



**Open Water Spearing and Netting in  
Northern Wisconsin by Chippewa Indians  
During 1989**

by  
Neil Kmiecik  
Inland Fisheries Section Leader  
and  
J. Dale Shively  
Fisheries Biologist

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**GREAT LAKES INDIAN FISH  
& WILDLIFE COMMISSION**  
Biological Services Division  
P.O. Box 9  
Odanah, WI 54861  
(715) 682-6619



## ABSTRACT

For the fifth consecutive spring a spear fishery was conducted in off-Reservation waters of northern Wisconsin. In addition, a fall spear fishery and a summer gill-net fishery were noted during the open water period for the first time. Tribal regulations for harvesting walleye and muskellunge became permanent in 1989 and were based on stipulations and a March 3, 1989 Federal Court decision.

During spring spearing a total of 271 tribal members participated. Spearing effort occurred on 102 lakes and walleye were harvested from all except one (Minong Flowage in Washburn Co). A total of 16,394 fish were taken with 98% of the catch (16,054 fish) being walleye. The numbers of other gamefish harvested were 188 muskellunge, 113 bass, 14 northern pike, 1 sturgeon and 1 trout. Average length was 16.0 inches for walleye and 35.7 inches for muskellunge. Except for one lake where the tribal walleye quota was exceeded by one fish, harvest of walleye and muskellunge was maintained within the established limits by a nightly permit system and by complete monitoring of the catch.

Fall spearing occurred on two October nights and was limited to two lakes named by the Bad River tribe. A total of 100 walleye and 3 northern pike were taken. Average length for walleye was 13.4 inches.

Summer gill-netting occurred on 4 dates during June-July with 600 feet of 3 inch mesh (stretch) net set each night. A total of 239 fish were caught from three lakes, of which 176 were cisco (lake herring) and 47 were walleye. One muskellunge was caught and released. Average length was 12.4 inches for cisco and 15.3 inches for walleye. CPE (number per 100 feet of net) was 14.7 and 2.0, respectively.



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## INTRODUCTION

This report presents data for harvest and effort by Chippewa spearers and netters in ceded territory waters of northern Wisconsin (Figure 1) during the 1989 open-water season. In previous years only a spring spear fishery occurred. However, in 1989 three distinct fisheries occurred. The spring spear fishery was conducted for the fifth consecutive year. In addition, a fall spear fishery and a summer gill-net fishery were noted for the first time.

## REGULATIONS

Regulations governing the use of spears and nets for harvesting walleye and muskellunge were adopted by each of the six Wisconsin tribes and became permanent in 1989. This set of permanent tribal rules was based on pre-trial stipulations and on the March 3, 1989 decision by Federal Judge Barbara A. Crabb. Judge Crabb's decision was a synthesis of elements testified to by state and tribal biologists at a 14 day trial during October-November 1988. In addition, the Court instituted a "pulse" fishing rule, the terms of which were developed and stipulated to following the March decision.

Permanent regulations differed significantly from negotiated rules in several respects.

1. Harvest of muskellunge was to be controlled by a quota/permit system identical to that used for walleye in 1987 and 1988. Previously, harvest was regulated by a 2/night bag limit for spearing.
2. Fish of all species could be harvested with spears from lakes under 500 acres. In previous years, lakes less than 500 acres were closed to tribal spearing.
3. The spearing season would not be limited to 15 days in spring or end the night before the state angling season opened. It would run from ice-out to ice-in or until the tribal quota was reached on a given lake.
4. Nightly spearing hours were no longer in effect. Also, the number of pre-selected lakes (see 7 below) that a tribe could name for harvest each night was not limited, except by constraints on personnel or budget.
5. Gill-nets could be set in lakes 1000 acres and larger. Mesh size and length of net restrictions were identical to those previously agreed to. The netting season would run from June 1 through March 1.



6. "Safe Harvest" levels for walleye and muskellunge were to be calculated using a variety of safety factors. These concepts were secretly developed by state biologists two weeks prior to the 1988 trial, presented in surprise testimony, and adopted by the Court.
7. The tribes could set quotas of up to 100% of the "safe harvest" for walleye and muskellunge in any lake. However, the state must be notified by March 15 of the "safe harvest" percent selected in each lake for harvest by the tribes during the upcoming year.
8. A lake would be closed to tribal spearing and netting of walleye for one year if more than 60% of the walleye "safe harvest" level were taken in both of the two previous years. This "pulse" fishing closure also applied to muskellunge.
9. Fish could be sold commercially.

Other permanent rules were identical to 1988 regulations in many respects. For example, the same bag limits were in effect for the spearing or netting of species other than walleye and muskellunge. The list of 24 rivers that could be speared was the same. The spearing size and bag limits for walleye 20 inches and larger were identical, as were regulations governing the use of seines and fyke nets (Kmiecik and Shively 1989).

#### PERMIT SYSTEM AND MONITORING

The permit system operated the same as in 1988. Permits (Figure 2) were issued at a tribal office during the day or at the designated boat landing at night. The number of permits that could be issued was determined daily by dividing the remaining Tribal Quota (TQ) for a lake by the bag limit selected for that lake. Lakes were closed to further spearing of walleye and to all netting once the walleye TQ was reached. However, spearing permits could be issued for harvest of other species.

All spearing was monitored by tribal creel clerks under the supervision of GLIFWC wardens and biologists. A set of instructions for collecting biological data was provided to creel clerks at a training meeting about two weeks prior to the season. Summer netting was monitored by GLIFWC biologists.

During spearing, creel clerk/warden teams were assigned to each lake in some areas and only to lakes where permits had been issued in other areas. These teams arrived at the designated boat landing before dark and prepared a work area. Upon return of each boating party, a catch report form was completed. For species other than walleye, all fish were identified to genus or species, counted, sex determined, and measured. For walleye, all fish were counted. Also, the first 100 walleye plus all those in the last boat were measured and sex determined. In addition, permits were collected and a record made of each person's tribal ID number, the time spearing started and the time it ended.

During spring spearing, harvest and effort for each lake were totalled and reported by 9 a.m. the following day to GLIFWC in Odanah. These data were then transmitted to tribal and WDNR representatives by 10 a.m. and used to update walleye and muskellunge TQ's. At the same time, tribal representatives notified GLIFWC of the lakes and bag limits selected for that night. Harvest was reported daily in newspapers throughout Wisconsin.

Figure 1. Map depicting the ceded territory in northern Wisconsin. Heavy line indicates approximate ceded territory boundary.

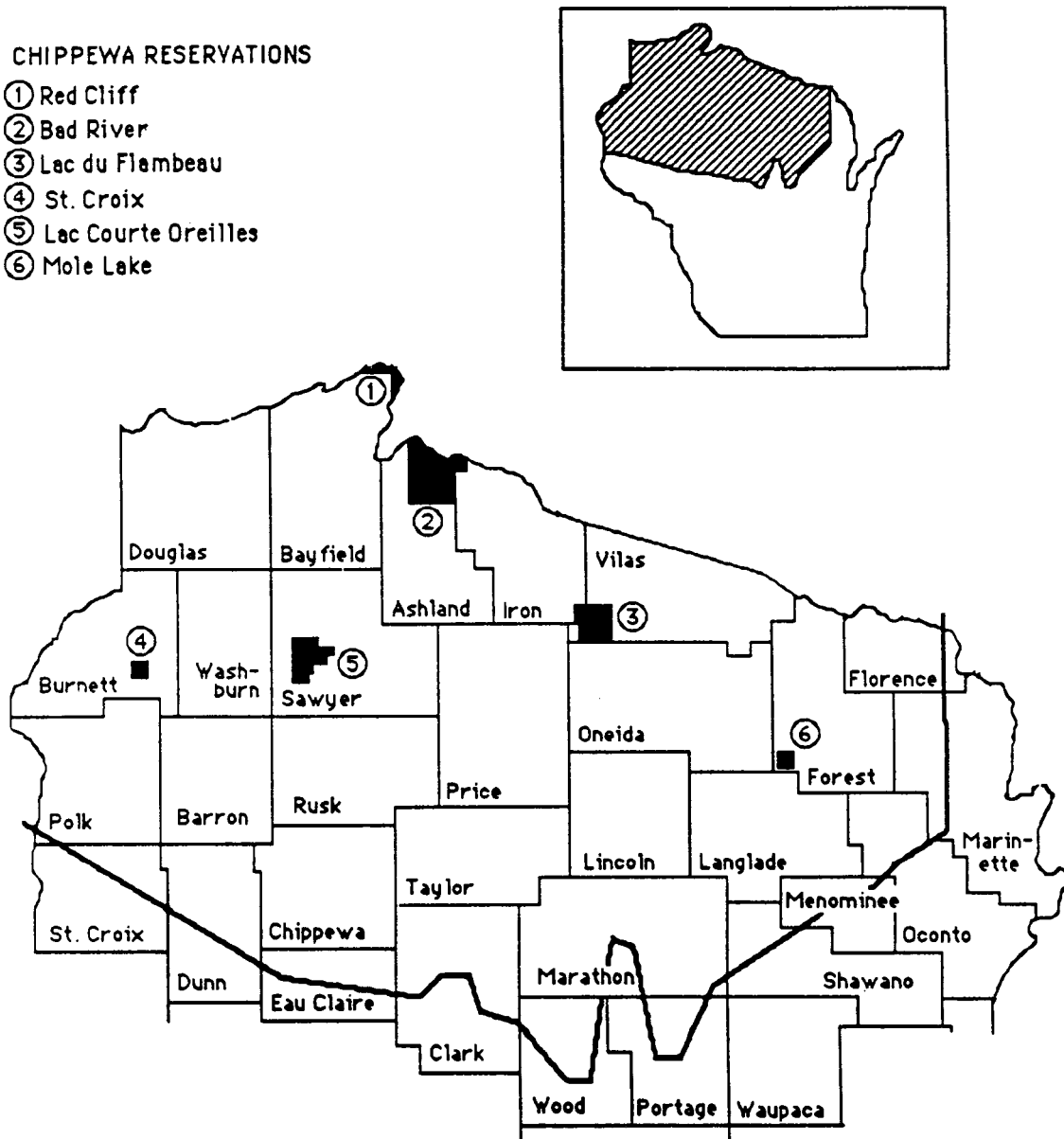


Figure 2. Off-Reservation Treaty Fishing Permit used during the 1989 open-water season.

