15	51	23	12
Improved fishing technology	14	33	45	8
Problems recognizing muskellunge	11	37	48	4
Fishing tournaments	11	22	62	5
Bag limits too liberal	10	14	71	3
Illegally keeping undersized muskellunge	8	23	55	14

**Table 6. Reasons for anglers fishing for muskellunge in a particular lake.**

Reason	Percent (%) Anglers Who Said Reason Was Important
Natural beauty of the lake	61
Reputation or potential of the lake for big muskellunge	51
Good fishing for other species as well as muskellunge	49
Reputation or potential of the lake for producing many muskellunge	42
Many legal fish personally caught there in the past	41
Big fish personally caught there in the past	40
Traditional spot for me and my fishing partners to go to	39
Permanent residence is nearby	27
Uncrowded by other anglers or recreationists	25
Friends live nearby	19
Own recreational property on the lake or nearby	19
Good facilities, such as landings, resorts, or taverns nearby	19
Other	22

## Muskellunge Season Opening Date

One way to regulate the muskellunge fishery is to shorten the season length. In 1983 the opening date for the beginning of muskellunge fishing season was delayed several weeks to the Saturday nearest Memorial Day. This later season opening affected all muskellunge waters north of U.S. Highway 10. The delay was intended to protect muskellunge during and shortly after the spawning period, which can extend into mid- to late May. Opponents felt the later season would hurt tourism, because unlike size or bag limits, which still allow angling, no muskellunge fishing can occur during the closed period.

When asked how they felt about the later opening, 68% of the respondents favored it while 18% opposed it. Another 14% had no opinion. Some differences of opinion occurred among the various groups. The percentage favoring the later opening was higher in nonlocal groups (club and nonclub), while local groups still favored the opener but to a lesser extent ( $P = 0.01$ ,  $\chi^2 = 30.2$ , df = 8; Table 7).

## Season Bag Limit

A season bag limit would regulate muskellunge harvest. Under this proposal each angler could keep a limited number of muskellunge each season. Anglers were presented 1 of 4 season bag limit options (1, 3, 5, or 7) and asked if they would support or oppose a season bag limit allowing that number of fish.

Support was mixed; opinions varied among the different bag options and among groups. Overall, 49% supported a bag limit while 39% opposed it and 12% had no opinion. The one-muskellunge limit was least popular among all groups. Anglers wrote that with a one-fish bag limit, a badly injured muskellunge caught early in the season would fill the bag and end the year's muskellunge fishing. Those who liked the one-fish bag made comparisons with big game regulations. As one angler noted:

*"I think you should only be able to keep one fish per year. Issue tags, the same as in deer hunting."*

One might have expected that support for a bag limit would be lower among those people who caught more fish. People who caught no muskellunge, or 1 or 2 per year might be expected to be unconcerned by a season bag limit. In fact, there was no difference in the percentage favoring a bag limit when considering the number of fish respondents caught. Those catching 1 or 2 were as likely (or unlikely) to favor a bag limit as those who caught many muskellunge.

Support was greatest for 3, 5, or 7 fish per year. Support for a yearly bag of 7 was lower than support for more restrictive bags among 3 of 5 angler groups surveyed, although the difference was not statistically significant ( $P = 0.19$ ,  $\chi^2 = 15.9$ , df = 12; Table 8). In the license sales group, support for bag limits increased as the number of muskellunge allowed increased (including a bag limit of 7). Some anglers apparently thought that a high limit would compel many anglers who normally release fish to fill their bag limits. In the words of one angler:

*"If fishermen were limited to 7 legal muskies per season, it would create a problem by people wanting to keep their legal limit rather than release them."*

However, another angler found merit in the bag system and suggested it as a way to control over harvest while not hurting tourism:

*"In regards to tagging fish I believe this is on track. Seven is too many, 2 or 3 would be enough. By placing a 2 or 3 tag limit per season won't hurt the tourism business. It will stop the local fish hogs from keeping too many muskies."*

**Table 7.** Angler opinions on the later muskellunge season opening day.

Group	Percent (%) of Anglers		
	Favored	Opposed	No Opinion
License sales	61	17	22
Local (nonclub)	63	23	15
Local (club)	63	26	11
Nonlocal (club)	78	11	11
Nonlocal (nonclub)	71	14	15

**Table 8.** Anglers' support for season bag limit options.

Group	Percent (%) of Anglers Who Supported Bag Limit Number			
	1	3	5	7
License sales	18	35	48	57
Local (nonclub)	19	49	46	59
Local (club)	39	53	48	42
Nonlocal (club)	42	60	58	48
Nonlocal (nonclub)	38	66	68	55

## Muskellunge Registration

Registering harvested muskellunge, similar to deer registration, is one way to monitor muskellunge harvest. Anglers would bring the muskellunge they kept to a registration station to be weighed and measured, and other biological information could be collected (such as where the fish was caught) to help monitor harvest of specific waters.

Muskellunge registration was supported by 53% of all respondents, while 37% opposed the concept. Support was greatest among nonlocal anglers, while local anglers either marginally favored or opposed registration ( $P = 0.01$ ,  $\chi^2 = 37.4$ , df = 8; Table 9). Anglers identified areas such as failure to comply, inaccurate information, and the extra trouble as drawbacks to registration. Yet at least one angler saw the additional trouble involved in registration as a benefit:

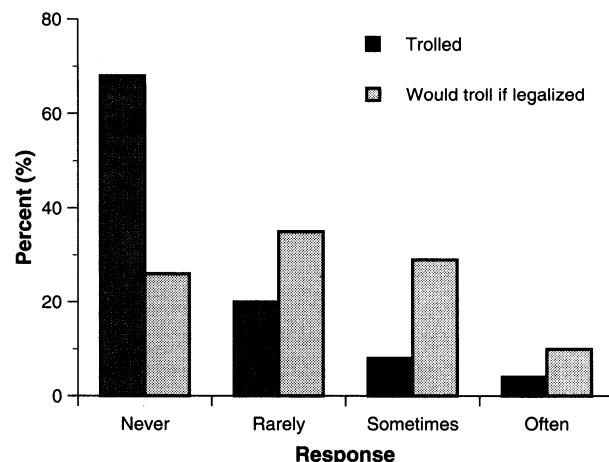
*"I favor [registration of harvested fish] because it is more of a hassle so maybe people would release more."*

## Motor Trolling

Most anglers (68%) indicated that they never motor trolled for muskellunge; however, if forward trolling were legalized statewide many indicated they would change their habits.<sup>2</sup> Presently, Wisconsin law prohibits forward motor trolling on Class A muskellunge lakes. If trolling were legalized, only 26% of the respondents indicated they would never troll, while 64% said they would troll to varying degrees (Figure 2).