28	29	30	31	Month	1	2	3	4	5
27	Off-Reservation Treaty Fishing Permit				N <sup>o</sup>	1445			6
26	<input type="checkbox"/>	Spearing	<input type="checkbox"/>	Fyke Netting					7
	<input type="checkbox"/>	Seining	<input type="checkbox"/>	Gill Netting					8
25	Tribal ID Number _____ of _____ Reservation								9
	Signature of Permittee: _____								10
24	Issued by: _____ of _____ Reservation								11
23	Water: _____ County: _____								12
	Bag Limit: Walleye _____ Muskellunge _____								
22	Other Restrictions: _____								
21	20	19	18	17	16	15	14	13	12

FRONT

Spearing Times:		Number of:	
Starting _____	Ending _____	Walleye per boat _____	Musky per boat _____
WALLEYE LENGTHS			
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

BACK

## RESULTS AND DISCUSSION

### SPRING SPEARING

#### Fishing Effort

Effort in the spring spear fishery has been measured in three ways: by the number of spearkers, the number of spearker-nights, and the number of boat-hours.

**Number of spearkers.** A total of 271 tribal members participated in the 1989 spring spear fishery (Table 1; Appendix A). Roughly half (118 members or 43.5%) speared on lakes selected by Lac du Flambeau. The number of persons spearing on lakes selected by the other five tribes ranged from 23 to 42.

All persons spearing on lakes selected by each of three tribes (Bad River, Lac Courte Oreilles, and Mole Lake) were members of that tribe. Of the persons spearing on lakes named by Red Cliff and Lac du Flambeau, 2 and 3 spearkers, respectively were enrolled at Bad River. Of the 42 persons spearing on lakes named by St Croix, 17 were members of another tribe (1 from LCO, and 8 each from LDF and Mille Lacs).

Table 1. Number of spearkers on lakes named by six Wisconsin Chippewa bands during spring 1988 and 1989.

Tribe	Number of Spearkers			Percent Change
	1988	1989	Difference	
Bad River	35	27	- 8	- 23%
LCO	48	30	- 18	- 38%
LDF	200	118	- 82	- 41%
Mole Lake	63	31	- 32	- 51%
Red Cliff	14	23	+ 9	+ 64%
St. Croix *	66	42	- 24	- 36%
	---	---	-----	-----
Total:	426	271	- 155	- 36%

\* = Includes members from Mille Lacs Tribe: 7 in 1988 and 8 in 1989.

The number of spearers was much lower than during spring spearing seasons in 1987 and 1988. Compared to 1988, the total number of spearers decreased by 155 persons or 36% (Table 1). This decrease was noted for all tribes except Red Cliff where the number of spearers increased by 64% from 14 to 23 persons. Compared to 1987 when 419 persons participated (Kmiecik and Shively 1988), effort in 1989 decreased by 148 persons or 35%.

**Number of Spearer-nights.** A total of 996 spearer-nights (number of persons times number of nights that each person speared) were observed in 1989 (Table 2; Appendix B). Roughly half of this effort (429 spearer-nights or 45%) occurred on lakes selected by Lac du Flambeau. Spearer-night effort on lakes selected by the other five tribes ranged from 70 to 168.

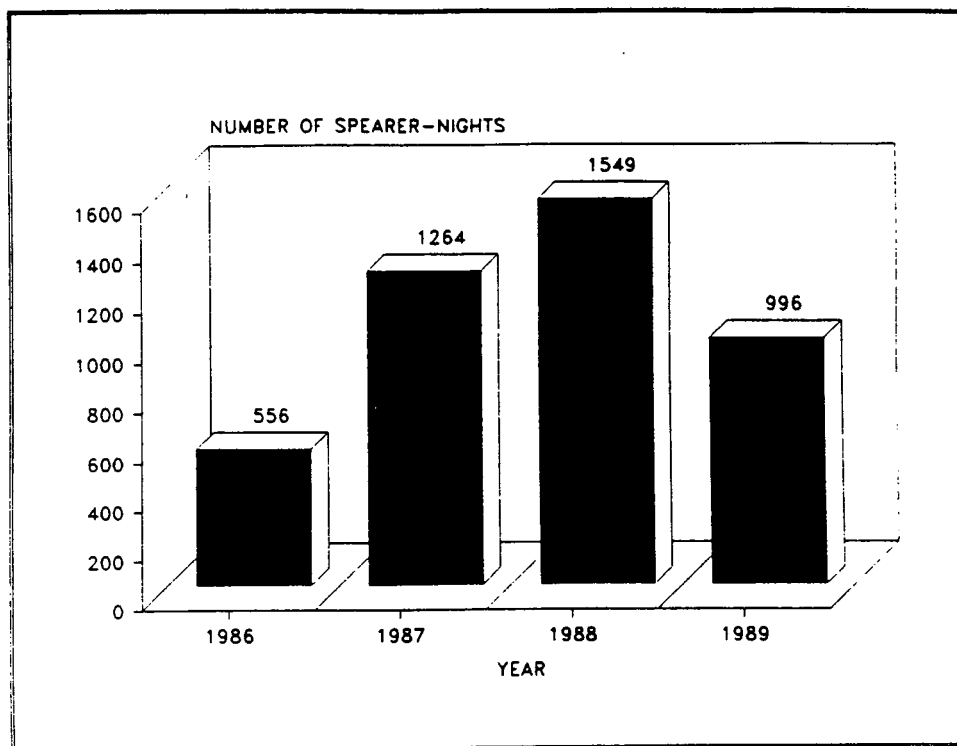
Table 2. Number of spearer-nights on lakes named by six Wisconsin Chippewa bands during spring 1988 and 1989.

Tribe	Number of Spearer-Nights			Percent Change
	1988	1989	Difference	
Bad River	64	70	+ 6	+ 9%
LCO	165	109	- 56	- 34%
LDF	788	429	- 359	- 46%
Mole Lake	249	120	- 129	- 52%
Red Cliff	37	100	+ 63	+ 170%
St. Croix *	246	168	- 78	- 32%
..	1,549	996	- 553	- 43%

\* = Includes effort for Mille Lacs Tribe: 22 spearer-nights in 1988 and 29 spearer-nights in 1989.

Effort in 1989 was much lower than during the two previous spring seasons but higher than in 1986, the first year that spearer-night effort was calculated (Figure 3). Compared to 1988 (1,549 spearer-nights), effort decreased by 553 spearer-nights or 36% (Table 2). This decrease was noted for four of the six tribes that speared in 1988.

Figure 3. Number of spearer-nights during spring spearing seasons from 1986-1989.



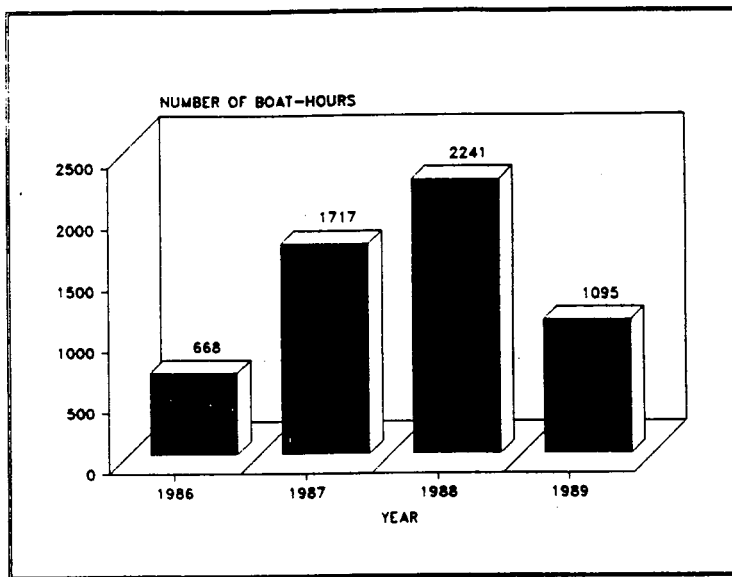
**Number of Boat-Hours.** A total of 1,094.6 boat-hours of effort was recorded in 1989 (Table 3; Appendix B). This effort was much lower than during the two previous years but higher than in 1986 (Figure 4). Compared to 1988 (2,240.6 boat-hours), effort decreased by 1,146 boat-hours or 51%.

Table 3. Number of spearer boat-hours on lakes named by six Wisconsin Chippewa bands during spring 1988 and 1989.

Tribe	Number of Boat-Hours			Percent Change
	1988	1989	Difference	
Bad River	172.9	134.8	- 38.1	- 22%
LCO	247.0	121.5	- 125.5	- 51%
LDF	1,093.7	364.1	- 729.6	- 67%
Mole Lake	393.2	155.4	- 237.8	- 60%
Red Cliff		109.2	n/a	n/a
St. Croix *	333.8	209.6	- 124.2	- 37%
	-----	-----	-----	-----
	2,240.6	1,094.6	- 1,146.0	- 51%

\* = Includes effort for Mille Lacs Tribe.

Figure 4. Number of boat-hours of effort during spring spearing seasons from 1986-1989.



Boat-hour statistics during the past three years have been slightly biased by the fact that not all effort has been recorded. For example, in 1989 for all tribes combined, a total of 439 interviews were conducted and boat-hour effort was noted for 411 or 93.6% of the total (Table 4). These 411 interviews included 95.5% of the walleye that were harvested (15,337 of 16,054). In the two previous years, boat-hour effort was recorded for a slightly greater percent of the walleye harvest: 98% in 1988 and 97% in 1987 (Kmiecik and Shively 1989).

Table 4. Number of interviews and average length of spearing trip (in boat-hours) during spring 1989.

Tribe	Number of interviews		Boat-hours (c)	Average length of trip (c/a)
	with effort (a)	without effort (b)		
Bad River	33	1	134.81	4.09
LCO	51	--	121.49	2.38
LDF	148	24	364.14	2.46
Mole Lake	59	--	155.35	2.63
Red Cliff	43	1	109.24	2.54
St. Croix *	77	2	209.63	2.72
	-----	---	-----	----
	411	28	1,094.66	2.66

\* = Includes effort for Mille Lacs Tribe.

## Total Harvest

Fifteen taxa of fish were harvested during the 1989 spring spear fishery (Table 5). Of the 16,394 fish taken, 98% were walleye. Both muskellunge and bass made up 0.7% of the catch. Northern pike accounted for 0.1% of the harvest. One sturgeon and one trout were speared. Other species combined (panfish, rough fish, and cisco) made up the remaining 0.6% of the harvest.

Table 5. Number and percent of various fish species harvested by tribal spearkers during spring spearing seasons from 1985 through 1989.

TAXA	NUMBER OF FISH					PERCENT OF TOTAL				
	1985	1986	1987	1988	1989	1985	1986	1987	1988	1989
Walleye	2,761	6,940	21,321	25,969	16,054	94.75%	98.06%	97.25%	98.08%	97.93%
Muskellunge	86	55	196	158	118	2.95%	0.78%	0.89%	0.60%	0.72%
Bass sp.	21	39	275	167	113	0.72%	0.55%	1.25%	0.63%	0.69%
Northern Pike	2	13	41	59	14	0.07%	0.18%	0.19%	0.22%	0.09%
Lake Sturgeon	1		6	2	1	0.03%		0.03%	0.00%	0.00%
Trout sp.			2		1			0.00%		0.00%
Rock Bass	12	3	1	23	9	0.41%	0.04%	0.00%	0.09%	0.05%
Crappie sp.		9	22	47	27		0.13%	0.10%	0.18%	0.16%
Bluegill	2	2	8	9	3	0.07%	0.03%	0.04%	0.03%	0.02%
Yellow Perch				17	13				0.06%	0.08%
Bullhead sp.	1	1	4	2	3	0.03%	0.01%	0.02%	0.00%	0.02%
Sucker sp.	27	15	48	21	31	0.93%	0.21%	0.22%	0.08%	0.19%
Carp	1		1	1		0.03%		0.00%	0.00%	
Burbot				1	3				0.00%	0.02%
Bowfin				1	2				0.00%	0.01%
Cisco					2					0.01%
<b>Total:</b>	<b>2,914</b>	<b>7,077</b>	<b>21,925</b>	<b>26,477</b>	<b>16,394</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>



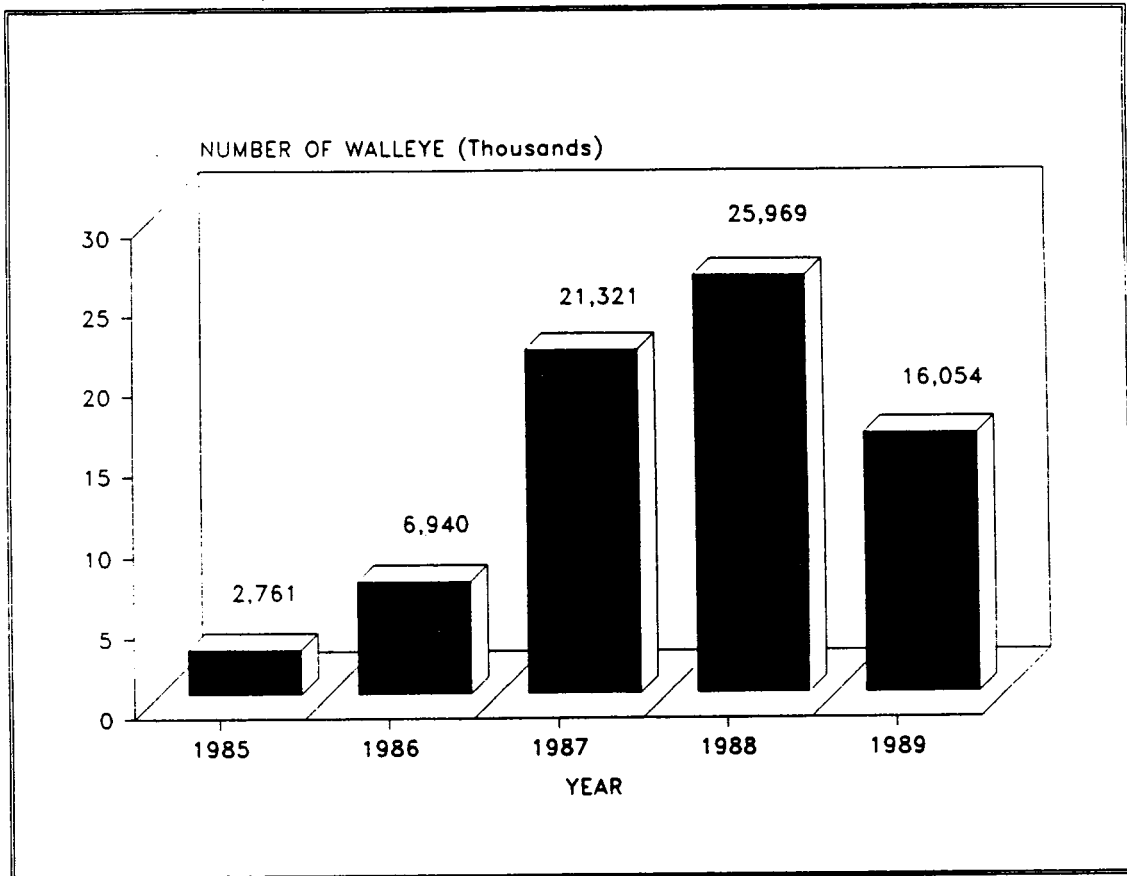
## Walleye Harvest

**Lake Quotas.** Tribal walleye quotas (TQ's) were selected for 254 lakes and totalled 43,801 walleye. The percent of the "safe harvest" selected as tribal quotas for these lakes ranged from 54 to 59.9%. Two tribes selected the same lake in 26 instances and agreed on various inter-tribal allocation formulas to keep the TQ within the selected percentage.

Tribal spearers harvested a total of 16,054 walleye from 102 lakes (Appendix B). Walleye were taken from each of these 102 lakes except the Minong Flowage (Washburn Co) where spearing occurred but no walleye were caught.

Prior to 1989, an increasing number of walleye had been harvested during each of the four spearing seasons from 1985-1988 (Figure 5). The 1989 harvest level broke this pattern and fell well below levels recorded for the two previous years.

Figure 5. Number of walleye harvested during spring spearing seasons from 1985-1989.

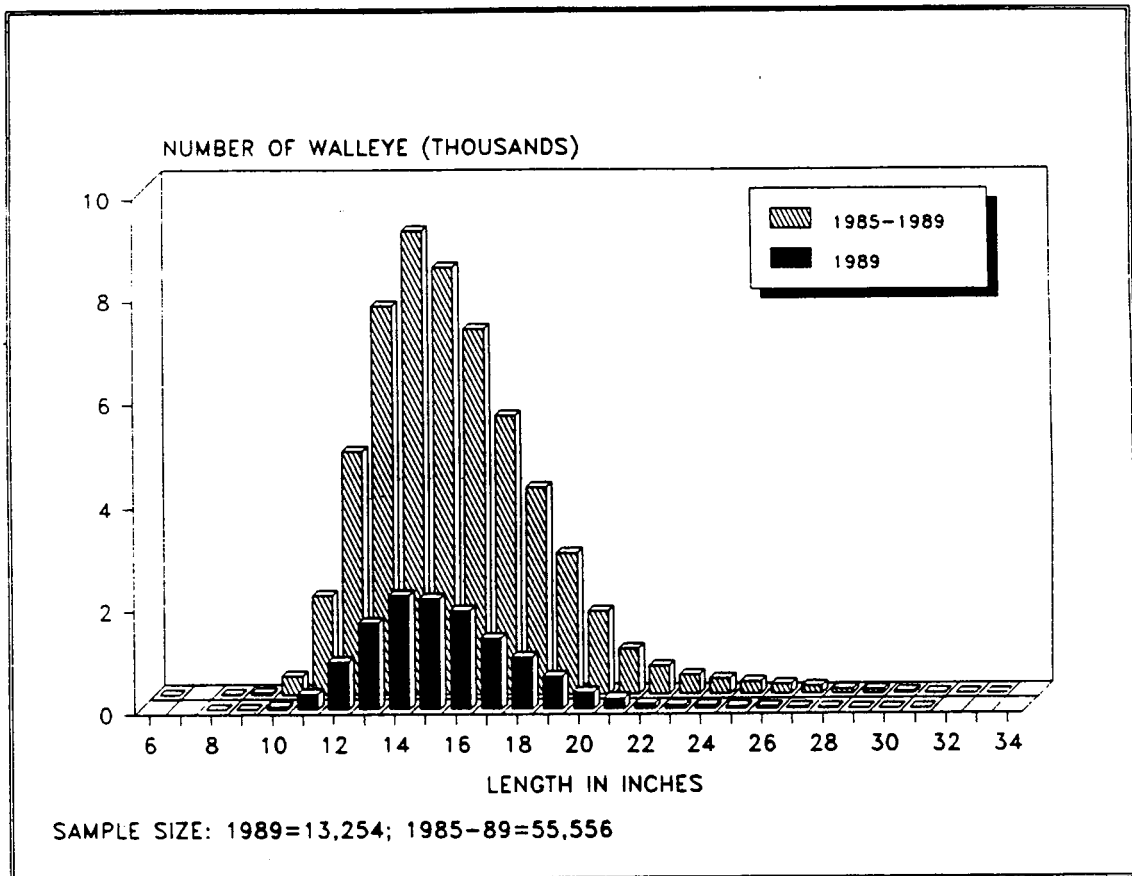


Overall, 36.6% of the total walleye TQ was harvested. However, this percentage includes the quota for 152 lakes where no spearing occurred. For only the 102 lakes that were speared, 58.5% of the combined TQ (27,427 walleye) were harvested (Appendix B). Also, within this set of 102 lakes, at least 75% of the individual lake quota was harvested from 46 lakes.