## Increased Minimum Size Limit

Size limits are a common management tool for protecting certain groups of fish. At the spring 1990 county conservation hearings, a proposal to raise the minimum size limit for muskellunge to 40 inches in 10 Wisconsin lakes (Appendix A, Section VII No. 8) was made. Anglers in this study were asked



**Figure 2.** Percent of muskellunge anglers who trolled at the time of the survey and said they would troll if trolling were legalized in Wisconsin.

for their opinion regarding the increased size limit on the 10 lakes, and also for a 40-inch minimum size limit for muskellunge in most Wisconsin waters.

Nearly half (47%) of the anglers indicated that they had fished for muskellunge in at least 1 of the 10 proposed 40-inch limit lakes, and they strongly favored the idea of the 40-inch limit on those lakes. Sixty-six percent favored the size limit while 15% were opposed. Nineteen percent had no opinion.

Anglers strongly supported increasing the size limit to 40 inches in most muskellunge waters in Wisconsin. Sixty-two percent favored increasing the size limit, 29% opposed the idea, and 9% were indifferent. Nonlocal groups were more supportive than local groups, with the lowest support from the license sales group ( $P = 0.01$ ,  $\chi^2 = 44.8$ , df = 8; Table 10).

A cross tabulation determined which anglers were most likely to support or oppose higher size limits. This analysis indicated that anglers who favored higher size limits were those who said

**Table 9.** Angler opinions on muskellunge registration.

Group	Percent (%) of Anglers		
	Favored	Opposed	No Opinion
License sales	41	53	6
Local (nonclub)	40	50	10
Local (club)	55	33	12
Nonlocal (club)	58	33	9
Nonlocal (nonclub)	63	29	9

**Table 10.** Opinions on raising the size limit for muskellunge to 40 inches in most Wisconsin waters.

Group	Percent (%) of Anglers		
	Favored	Opposed	No Opinion
License sales	42	40	18
Local (nonclub)	54	39	7
Local (club)	59	31	10
Nonlocal (club)	76	17	7
Nonlocal (nonclub)	65	26	9

<sup>2</sup>This survey was conducted before backtrolling was legalized in Wisconsin in 1990. As written, the survey question intended to quantify angler opinions on forward trolling as a means to catch muskellunge.

they usually released the legal fish they caught ( $P = 0.01, \chi^2 = 101.5, df = 6$ ), and felt liberal bag limits ( $P = 0.01, \chi^2 = 72.7, df = 6$ ) and size limits ( $P = 0.01, \chi^2 = 198.4, df = 6$ ) were a large problem in muskellunge fishing (Table 11). Anglers likely to oppose higher size limits felt liberal bag and size limits were no problem to muskellunge fishing and indicated they often kept the legal fish they caught (Table 11).

In their written comments anglers expressed some concern over a uniformly high size limit on all waters. Genetic and/or growth variation among muskellunge populations and differing angler desires were listed as reasons. As one angler wrote:

*"Changing size limits or numbers in lakes should vary according to all species of fish in these lakes. Certain lakes would be ruined if we waited for all muskies to grow to 40 inches. In a lot of area lakes there is an over abundance of 30- to 40-inch muskies."*

Many anglers also offered an alternative size limit proposal; in the words of one angler:

*"A 40-inch size limit may be a good idea on lakes that are considered "big fish" lakes, but a 32 inch or even a 30 inch size limit should be used on "action lakes".... With specific size limits, we can keep those who prefer the "action" lakes (because of desire to catch muskies, inexperience, or whatever) happy."*

Another suggested a slot limit:

*"I have often wondered about a slot size limit on some lakes. A slot size limit, maybe - allow to keep 27 to 32 inches, release 33 to 45 inches."*

While another, somewhat emphatically, proposed the following:

*"Fifty-inch size limit instead of 40-inch [on the 10 study lakes];  
Zero to 30 inches - undersized;  
30 inches to 36 inches legal for tourists, meat hogs, and kids;  
36 inches to 48 inches ILLEGAL for ALL, use as breeders;  
48 inches and over - Legal as trophies to be registered with DNR or assigned stations such as taxidermists, etc."*

Anglers who opposed the size limit identified Indian spearing as their main concern. Other potential problems of the higher size limit identified by anglers included illegally harvesting undersized fish, and loss of interest by anglers in muskellunge fishing with a high size limit (Table 12).

### **Muskellunge Stamp**

Each year the DNR spends approximately \$500,000 to rear and stock muskellunge in Wisconsin (Margenau, Wis. Dep. Nat. Resour., unpubl. data). The sale of fishing licenses largely funds this program; hence, all anglers who purchase a license are entitled to fish for, or incidentally catch and keep, a legal muskellunge. However, static program revenues and increasing program costs have made it necessary in some situations to levy new fees to support special programs. The sale of Great Lakes trout and salmon stamps, for instance, supports the stocking of salmonids in Lakes Superior and Michigan. Would anglers accept a similar stamp for muskellunge? To find out, the questionnaire described a stamp proposal. Anglers were presented with 1 of 3 possible prices (\$3.50, \$5.50, \$10.) for such a stamp, and then asked if they would support or oppose the stamp.

Anglers were divided in their support; 54% endorsed a stamp while 46% opposed it. Support varied among the groups surveyed and according to the suggested price. Anglers who belonged to a muskellunge club, or who preferred to fish muskellunge more than other fish, were considerably more supportive of a stamp. Likewise, support for the stamp declined as the price increased (Table 13).

Opponents felt that license fees were already too high, doubted that the stamp money would actually go to muskellunge management, and thought that a stamp would add to an already complex regulatory structure. Some respondents observed that those who caught a muskellunge but did not have a stamp would have to release the fish or find themselves breaking the law. Others were troubled by the proliferation of special stamps to support programs. One angler noted:

*"Having a musky stamp is the stupidest idea I've ever heard. There's too many stamps now...trout, ducks, geese...when you buy a license it should include EVERYTHING!"*

Those who supported a stamp viewed the requirement that non stamp holders release any muskellunge they caught as a plus. They thought it would reduce the pressure on the muskellunge population by those not truly committed to the sport, and did not consider the additional cost of a stamp a drawback. As one supporter noted:

*“...\$10.00 might sound a bit high for a musky stamp BUT most musky baits are \$7-\$15 EACH, rods \$50 and reels (bait-casting) \$50. Want to know what my boat cost?”*

Most anglers who favored a stamp thought revenue from stamp sales should fund education on catch and release. Stocking into waters with existing muskellunge populations and habitat improvement were also considered high priority (Table 14). Expanding the muskellunge range by stocking into new waters was given a low priority.

**Table 11.** Factors associated with the acceptance of increased size limits on muskellunge.

Factor	Angler Support (%) for Increased Size Limits		
	Favor	Neutral	Opposed
Bag limits too liberal			
No problem	62	87	87
Somewhat of a problem	19	10	5
Large problem	14	1	3
Size limits too liberal			
No problem	34	81	80
Somewhat of a problem	31	11	16
Large problem	32	4	3
Preference for catch and release			
Kept more than released	2	2	19
Kept/released same amount	2	3	9
Released most often	85	78	58
Not applicable	10	13	14

**Table 12.** Reasons that anglers might have opposed raising the minimum size limit on muskellunge to 40 inches.

Reason	Percent (%) of Anglers Who Opposed Size Limit for This Reason
Indians might spear muskellunge before they reached the legal length	46
Some people might illegally keep undersized fish	26
People might lose interest in muskellunge fishing	21
Muskellunge fishing should be catch and release	15
Changing size limit would not change muskellunge fishing quality	14
Changing the size limit might hurt fishing for other species	14
Quality of muskellunge fishing is good now - don't change the rules	13
Like keeping 32-39 inch muskellunge	13
Fishing regulations are getting too complicated	12
Size limit should be higher than 40 inches	7
Higher limit would increase fishing pressure	6
None of these apply	14

**Table 13.** Responses for support of a muskellunge stamp.

Muskellunge Club Membership	Percent (%) Support at Each Price Level		
	\$3.50	\$5.50	\$10.00
Club member	73	62	54
Nonmember	47	49	36
Favorite Fish			
Muskellunge	70	64	57
Other	47	42	30

**Table 14.** Ranking for spending muskellunge stamp money.

Option	Priority Ranking (%)		
	High	Medium	Low
Education (catch and release)	72	22	6
More stocking (waters already containing muskellunge)	57	33	10
Habitat improvement	54	36	10
Enforcement of regulations	47	35	18
Fisheries research	40	45	15
More stocking (new waters)	27	27	47

## Summary

This questionnaire surveyed nearly 1,100 anglers who fish muskellunge in Wisconsin. The sample comprised anglers who belonged to muskellunge clubs and those who did not, local and nonlocal anglers, and a sample of anglers from fishing license sales in 4 northern counties. Respondents to the questionnaire represented a wide range of anglers in age, backgrounds, fishing experience, and geographical location. The questionnaire was designed to allow muskellunge anglers input into the management of the fish in Wisconsin. Following is a summary of opinions and discussion on various management issues presented, and how some of these may affect muskellunge management in Wisconsin.

1. The goal of the muskellunge program in Wisconsin is to provide a trophy fishery. Definition of the term "trophy" is troublesome because it relies on the differing perceptions of individuals. For instance, to someone who has never caught a muskellunge, a 30-inch fish may represent a trophy. Conversely, a more experienced muskellunge angler may view a trophy as a fish so large that it is beyond the realm of reality for most people. Anglers polled in this survey felt a trophy muskellunge was at least 40 inches in length and preferably greater than 45 inches. Hence, results from this questionnaire suggest that management of muskellunge in Wisconsin should be geared to maximize production of fish longer than 40 inches.
2. Anglers supported various management options (e.g., a delayed opening date, bag limits, fish registration, and size limits), but to varying degrees. Their answers suggest that muskellunge anglers are willing to be more restricted in their fishing activities if it means improving the fish resource. Support was strongest for the later muskellunge season opener (as opposed to the traditional season start) and for the higher size limits. Some concern was expressed over the possibility of having a uniformly high statewide size limit. Support for bag limits and registration was mixed; however, this may be expected with new and untested regulatory measures.
3. Most anglers indicated they presently do not troll for muskellunge; however, if forward trolling were legalized, many indicated they would utilize it to some extent. This seems somewhat ironic based on responses to other regulatory questions where more restrictions were generally favored. Some anglers may have felt they could improve their catch rates by trolling, but did not think this would harm the resource, possibly because they would release the fish.
4. Anglers expressed a great deal of concern regarding Indian spear-fishing activities. The treaty rights issue was identified as the biggest problem in muskellunge fishing, and as the greatest factor jeopardizing success of high size limits. Apparently education, communication, and cooperation among concerned user groups are paramount if the muskellunge resource is to be managed to its maximum potential in future decades.
5. Voluntary catch-and-release fishing by muskellunge anglers plays a vital role in successful management. Anglers in this survey indicated a high compliance for releasing legal muskellunge, with the exception of badly injured or trophy-sized fish. During 1989 anglers reported catching an average of 6.5 and releasing 6.2 legal muskellunge. However, survey results also indicated that release rates can be considerably lower for some groups. Anglers from the license sales group were much more likely to keep a legal muskellunge than other groups surveyed.