**Mean length.** A total of 13,254 or 83% of the catch was measured in 1989 (Appendix C). Lengths of walleye ranged from 8.2 to 31.1 inches and averaged 16.0 inches, similar to the average in 1987 (15.9 inches) and 1988 (15.8 inches) (Appendix D). Size restrictions were identical during these three seasons. Average length was highest in 1985 (16.3 inches) when regulations allowed one fish 20 inches and larger to be harvested and lowest in 1986 (15.5 inches) when one walleye from 20-24 inches and no walleye over 24 inches could be taken.

Overall, for the 5 spring spearing seasons combined, 76% of the walleye harvest has been measured (55,556 of 73,045 fish) (Figure 6; Appendix D). Average length for this 5 year sample was 15.9 inches. Also, 8% of the walleye (4,461 fish) were 20 inches or larger while 1.4% (757 fish) were 25 inches or larger.

Figure 6. Length frequency of walleye speared during 1989 and during the five year period 1985-1989.



**Sex Composition of Catch.** The majority of walleye measured in 1989 were male i.e. 11,222 of 13,254 fish or 84.6% (Table 6). Females (1,030 fish) comprised 7.8% of the measured harvest, while those whose sex could not be determined (1,002 fish) made up 7.6%. Males made up 91.6% of sexable fish.

Table 6. Number and percent of walleye that were sexed and were male, female, or unknown sex during spring spearing seasons from 1985 through 1989.

Walleye	Spring Spearing Season					5 Year Total
	1985	1986	1987	1988	1989	
Harvested Number	2,761	6,940	21,321	25,969	16,054	73,045
Sexed Number	856	6,842	14,224	19,368	13,254	54,544
Percent	31.0%	98.6%	66.7%	74.6%	82.6%	74.7%
Male Number	696	6,013	11,539	16,193	11,222	45,663
Percent	81.3%	87.9%	81.1%	83.6%	84.6%	83.7%
Female Number	138	356	1,456	2,033	1,030	5,013
Percent	16.1%	5.2%	10.2%	10.5%	7.8%	9.2%
Unknown Number	22	473	1,229	1,142	1,002	3,868
Percent	2.6%	6.9%	8.7%	5.9%	7.6%	7.1%

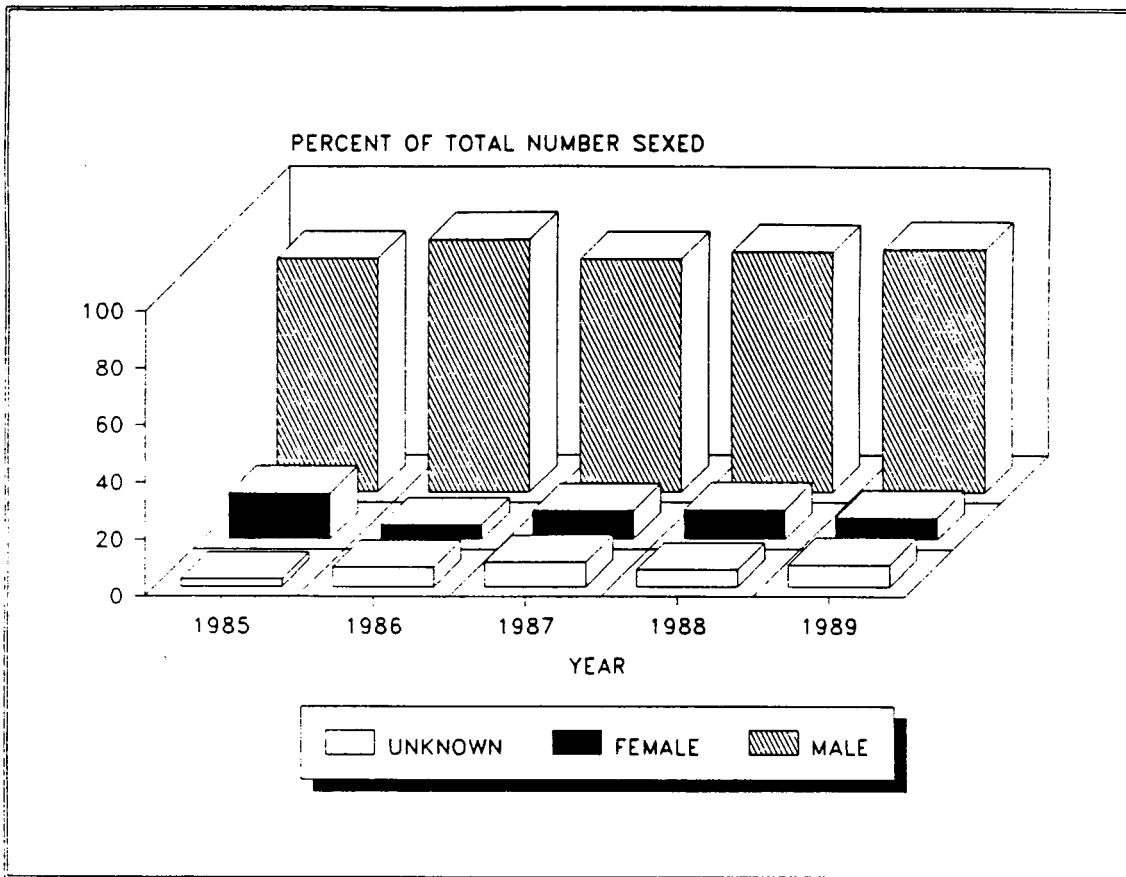
For the 5 spring spearing seasons combined, a total of 54,544 walleye have been sexed (Table 6, Figure 7). Of these, 83.7% were male, 9.2% were female, and 7.1% were of undetermined or unknown sex.

The preponderance of males in the catch is partly due to bag and size restrictions that limit the number of fish over 20 inches that can be taken. For example, in the years 1987-1989, despite whatever the nightly bag limit was set at, spearers were limited to two fish 20 inches and larger of which only one could be greater than 24 inches. Since the majority of walleye above 20 inches are female, this regulation has the effect of limiting the number of female walleye taken by focusing harvest on fish under 20 inches.

Differences in behavior between the sexes during the spawning season also accounts in part for this unbalanced sex ratio. In general, male walleye spend more time (i.e. number of nights, as well as, hours per night) on or near spawning areas than females. This longer period of time spent in shallow spawning areas, increases the likelihood of a speared walleye being male.

Another factor that could influence this sex ratio is spearer preference. For example, in a lake with a mercury advisory, spearers may avoid the larger contaminated fish and select smaller fish which generally have lower mercury levels. Again, smaller walleye would usually be male.

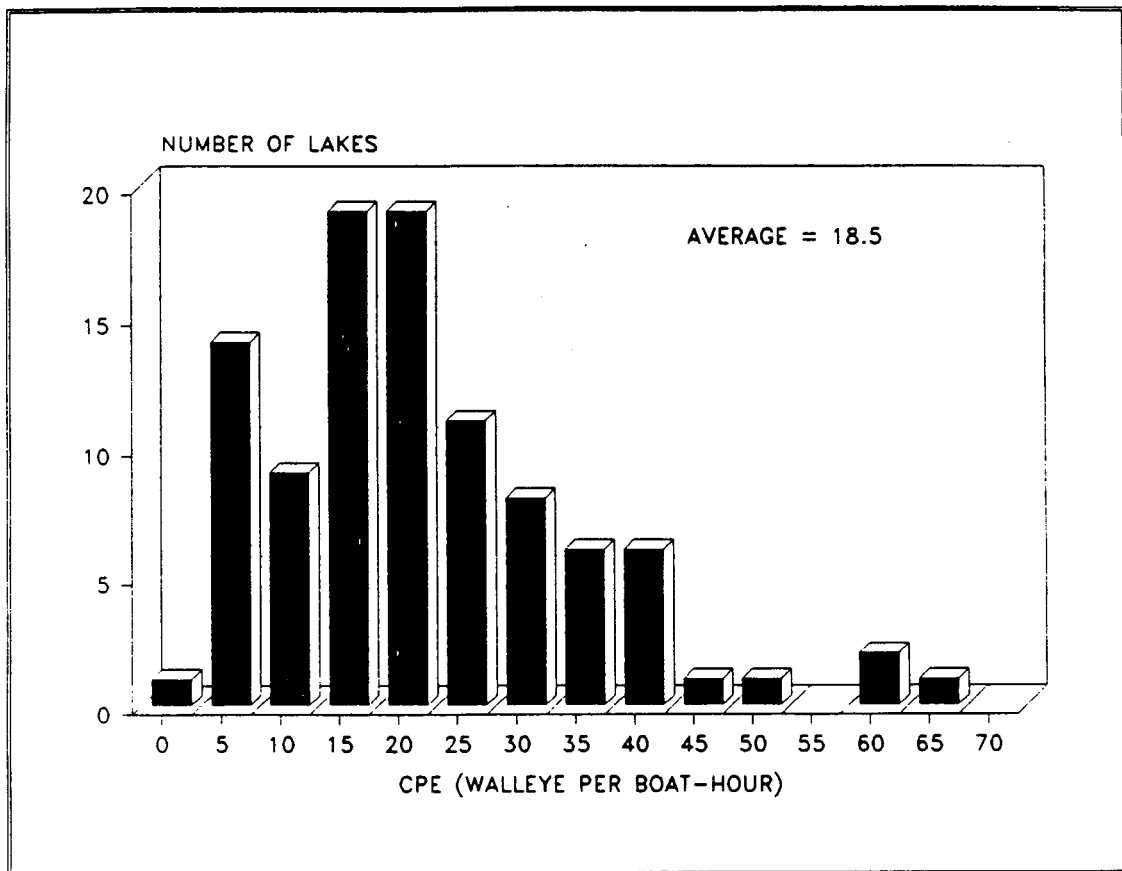
Figure 7. Sex composition of the walleye harvest during spring seasons from 1985-1989.