Concern for overharvest of muskellunge can be put into perspective by considering the number of anglers. A survey of outdoor recreational activities estimated that 25,000 anglers primarily pursue the muskellunge (Nelson, Wis. Dep. Nat. Resour., unpubl. data). The survey also estimated that 96,000 resident anglers caught a muskellunge during the previous year. The catch can be substantial, especially by the casual muskellunge angler, or as an incidental catch by anglers targeting other species. The survey estimates show that nearly 75% of the people who caught a muskellunge were probably not avid muskellunge anglers, and probably release

## Management Implications

fewer legal fish than avid anglers. Hence, results of these 2 surveys suggest that while catch and release is prevalent among the muskellunge fraternity, many muskellunge are caught by casual anglers whose release rates are lower. Taking into account the additional catch by nonresident anglers (not represented in the outdoor recreational survey [Nelson, Wis. Dep. Nat. Resour., unpubl. data]), the potential for overharvest of the muskellunge resource is easily visualized.

6. A muskellunge stamp was strongly supported by avid muskellunge anglers. However, considerably less support from nonclub members and those anglers who primarily fish for species other than muskellunge raises some concerns. One concern was the incidental catch of muskellunge by anglers fishing for other species. Other game and panfish also live in most muskellunge waters. Anglers fishing for other species such as walleye, northern pike, bass, or even panfish will sometimes catch muskellunge. Wingate (1986) warned that this type of situation would likely result in enforcement problems.

Incidental catch also raised some concerns regarding funding for certain aspects of the muskellunge program, such as stocking. Annual costs for rearing and stocking muskellunge into Wisconsin waters approach \$500,000. State funds, which come in part from general fishing license sales, currently pay these costs. Hence, all anglers who purchase a Wisconsin fishing license indirectly support programs such as muskellunge stocking, and therefore are entitled to fish for, or incidentally catch and keep, legal muskellunge. If a special muskellunge stamp is established, the current funding for the muskellunge program (particularly stocking) would probably be terminated. Revenue from stamp sales would have to support all the programs that deal primarily with muskellunge.

Many respondents felt there are already too many stamps, and too much bureaucracy as a result. Opponents noted that stamp funds could be diverted to nonmuskellunge uses. Supporters felt that a stamp could help to maintain the resource. Those who incidentally catch muskellunge were more likely to keep legal fish. Presumably, this would change if they had to have a stamp.

The development of effective regulations must consider management objectives and needs of user groups, such as sport anglers, while providing necessary protection to the resource. The trophy management of muskellunge in Wisconsin requires that certain social components to management such as "what is a trophy?" be defined. This study has defined a trophy muskellunge in the eyes of a muskellunge angler. However, the definition of trophy to the casual angler who incidentally catches a muskellunge is likely somewhat different. This situation becomes problematic for biologists charting the course for management. Should the muskellunge fishery be managed for muskellunge anglers with special regulations such as high size limits, or instead to maximize catch (and potentially harvest) of all sizes of muskellunge? These questions may best be answered by considering what is best for the muskellunge.

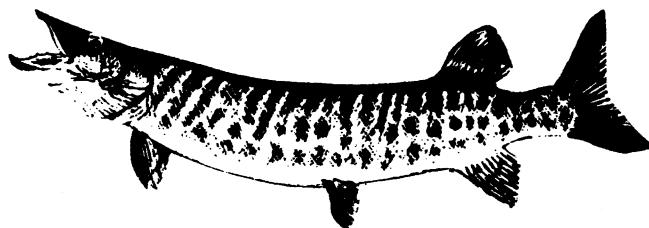
To achieve the trophy objective, muskellunge require protection to live longer and reach larger sizes. Crossman (1986) stated,

*"It seems fool hardy to continue to remove from the population, in increasing numbers per year, animals at one quarter of both their potential size and reproductive capacity."*

Increased size limits were the most acceptable regulatory option for anglers in restricting muskellunge harvest. Size limits provide necessary protection but also allow anglers to continue fishing. Other regulations (e.g., seasonal bag limit) can limit angling.

Quantifiable surveys of angler opinions represent an integral part of muskellunge management. Historically the social aspect of fisheries management has often been overlooked (Voiland and Duttweiler 1984). This survey represents an initial effort in monitoring and quantifying the views of the muskellunge angler in Wisconsin. However, opinions will undoubtedly change with time and should be updated periodically, possibly every 10 years.

# SPECIAL 1989-90 MUSKY SURVEY



This study is being conducted by the University of Wisconsin  
Department of Agricultural Journalism.

## SECTION I: YOUR TYPE OF FISHING

People enjoy fishing for many different types of fish. These first questions ask about what kinds of fish you most enjoy fishing for and how much time you spend fishing.

1. What types of fish have you fished for in the past five years?  
Please circle all the species of fish that you have fished for in the past five years.

### CIRCLE ALL THAT APPLY

Panfish (crappie, perch, bluegill, etc.)	1
Largemouth or smallmouth bass	2
White bass or striped bass	3
Walleyes or sauger	4
Northern pike	5
Muskellunge	6
Inland trout (streams and lakes)	7
Great Lakes trout and salmon	8
Catfish or bullheads	9
Rough fish (carp, sheepshead, etc.)	10

Any other fish? Please tell us: \_\_\_\_\_  
\_\_\_\_\_

2. What two types of fish from the above list are your favorite to fish for?

\_\_\_\_\_ Favorite fish to fish for  
\_\_\_\_\_ Second favorite

3. About how many different days during 1989 did you spend at least part of the day fishing? Please fill in the blanks with your best estimate of the number of days fished in and outside of Wisconsin.

       Days fished in Wisconsin - 1989

       Days fished outside Wisconsin - 1989

**IF YOU DID NOT FISH IN 1989, PLEASE SKIP TO SECTION II**

4. We are also interested in where you fished in 1989. In which of the areas shown on the map did you fish in 1989?

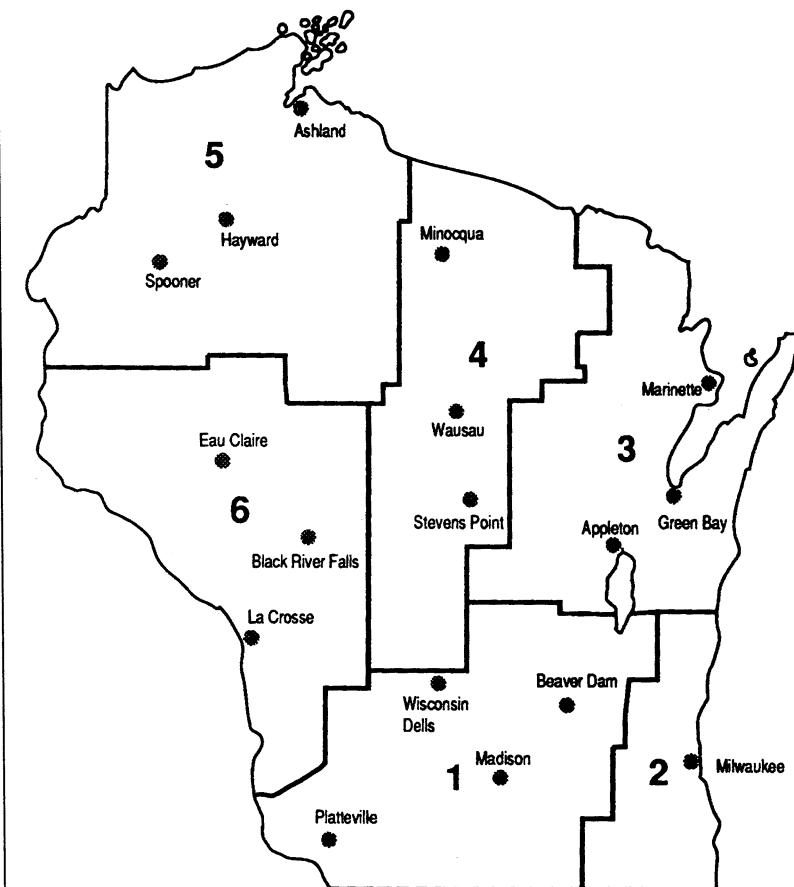
**CIRCLE ALL THAT APPLY**

I fished in the following areas in 1989:

Area 1 .....	1
Area 2 .....	2
Area 3 .....	3
Area 4 .....	4
Area 5 .....	5
Area 6 .....	6

5. Which area of those listed above did you fish most often in 1989? Please write the number of the area in the blank.

       Area fished most often in 1989



## SECTION II - MUSKY FISHING IN 1989

1. Did you do any fishing in the past three years specifically for musky?

CIRCLE ONE

Yes ..... 1

No (PLEASE GO TO SECTION VIII) ..... 2

2. About how many different days in 1989 did you spend at least part of the day fishing for musky? You may have trouble remembering exactly, but please give us your best estimate.

I spent \_\_\_\_\_ days musky fishing.

3. How much time did you spend fishing muskies in 1989, compared with what you might think of as a 'typical' musky season?

CIRCLE ONE

1	2	3	4	5
Much less time	Somewhat less time	About the same time	Somewhat more time	Much more time

4. Did you catch any muskies in 1989?

CIRCLE ONE

Yes ..... 1

No (PLEASE GO TO SECTION III) ..... 2

5. How many legal muskies did you catch during 1989? Please give us your best estimate.

I caught \_\_\_\_\_ legal muskies during 1989.

6. Of those legal muskies you caught in 1989, about how many did you release?

I released \_\_\_\_\_ legal muskies during 1989.

7. Approximately how many undersized muskies did you catch during 1989?

I caught \_\_\_\_\_ undersized muskies during 1989.

### SECTION III - COMMITMENT TO MUSKY FISHING

1. How many years have you been musky fishing? Please fill in the blank below with your best guess.

I have been musky fishing for about \_\_\_\_\_ years.

2. Approximately how many legal muskies have you caught in the time you have been musky fishing? Please give us your best estimate.

CIRCLE ONE

0 .....	1
1 - 5 .....	2
6 - 10 .....	3
11 - 25 .....	4
26 - 50 .....	5
More than 50 .....	6

3. How many inches long was the largest musky you have ever caught? Please write the length of the fish in the space below.

\_\_\_\_\_ Longest musky I have ever caught

4. How many inches long would a musky have to be before you would refer to it as a trophy?

I would call a \_\_\_\_\_ inch musky a trophy fish.

5. How many different bodies of water did you fish for muskies during the last 2 years? If one lake is connected to another so that you can get there by boat, count it as only one water.

CIRCLE ONE

1 .....	1
2 - 4 .....	2
5 - 9 .....	3
10 - 20 .....	4
More than 20 .....	5

6. What lures or bait do you use when musky fishing? Please circle the type of fishing you usually do.

CIRCLE ONE

Only use artificial lures .....	1
Only use live bait .....	2
Use either artificials or live bait, or both at once, depending on conditions .....	3

7. How often do you motor troll for muskies?

CIRCLE ONE

Often .....	1
Sometimes .....	2
Rarely .....	3
Never .....	4

8. If motor trolling for muskies were legalized on all musky waters in the state, how often would you do it?

CIRCLE ONE

Often .....	1
Sometimes .....	2
Rarely .....	3
Never .....	4

9. Do you belong to a dues-paying musky fishing club?

CIRCLE ONE

Yes - WHAT CLUB? _____	1
No .....	2

10. Considering all of your other outdoor activities, how many substitutes do you have for musky fishing? If you couldn't musky fish, are there other activities you would like as much?

CIRCLE ONE

I have many substitutes for musky fishing .....	1
I have some substitutes for musky fishing .....	2
I have only a few substitutes for musky fishing .....	3
I have no substitutes for musky fishing .....	4

#### SECTION IV - FAVORITE MUSKY WATER IN WISCONSIN

1. We would like to know a little about your favorite place to musky fish in Wisconsin. This may be a body of water where you have caught many fish, a large fish, or you like for another reason. If you have several such spots, pick one. Please fill in the blanks below with the name of the lake or flowage (optional), where it is located, and how many years you have fished there.