**Catch per effort (CPE).** In 1989 a total of 1,095 boat-hours of spearing was recorded in which 15,337 walleye were caught. Catch per effort was 14.0 walleye per boat-hour (Appendix B).

Catch rates for 98 of the 102 lakes speared in 1989 ranged from 0.0 to 63.9 walleye per hour (Figure 8; Appendix C) and averaged 18.5 per hour. This unweighted catch rate by lake was higher than the average of 14.2 walleye per hour (range = 0.0 - 84.1) for 91 lakes speared in 1988 and 12.2 per hour (range = 0.0 - 46.4) for 66 lakes speared in 1987 (Biological Issues Group 1988).

Figure 8. Walleye CPE (number per boat-hour) in 98 lakes speared during spring 1989.



## Muskellunge Harvest

Harvest of muskellunge declined for the second consecutive year after reaching a peak of 196 fish in 1987 (Table 5, Figure 9). During spring 1989 a total of 118 muskellunge were speared from 36 lakes in eight counties (Table 7). This harvest represented 9.7% of the combined tribal muskellunge quota (1,221 fish) selected for 184 lakes in 15 counties prior to the season.

Overall, the number of muskellunge harvested from each of the 184 lakes with a tribal quota was low. Ten or more musky were taken from 3 lakes while 7 or fewer were speared from the remaining 33 lakes where harvest occurred (Table 7). Within this set of 36 lakes, 75% or more of the muskellunge TQ was taken from 4 lakes. In addition, the number of muskellunge harvested per surface-acre of water averaged 0.00305 and ranged from 0.0002 to 0.0092. No muskellunge were speared from the other 148 lakes.

Lengths of the 117 muskellunge measured ranged from 25.2 to 50.0 inches and averaged 35.7 inches. During the five spring spearing seasons combined, a total of 578 muskellunge have been measured with lengths ranging from 16.0-53.0 inches (Appendix E; Figure 10). Average length for these fish was 36.1 inches.

Of the measured catch in 1989, 24% (28 of 117 fish) were less than 32 inches while 6% (7 muskellunge) were 45 inches and larger. For the 578 muskellunge measured from 1985-1989, 21% were less than 32 inches and 8% were 45 inches and larger (Appendix E).

The number of muskellunge per spearer averaged 0.44 for all tribes combined. In other words, 44 muskellunge were taken for every 100 spearers. The number per spearer was 0.37 in 1988 and 0.47 in 1987 (Kmiecik and Shively 1989). For individual tribes, the number per spearer was higher for Lac Courte Oreilles (0.73) and Lac du Flambeau (0.57) than for the other 4 tribes.

Catch per boat-hour in 1989 averaged 0.11 muskellunge. The number per boat-hour was 0.07 in 1988 and 0.11 in 1987.

Figure 9. Number of muskellunge harvested during spring spearing seasons from 1985-1989.

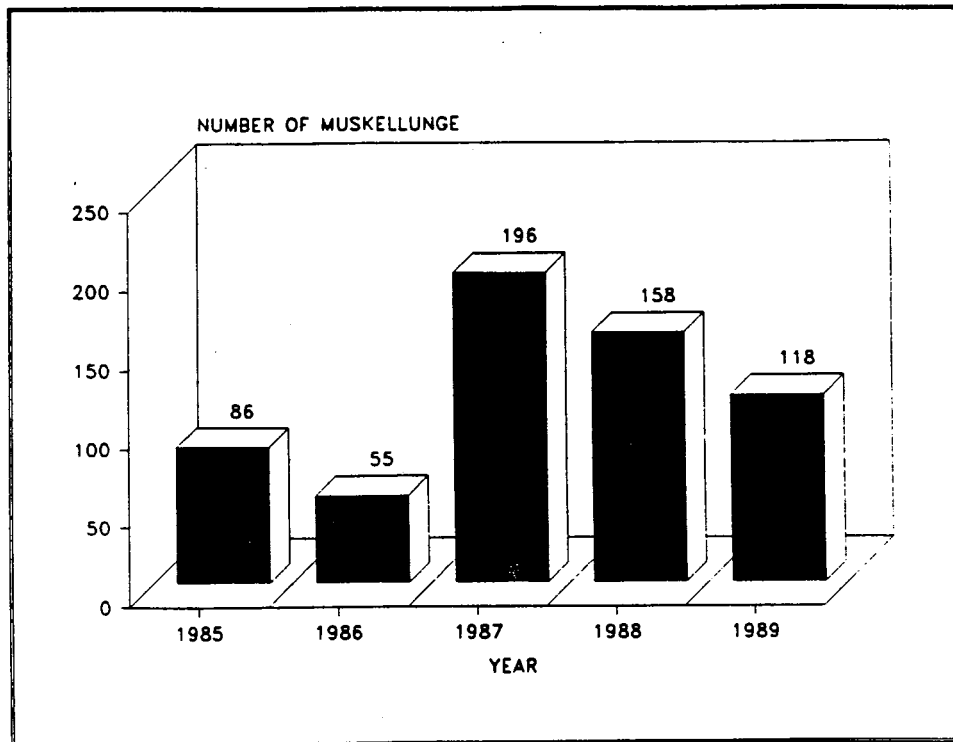


Figure 10. Length-frequency of muskellunge speared during 1989 and during the five year period 1985-1989.

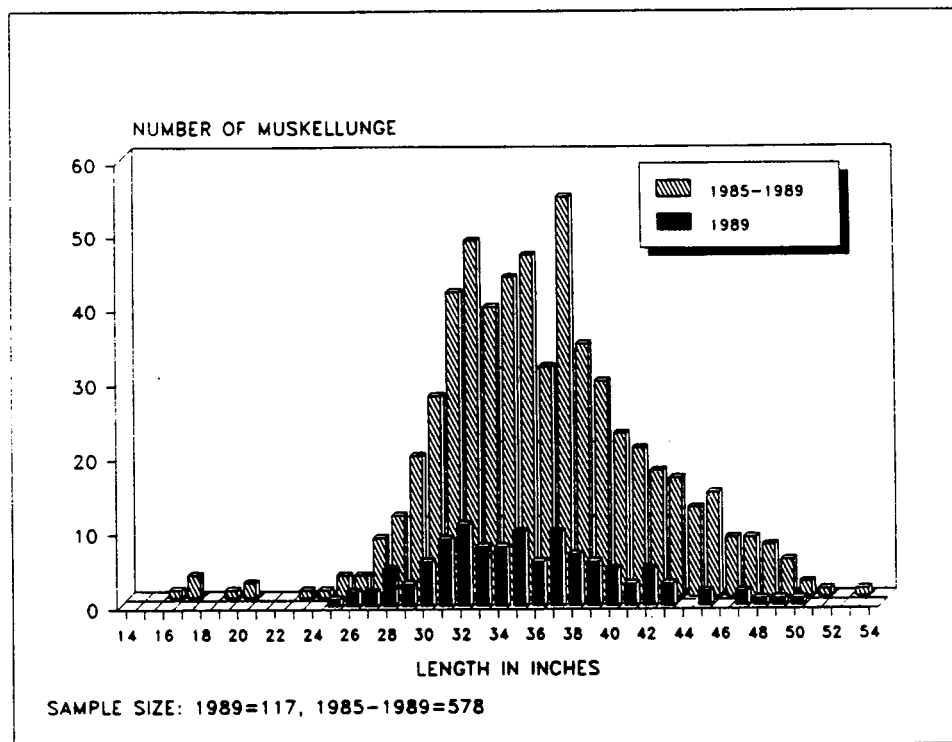


Table 7. Number of muskellunge, northern pike, and bass harvested from various waters during spring 1989. Data arranged by species, county, and lake.