\_\_\_\_\_  
Body of water (optional)  
\_\_\_\_\_  
Nearest town or city  
\_\_\_\_\_  
County (if known)  
\_\_\_\_\_  
Years fished there

2. What changes, if any, have you noticed in the last five years at the water body that is your favorite in Wisconsin to fish for muskies? Please answer with the water body you mentioned above in mind.

CIRCLE ONE NUMBER PER LINE

	Increased	Same	Decreased	Not sure
Number of legal muskies.....	1	2	3	4
Number of undersized muskies .....	1	2	3	4
Average size of muskies.....	1	2	3	4
Fishing pressure from other musky fishermen.....	1	2	3	4
Amount of good musky habitat...	1	2	3	4
Percentage of legals released by others.....	1	2	3	4
Number of northern pike in the lake.....	1	2	3	4

3. What is it about this spot that makes it your favorite for musky fishing? Please circle all the reasons listed below that make the fishing spot you listed above your favorite.

CIRCLE ALL THAT APPLY

Big fish I have caught there in the past ..... 1  
 Many legal fish I have caught there in the past ..... 2  
 Reputation or potential the lake has for big muskies ..... 3  
 Reputation or potential the lake has for producing lots of muskies ..... 4  
 Good fishing for other species there as well as muskies ..... 5  
 Natural beauty of the lake ..... 6  
 I own recreational property on the lake or nearby ..... 7  
 Good facilities such as landings or resorts and taverns nearby ..... 8  
 I have friends who live nearby ..... 9  
 My permanent residence is nearby ..... 10  
 Uncrowded by other fishermen or recreationists ..... 11  
 Traditional spot for me and my fishing partners to go to ..... 12

Any other reason? \_\_\_\_\_ 13

4. Which of the reasons you listed above is most important to you in feeling that a certain body of water is your favorite for musky fishing? Please write the number of the factors in the blanks provided below.

\_\_\_\_\_ Most important reason

\_\_\_\_\_ Next most important reason

## SECTION V - CATCH AND RELEASE MUSKY FISHING

1. Which of the following best describes your current preference of keeping or releasing legal sized muskies you catch?

CIRCLE ONE

Almost always keep.....	1
More often keep .....	2
Keep about half/release half.....	3
More often release .....	4
Almost always release.....	5
Doesn't apply - I've never caught a 'keeper' .....	6

2. How do the following factors affect your decision to keep or release a legal sized musky?

CIRCLE ONE NUMBER PER LINE

More likely to keep      Does not affect      More likely to release

If it appears the fish will not survive .....	1	2	3
If it is a trophy musky .....	1	2	3
If I have not caught a legal musky before or in a long time .....	1	2	3
If there seem to be many muskies in the lake.....	1	2	3
If I, my friends or family really like to eat musky.....	1	2	3
If the fish might have toxins.....	1	2	3
If I fish the lake often .....	1	2	3
If the lake doesn't get pressure from other anglers .....	1	2	3
If the lake is stocked.....	1	2	3
If the fish is bigger than I usually catch.....	1	2	3

3. How big does a musky have to be for you to keep it? We realize that other circumstances besides size of the fish affect your decision. Please give us your best estimate.

I would probably keep a musky \_\_\_\_\_ inches long.

4. How many of the muskies that you release do you feel will survive? We realize it depends on many factors. Please give us your best estimate.

CIRCLE ONE

Almost all .....	1
More than half.....	2
About half.....	3
Less than half .....	4
Almost none.....	5

5. How do you usually land a legal musky that you intend to release? We realize that you land fish differently under different circumstances. Please tell us what you usually do.

CIRCLE ONE

Does not apply. I rarely release legal muskies .....	1
Net the fish and bring it into the boat .....	2
Net the fish, but leave it in the water next to the boat .....	3
Gaff the fish and bring it into the boat .....	4
Leave the fish in the water without netting or gaffing it .....	5
Try to shake the fish off the hook so I don't have to touch it .....	6

Other \_\_\_\_\_

6. In general, do you favor or oppose the idea of other fishermen releasing legal muskies?

CIRCLE ONE

1 Definitely favor	2 Probably favor	3 Neutral	4 Probably oppose	5 Definitely oppose

## SECTION VI - PROBLEMS IN MUSKY FISHING

The following have been mentioned as problems in musky fishing.  
How much of a problem do you think each is where you musky fish?

	CIRCLE ONE NUMBER PER LINE			
	Not much of a problem	Somewhat of a problem	Big problem	I'm not sure
Illegally keeping undersized muskies.....	1	2	3	4
Accidental injuries to muskies to be released.....	1	2	3	4
Problems recognizing musky.....	1	2	3	4
Loss of weedbeds and cover.....	1	2	3	4
Too much fishing pressure.....	1	2	3	4
Bag limits too liberal.....	1	2	3	4
Size limits too liberal.....	1	2	3	4
Not enough musky stocking.....	1	2	3	4
Poor natural reproduction.....	1	2	3	4
Decline in water quality.....	1	2	3	4
Indian treaty rights.....	1	2	3	4
Improved fishing technology.....	1	2	3	4
Fishing tournaments.....	1	2	3	4
Conflicts with speed boats and water skiers.....	1	2	3	4
Compete with northern pike.....	1	2	3	4

## SECTION VII - MUSKY MANAGEMENT

### EARLIER OPENING OF THE MUSKY SEASON IN NORTHERN WISCONSIN

1. Under current state regulations, the musky season does not open north of Hwy 10 until the Saturday before Memorial Day (May 26 in the 1990 season). It is thought that this late opener may help musky populations by protecting spawning muskies. However, it shortens the musky season, limiting fishermen and perhaps taking away tourism dollars. How do you feel about the later opening date (May 26)?