LAKE	COUNTY	ACRES	TRIBE	MUSKY		NORTHERN PIKE		BASS			
				TRIBAL QUOTA	% OF TO SPEARED	ACRES	TRIBE	LARGE MOUTH	SMALL MOUTH I.D.		
1	ENGLISH L	244	BRV	3	66.7%	0.820			1		
2	MIDDLE EAU CLAIRE L	926	RC	9	11.1%	0.108			2		
3	BIG MCKENZIE L	1185	STC	10	70.0%	0.591			5		
4	BEARSKIN L	400	LDF	5	20.0%	0.250			5		
5	CARROL L	335	LDF	4	50.0%	0.597			2		
6	CRESCENT L	612	LDF	3	100.0%	0.490			1		
7	KATHERINE L	590	LDF	7	14.3%	0.169			17		
8	LONG L	620	MLK	3	33.3%	0.161			23		
9	MINOCQUA L	1360	LDF	11	27.3%	0.221			6		
10	PELICAN L	3585	LDF/MLK	19	89.5%	0.474			7		
11	SQUIRREL L	1317	LDF	11	18.2%	0.152			2		
12	TOMAHAWK L	3392	LDF	21	19.0%	0.118			8		
13	PIKE L	806	LDF	8	12.5%	0.124			1		
14	GRINDSTONE L	3111	LCO	9	55.6%	0.161			1		
15	L CHIPPEWA	15300	LCO	31	9.7%	0.020					
16	LAC COURTE OREILLES	5039	LCO	16	62.5%	0.198					
17	LOST LAND L	1304	BRV	10	50.0%	0.383					
18	ROUND L	3054	LCO	18	22.2%	0.131					
19	BIG ARBOR VITAE L	1090	LDF	10	100.0%	0.917					
20	CATFISH L	1012	LDF	10	50.0%	0.494					
21	CLEAR L	555	LDF	6	16.7%	0.180					
22	CRAB L	949	LDF	9	22.2%	0.211					
23	CRANBERRY L	956	LDF	6	66.7%	0.628					
24	HARRIS L	507	LDF	6	16.7%	0.197					
25	ISLAND L	1023	LDF	10	20.0%	0.196					
26	KENTUCK L	957	MLK	8	12.5%	0.104					
27	L LAURA	599	LDF	7	14.3%	0.167					
28	LAC VIEUX DESERT	4300	MLK	14	7.1%	0.023					
29	LITTLE ARBOR VITAE L	534	LDF	36	5.6%	0.375					
30	LYNX L	339	LDF	4	25.0%	0.295					
31	N TWIN L	2788	LDF	19	5.3%	0.036					
32	OXBOW L	511	LDF	6	33.3%	0.391					
33	PAPOOSE L	428	LDF	5	60.0%	0.701					
34	PLUM L	1108	LDF	10	10.0%	0.090					
35	TROUT L	3816	LDF	23	8.7%	0.052					
36	MIDDLE MCKENZIE L	530	STC	5	80.0%	0.755					
TOTAL:				118					50	16	47
WEIGHTED AVERAGE:					35.7%	0.305					

LAKE	COUNTY	ACRES	TRIBE	ACRES	TRIBE	NORTHERN PIKE	LARGE MOUTH	SMALL MOUTH I.D.	
1	MIDDLE EAU CLAIRE L	926	RC				1		
2	CLAM R FL	473	STC				5		
3	ROONEY L	322	STC				5		
4	RED L	258	STC					2	
5	BUTTERNUT L	1292	MLK					1	
6	L LUCERNE	1026	MLK					17	
7	PINE L	1670	MLK				23		
8	BALSAM L	2054	STC				6		
9	BIG ROUND L	1015	STC					7	
10	HALF MOON L	579	STC					2	
11	ROUND L	3054	LCO				8		
12	L NANCY	WASHBURN	772	STC			1		
13	LONG L	WASHBURN	3290	STC			1		
14	MIDDLE MCKENZIE L	WASHBURN	530	STC				4	
TOTAL:							50	16	47
1	NAMEKAGON L	BAYFIELD	3227	RC		1			
2	CLAM R FL	BURNETT	473	STC		1			
3	CRANBERRY L	DOUGLAS	172	STC		3			
4	L NEBAGAMON	DOUGLAS	914	RC		1			
5	LOMER EAU CLAIRE L	DOUGLAS	802	RC		1			
6	PINE L	FOREST	1670	MLK		2			
7	BALSAM L	POLK	2054	STC		1			
8	BIG ROUND L	POLK	1015	STC		1			
9	GRINDSTONE L	SAWYER	3111	LCO		1			
10	LAC COURTE OREILLES	SAWYER	5039	LCO		1			
11	L NANCY	WASHBURN	772	STC		1			
TOTAL:						14			



## Bass Harvest

Total harvest of bass (largemouth and smallmouth combined) declined for the second consecutive year after reaching a peak of 275 bass in 1987 (Table 5, Figure 11). A total of 113 bass were harvested from 14 lakes in 7 counties (Table 7). The majority of bass (88 fish or 78% of the total) were taken from nine lakes named by St Croix. St Croix members also speared the majority of bass in the two other years when more than 100 were harvested: 76% in 1987 and 75% in 1988 (Kmiecik and Shively 1988, 1989).

Lengths of 111 bass measured ranged from 7.8-22.7 inches (Figure 12) and averaged 15.3 inches (Appendix F), a value identical or similar to average length in 1986 (15.3 inches) and 1987 (15.2 inches). Average length was highest in 1988 (15.8 inches). For the 521 bass measured from 1985-1989, average length was 15.4 inches.

Species was recorded for 66 bass in 1989 (Table 7). A total of 50 largemouth bass was taken from 8 lakes and averaged 15.4 inches. The number of smallmouth speared from 5 lakes was 16 with an average length of 13.9 inches. No species identification was made for 47 bass; average length for 45 of these fish was 15.6 inches.

The number of bass per spearer was 0.42 for all tribes combined and highest for St. Croix (2.10). Catch per boat-hour was 0.10 bass.

Figure 11. Number of bass harvested during spring spearing seasons from 1985-1989.

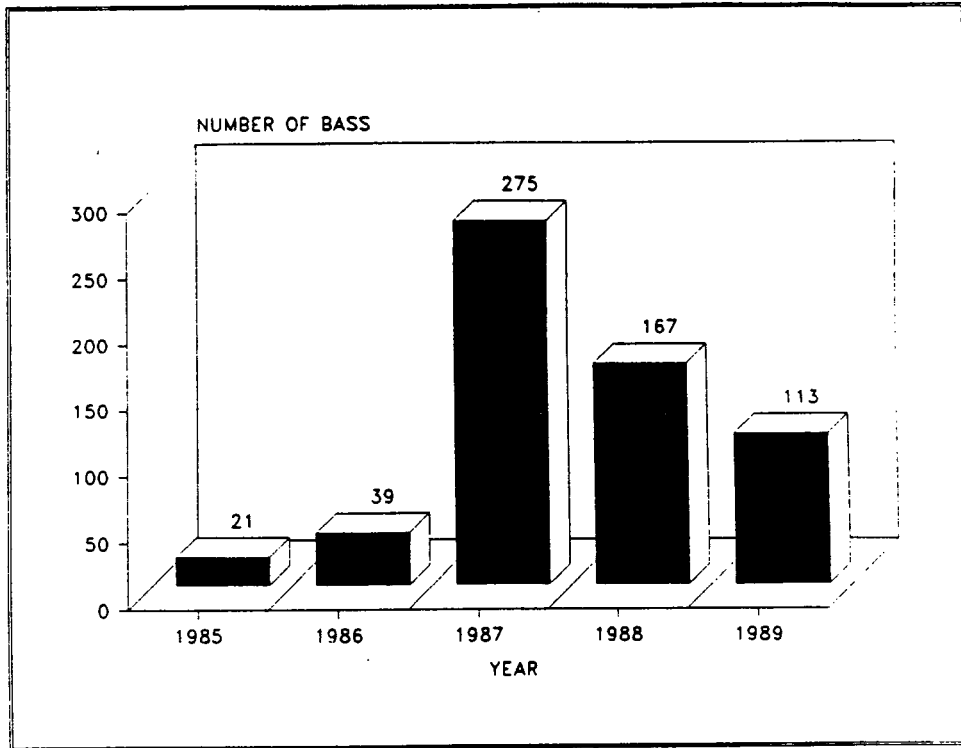
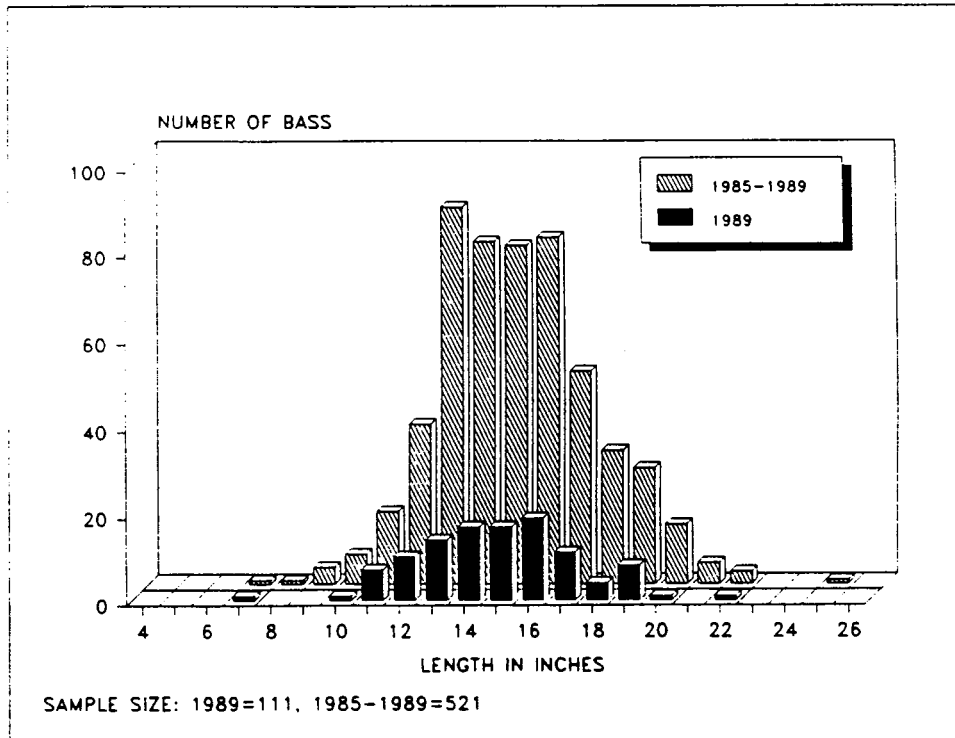


Figure 12. Length-frequency for bass taken during 1989 and during the five year period 1985-1989.



## Northern Pike Harvest

The pattern of northern pike harvest changed in 1989. The previous trend from 1985-1988 was one of gradually increasing harvest (Table 5, Figure 13). However, in 1989 the number speared dropped off sharply to the level observed in 1986 when 13 pike were taken. Harvest of pike continues to be incidental and an insignificant component of the fishery.

A total of 14 northern pike were harvested from 11 lakes in seven counties (Table 7). St Croix members took half (7) of these pike. Length of all 14 northerns was measured and averaged 23.8 inches (range: 17.2 - 37.0 inches) (Figure 14). During the four year period from 1986-1989 a total of 99 northern pike have been measured. Average length for this sample was 25.5 inches (range: 23.8 - 26.0 inches) (Appendix G).

Figure 13. Number of northern pike taken during spring spearing seasons from 1985-1989.

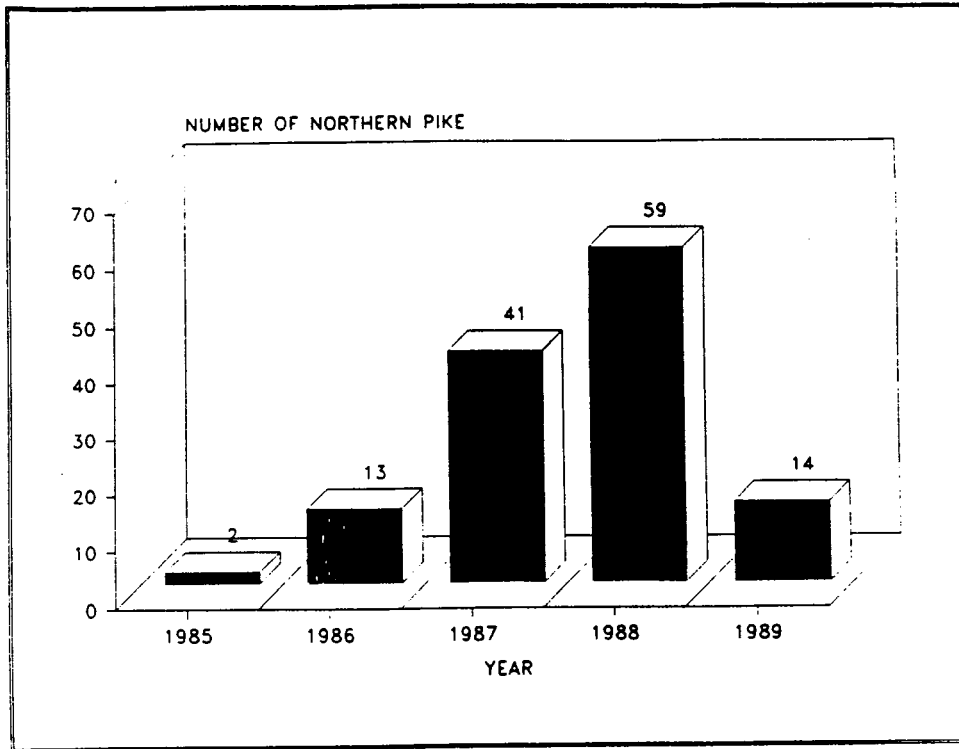
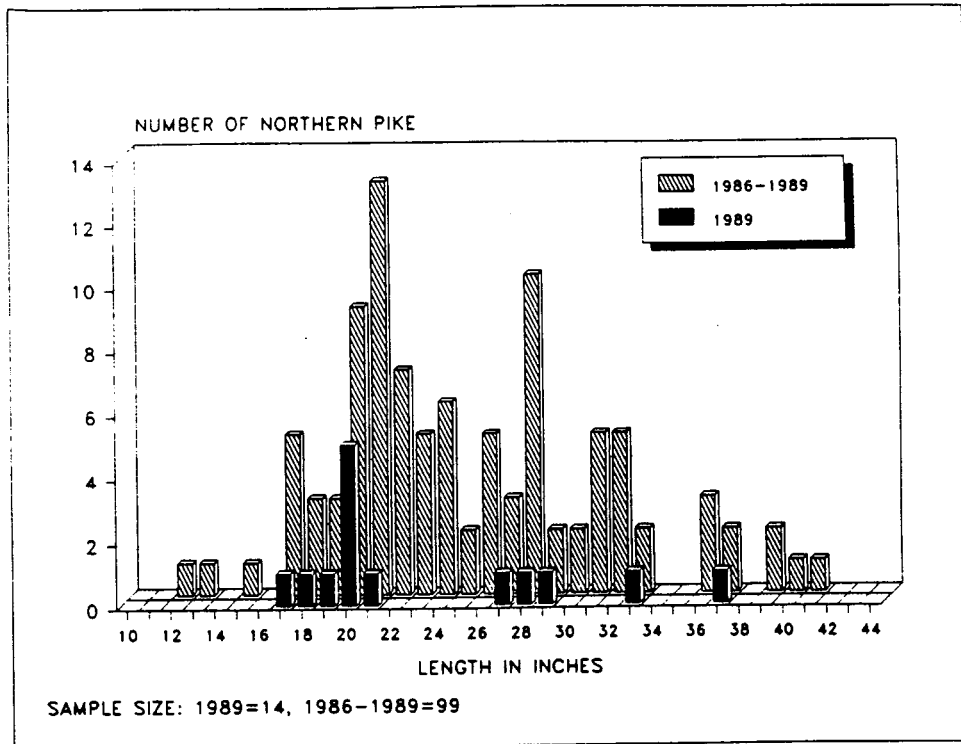


Figure 14. Length frequency of northern pike speared during 1989 and during the four year period 1986-1989.

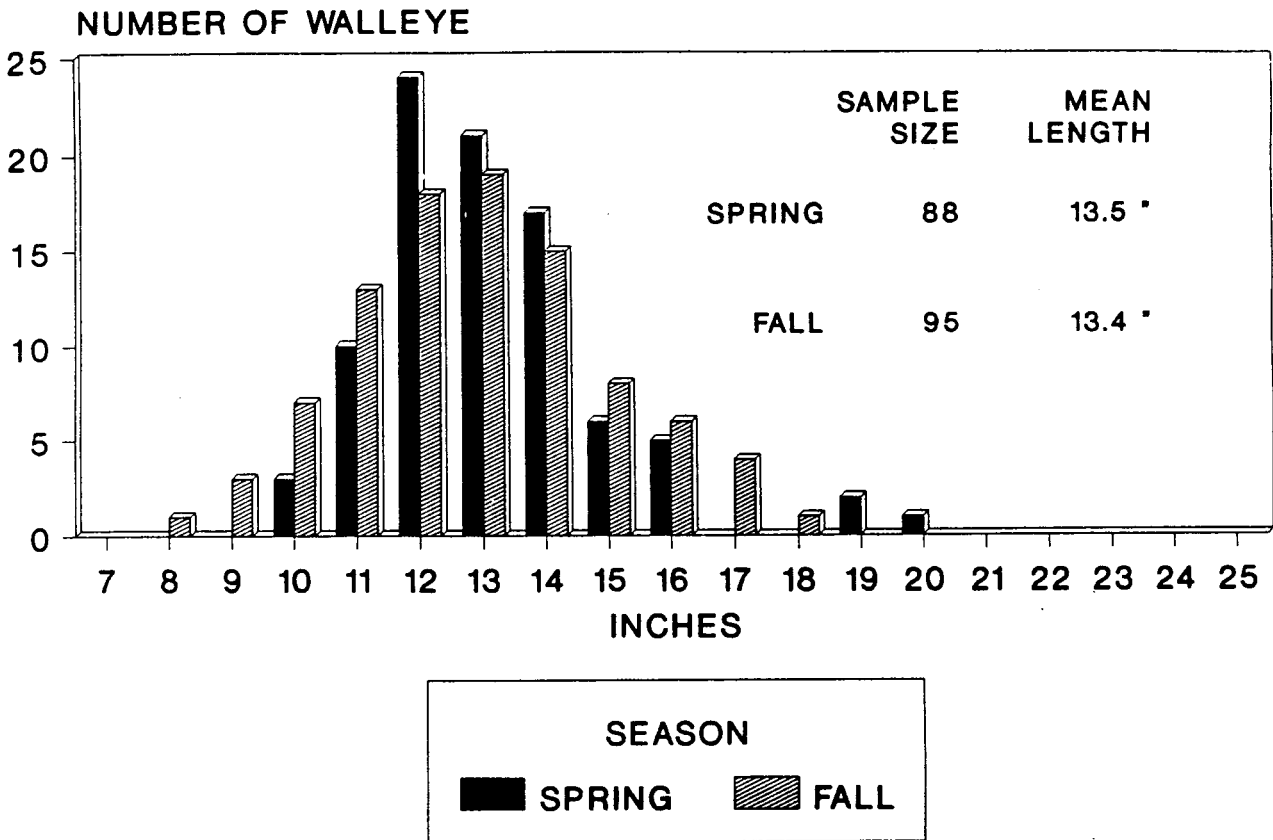


**FALL SPEARING**

Spearing occurred on two October nights and was limited to 2 lakes named by the Bad River Tribe. A total of 17 spearers took 95 walleye from Round Lake (Price County) on October 7. The following night, 16 spearers harvested 5 walleye and 3 northern pike from Lake Namekagon (Bayfield County). Total effort for the 2 nights combined was 23 boat-hours; CPE was 4.3 walleye per boat-hour.

Mean length for the 100 walleye was 13.4 inches. For walleye in Round Lake, mean length of fish speared during fall and spring was similar, 13.4 and 13.5 inches, respectively (Figure 15).

Figure 15. Length frequency of walleye harvested in Round Lake (Price County) during spring and fall spearing in 1989.