#### CIRCLE ONE

Definitely favor ..... 1  
 Probably favor ..... 2  
 Makes no difference ..... 3  
 Probably oppose ..... 4  
 Definitely oppose ..... 5  
 I'm not sure ..... 6

### YEARLY BAG LIMIT ON MUSKIES

2. Current state regulations permit one musky per day to be kept by each fisherman. How would you feel about a regulation that permits a fisherman to keep \_\_\_\_\_ legal muskies each season? Under regulations of this type, you would probably be required to record on your license each musky you kept. These rules may lessen pressure on the musky population.

How would you feel about regulations that allowed you to keep \_\_\_\_\_ muskies each year?

#### CIRCLE ONE

Definitely favor ..... 1  
 Probably favor ..... 2  
 Makes no difference ..... 3  
 Probably oppose ..... 4  
 Definitely oppose ..... 5  
 I'm not sure ..... 6

### REGISTRATION OF MUSKIES CAUGHT AND KEPT

3. Suppose the DNR were to require every legal musky that was kept to be officially tagged and registered. By doing this, the DNR would get a more accurate count of the number and size of muskies being harvested and would be better able to maintain or improve the population through regulations.

Under these regulations, you would probably take your fish to a nearby registration station, such as a resort, bait shop, or tavern. The fish would be weighed and measured, with you giving information on where and when the fish was caught. How would you feel about regulations of this type?

#### CIRCLE ONE

Definitely favor ..... 1  
Probably favor ..... 2  
Makes no difference ..... 3  
Probably oppose ..... 4  
Definitely oppose ..... 5  
I'm not sure ..... 6

4. Which of the following do you see as being drawbacks to registration of harvested muskies?

#### CIRCLE ALL THAT APPLY

It would be too much trouble to register the fish ..... 1  
The DNR doesn't need to know how many muskies  
are being kept ..... 2  
People wouldn't do it, so inaccurate information  
would be obtained ..... 3  
License money could be better used for another purpose ..... 4  
People wouldn't tell which lakes they caught their muskies ..... 5  
Registration won't help the DNR manage muskies ..... 6  
I don't think any of these are drawbacks ..... 7

### ESTABLISHING A "MUSKY STAMP"

5. For a number of years, the DNR has used revenues from sales of inland and Great Lakes trout stamps to fund projects to improve trout fishing. Suppose the DNR were to issue a musky stamp, with the funds raised specifically for improving musky fishing in the state. Would you be willing to pay \$ \_\_\_\_\_ for a musky stamp?

#### CIRCLE ONE

Yes (go to Question 7) ..... 1  
No (go to Question 6) ..... 2

6. Here are some reasons why you may not have supported a stamp. Which, if any, apply to you?

#### CIRCLE ALL THAT APPLY

Too much money, but I would pay a lesser amount ..... 1  
Musky fishing doesn't need any special help ..... 2  
I doubt the money would go to help musky fishing ..... 3  
My license fees are already high enough ..... 4  
It seems like too much of a bother ..... 5  
Rules and licenses are already too complicated ..... 6  
I don't fish muskies enough to make it worthwhile ..... 7

7. If you answered yes to question 3, how would you like to see money raised from a musky stamp spent? Please circle the category that best represents how important you feel each spending option to be.

#### CIRCLE ONE NUMBER PER LINE

	Low priority	Medium priority	High priority
Fisheries research	1	2	3
More musky stocking in waters already containing muskies	1	2	3
Introduce muskies to more lakes	1	2	3
Habitat improvement	1	2	3
Enforcement of regulations	1	2	3
Education in catch and release	1	2	3

### RAISING THE MINIMUM SIZE LIMIT ON MUSKIES

8. A proposal to raise the size limit on muskies to 40" is currently being considered for ten lakes in Wisconsin. A list of the lakes, and their counties is shown below:

Twin Valley Lake - Iowa Co.	Lake Winter - Sawyer Co.
Long Lake - Iron Co.	Upper Red Lake - Shawano Co.
Moose Lake - Iron Co.	Lower Red Lake - Shawano Co.
Bone Lake - Polk Co.	Allequash Lake - Vilas Co.
Yellowstone Lake - LaFayette Co.	Big Lake - Vilas Co.

Have you fished any of the lakes listed above for musky?

CIRCLE ONE

Yes .....	1
No .....	2

9. If the proposal to raise the size limit to 40" were to go into effect, the average size of the muskies in these lakes would probably increase, with fish in the 34" to 39" range becoming more common. However, fish of this size could not be kept, and it would probably take more hours of fishing to catch a legal musky. Chances of catching a trophy musky would probably be higher in these lakes. How would you feel about raising the size limit to 40" in the lakes mentioned?

CIRCLE ONE

1	2	3	4	5
Definitely Favor	Probably Favor	Neutral	Probably Oppose	Definitely Oppose

10. How would you feel about raising the size limit for muskies to 40" in most musky waters in Wisconsin?

CIRCLE ONE

Definitely favor .....	1
Probably favor.....	2
Makes no difference .....	3
Probably oppose.....	4
Definitely oppose .....	5
I'm not sure .....	6

11. In general, why might you oppose raising the size limit on muskies to 40"?

CIRCLE ALL THAT APPLY

Increased fishing pressure on lakes with higher limit .....	1
I like to be able to keep 32" to 39" muskies, and I think other people should be able to as well.....	2
Some people might illegally keep undersized fish that are 32" to 39" .....	3
Fishing regulations are getting too complicated .....	4
I don't think changing the regulations is going to help musky fishing quality .....	5
I think that the quality of musky fishing in Wisconsin is good now - don't change the rules.....	6
Changing the size limit might hurt fishing for other species, such as walleyes or panfish .....	7
People might lose interest in musky fishing if the size limit were that high.....	8
Indians might spear the muskies before they reached the legal length .....	9
I think the size limit should be higher than 40" .....	10
I think musky fishing should be catch and release.....	11
NONE OF THESE APPLY TO ME .....	12

12. How often do you use each of the following musky fishing sources of information?

	CIRCLE ONE NUMBER PER LINE			
	Never	Rarely	Sometimes	Often
Magazines only on musky fishing....	1	2	3	4
Other magazines .....	1	2	3	4
Fishing club I belong to.....	1	2	3	4
Radio or television shows.....	1	2	3	4
Newspapers.....	1	2	3	4
Videos on musky fishing.....	1	2	3	4
DNR surveys/stocking records .....	1	2	3	4

## SECTION VIII - PERSONAL BACKGROUND

This last set of questions asks for background information so that your answers may be compared with other respondents. All of the information you provide is strictly confidential.

### 1. How old were you on your last birthday?

I was \_\_\_\_\_ years old.

### 2. Are you male or female?

CIRCLE ONE

Male.....1

Female.....2

### 3. What is the highest level of school you have completed?

CIRCLE ONE

Less than a high school degree.....1

High school graduate.....2

Some college or trade school.....3

Trade school degree.....4

Undergraduate college degree.....5

Post graduate studies.....6

### 4. What is your current marital status?

CIRCLE ONE

Married.....1

Single - never married.....2

Divorced/separated.....3

Widowed.....4

### 5. What county do you live in?

I live in \_\_\_\_\_ county.

### 6. Where is your permanent residence?

CIRCLE ONE

Farm.....1

Rural, non-farm.....2

Small town or village under 10,000.....3

Small city of 10,000 - 50,000.....4

Suburban area of city over 50,000.....5

Large city of over 50,000.....6

### 7. Do you or your family own vacation property or a second home in Wisconsin?

CIRCLE ONE

Yes - IN WHAT COUNTY?.....1

No.....2

### 8. What is your current employment status?

CIRCLE ONE

Working full time.....1

Working part time or seasonally.....2

Not employed for wages.....3

Fully retired.....4

### 9. Approximately what is your total family income (yourself and spouse, if married) before taxes?

CIRCLE ONE

Less than \$10,000.....1

\$10,000 - \$19,999.....2

\$20,000 - \$29,999.....3

\$30,000 - \$49,999.....4

\$50,000 - \$74,999.....5

\$75,000 - \$99,999.....6

\$100,000 or more.....7

## Literature Cited

Crossman, E. J.  
1986. The noble muskellunge: a review. American Fisheries Society Special Publication 15:1-13.

Dent, R. J.  
1986. A case history of voluntary catch and release of muskellunge with management implications for fishery programs. American Fisheries Society Special Publication 15:316-322.

Dillman, D. A.  
1978. Mail and telephone surveys. John Wiley & Sons, New York. 199 pp.

Gasbarino, P. L.  
1986. Catch and release of muskellunge - philosophy and methods. American Fisheries Society Special Publication 15:300-308.

Hanson, D. A.  
1986. Population characteristics and angler use of muskellunge in eight northern Wisconsin lakes. American Fisheries Society Special Publication 15:238-248.

Patton, M. Q.  
1990. Qualitative evaluation and research methods. Sage Publications, Newbury Park, Calif. 532 pp.

Penaloza, L. J.  
1992. Boater attitudes and experiences. Results of the 1989-1990 Wisconsin recreational boating study, phase 2. Wisconsin Department of Natural Resources Technical Bulletin No. 180. 50 pp.

Peyton, R. B.  
1987. Mechanisms affecting public acceptance of resource management policies and strategies. Canadian Journal of Fisheries and Aquatic Sciences 44(Suppl. 2):306-312.

Richards, K., and R. Ramsell  
1986. Quantifying the success of muskellunge catch and release programs: a summary of cooperative angler-tagging studies. American Fisheries Society Special Publication 15:309-315.

SAS Institute Inc.  
1987. SAS user's guide: statistics, 1987 edition. SAS Instit. Inc., Cary, N.C., 584 pp.

U. S. Department of the Interior  
1991. Casting light upon the waters: a joint fishery assessment of the Wisconsin ceded territory. Bureau of Indian Affairs, Minneapolis, Minn. 101 pp.

Voiland, M. P., and M. W. Duttweiler  
1984. Where's the humanity? A challenge and opportunity for the fisheries community. Fisheries 9:10-12.

Wingate, P. J.  
1986. Philosophy of muskellunge management. American Fisheries Society Special Publication 15:199-202.

## **Acknowledgments**

Thanks are due to many individuals and groups who helped complete this study. Debbie Benjamin was instrumental in compiling angler lists and sorting the survey sample. Marcia Johnson helped with printing of mailing labels. R. Dumke, L. Kernen, and M. Staggs reviewed and provided comments on early drafts of this manuscript. Special thanks to all anglers who participated in the survey and for their sincere interest in protecting the muskellunge resource in Wisconsin. Funding for this study was provided in part by the Federal Aid in Sport Fish Restoration Act, grants F-83-R and F-95-P, and the Wisconsin Department of Natural Resources.

## **About the Authors**

Terry L. Margenau, Wisconsin Department of Natural Resources, Post Office Box 309, Spooner, WI 54801, is a senior fisheries scientist for the Bureau of Research located in Spooner.

Larry R. Meiller, University of Wisconsin, Department of Agricultural Journalism, 440 Henry Mall, Madison, WI 53706, is professor of Agricultural Journalism at the University of Wisconsin-Madison and host of a call-in talk show heard on Wisconsin Public Radio.

Edward B. Nelson, Wisconsin Department of Natural Resources, Post Office Box 7921, Madison, WI 53707, is a social scientist for the Bureau of Research in Madison.

Richard C. Stedman, Department of Rural Sociology, University of Wisconsin, Madison, WI 53706, is a Ph.D. student in sociology at the University of Wisconsin-Madison.

Donald E. Johnson, University of Wisconsin, Department of Rural Sociology, Agriculture Hall, Madison, WI 53706, is a retired professor of Rural Sociology at the University of Wisconsin-Madison.

## **Production Credits**

Wendy M. McCown, Managing Editor

William E. Manci, Fisheries Technology Associates, Inc., Copy Editor

Michelle E. Jesko, Figure Preparation, Layout/Production

Ruth M. King, Illustrations

Central Office Word Processing

~~DIANE PRINSON  
1992  
RS/4~~



*Printed on recycled paper.*

**Wisconsin Department of Natural Resources  
PUBL-RS-163 94**