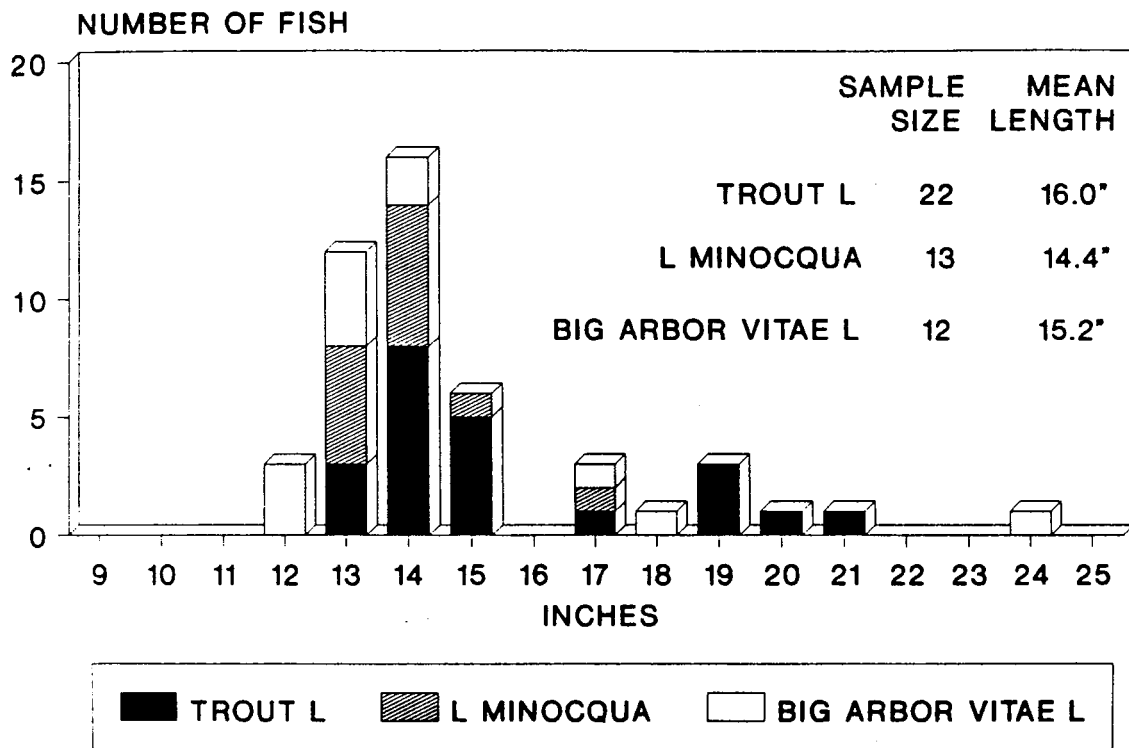


**SUMMER GILL-NETTING**

Gill-net permits were issued on 4 dates during June-July to persons from the Lac du Flambeau tribe. Two lakes were netted one night each (Trout Lake and Big Arbor Vitae in Vilas County) and one lake was netted two nights (Minocqua in Oneida County). Six hundred feet of 3 inch mesh (stretch) net was set each night.

A total of 47 walleye, the targeted species, was caught from the three lakes combined. CPE ranged from 0.0 - 3.7 walleye per 100 feet of net and averaged 2.0. Lengths of walleye ranged from 12.5 - 24.9 inches (Figure 16) and averaged 15.3 inches. Mean length per lake ranged from 14.4 - 16.0 inches and fell within the predicted or "target" range (13.5 - 16.49 inches) for walleye taken with 3 inch mesh nets (Appendix H).

Figure 16. Length frequency of walleye taken during summer gill-netting in 1989.





## ACKNOWLEDGMENTS

The authors wish to thank the following tribal workers who monitored the fishery or who issued permits and assisted in updating and compiling harvest data each day:

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Lac Courte Oreilles (LCO) - Richard Barber, Andrew Belille, Daniel Gokee, Carolyn Klecan, Alfred Taylor, and Donald Taylor;  
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We are grateful to Annie Plucinski for her diligence in compiling nightly harvest statistics, in providing these data to tribal and WDNR representatives, and in updating each day the list of lakes selected for harvest, along with the adjusted quota, the bag limits, and the number of permits available for each lake.

As always, we appreciate the patience shown by tribal members during the nightly counting and measuring of fish.

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APPENDIX A

Number of tribal members that speared one or more nights on lakes named by six Wisconsin Chippewa bands during the 1989 spring spear fishery.

NUMBER OF NIGHTS	MOLE		ST. CROIX	BAD RIVER	RED CLIFF	TOTAL	PERCENT OF TOTAL	CUMULATIVE PERCENT	
	LDF	LAKE							
1	39	9	11	12	10	11	92	33.9%	33.9%
2	23	5	2	6	7	4	47	17.3%	51.3%
3	14	5	2	10	5	1	37	13.7%	64.9%
4	12	6	4	2	3	1	28	10.3%	75.3%
5	4	4	8	3	1	1	21	7.7%	83.0%
6	10	0	1	0	0	0	11	4.1%	87.1%
7	3	0	2	2	1	1	9	3.3%	90.4%
8	4	0	0	4	0	1	9	3.3%	93.7%
9	5	2	0	2	0	2	11	4.1%	97.8%
10	1	0	0	1	0	1	3	1.1%	98.9%
11	2	0	0	0	0	0	2	0.7%	99.6%
12	1	0	0	0	0	0	1	0.4%	100.0%
13	0	0	0	0	0	0	0	0.0%	100.0%
14	0	0	0	0	0	0	0	0.0%	100.0%
15	0	0	0	0	0	0	0	0.0%	100.0%
TOTAL:	118	31	30	42	27	23	271	100.0%	
PERCENT:	43.5%	11.4%	11.1%	15.5%	10.0%	8.5%			

APPENDIX B

Number of walleye harvested nightly on lakes speared by six Wisconsin Chippewa bands during spring 1989. Also, number of spearer-nights, boat-hours, and CPE per lake. CPE data adjusted for missing boat-hour effort.

TRIBE *	LAKE	COUNTY	TRIBAL		MAY										WALLEYE HARVEST (B)	% OF QUOTA (B/A)	SPEARER-NIGHTS (C)	BOAT-HOURS (C)	CPE: NO/BOAT-HOUR (B/C)				
			QUOTA (A)	APRIL	23	24	25	26	27	28	29	30	1	2						3	4	5	6
BAD RIVER (BRV)	ENGLISH L	ASHLAND	26																18	69.2%	3	4.33	4.16
	GORDON L	ASHLAND									**	**	**	**	**	**	**	**	**	0			
	DIAMOND L	BAYFIELD	100				**	75	**	**	**	**	**	**	**	**	**	**	75	75.0%	3	4.08	18.38
	L NAMEKAGON	BAYFIELD	374				269	**	100	**	**	**	**	**	**	**	**	**	369	98.7%	19	29.12	12.67
	L OWEN	BAYFIELD	243				82	**	80	**	**	**	**	**	**	**	**	**	242	99.6%	16	29.34	6.88
	TRUDE L	IRON									**	**	**	**	**	**	**	**	0				
	PIKE L	PRICE	198								**	**	**	**	**	**	**	**	31	15.7%	5	7.74	4.01
	ROUND L	PRICE									**	**	**	**	**	**	**	**	0				
	LOST LAND L	SAWYER	279				**	**	**	**	**	**	**	**	**	**	**	**	153	54.8%	13	29.24	5.23
	MELSON L	SAWYER	299				212	**	**	**	**	**	**	**	**	**	**	**	212	70.9%	11	30.96	6.85
TEAL L	SAWYER					**	**	**	**	**	**	**	**	**	**	**	**	0					
WEDER L	ASHLAND					**	**	**	**	**	**	**	**	**	**	**	**	0					
						212	351	75	180	148	0	80	0	5	0	31	0	0	1100	72.4%	70	134.81	7.86
						sub-total:	1519																
RED CLIFF (RC)	HART L	BAYFIELD	78							**	36	**	**	**	**	**	**	**	78	100.0%	4	4.40	17.73
	L MILLICENT	BAYFIELD	56							**	**	**	**	**	**	**	**	**	57	101.8%	2	1.63	34.97
	L NAMEKAGON	BAYFIELD	374							258	**	**	**	**	**	**	**	**	327	87.4%	20	21.47	15.23
	LONG L	BAYFIELD								**	**	**	**	**	**	**	**	**	0				
	MIDDLE EAU CLAIRE	BAYFIELD	247				**	80	**	**	153	**	**	**	**	**	**	**	233	94.3%	13	19.24	12.11
	TWIN BEAR L	BAYFIELD	53								**	**	**	**	**	**	**	**	52	98.1%	4	2.24	23.21
	UPPER EAU CLAIRE	BAYFIELD	271				161	54	**	56	**	**	**	**	**	**	**	**	271	100.0%	17	17.25	15.71
	L NEBAGAMON	DOUGLAS	244				**	**	**	**	147	**	**	**	**	**	**	**	208	85.2%	18	20.03	10.38
	LOWER EAU CLAIRE	DOUGLAS	217				**	**	**	**	68	**	**	**	**	**	**	**	215	99.1%	11	14.73	14.60
	UPPER ST CROIX	DOUGLAS	229								219	**	**	**	**	**	**	**	219	95.6%	11	8.25	26.55
						sub-total:	1769												1660	93.8%	100	109.24	15.20
LAC COURTE OREILLES (LCO)	CHIPPEWA FLOWAGE	SAWYER	1761				109	125	39	**	43	41	**	**	**	**	**	**	372	21.1%	24	37.73	9.86
	GRINDSTONE L	SAWYER	251				30	**	**	**	58	29	60	41	**	**	**	**	218	86.9%	17	20.92	10.42
	LAC COURTE OREILLES	SAWYER	773				84	69	16	10	**	91	75	107	67	**	**	**	519	67.1%	36	36.33	14.29
	ROUND L	SAWYER	409				**	**	**	**	88	**	82	128	**	**	**	**	371	90.7%	26	22.20	16.71
	SAND L	SAWYER	443				1				**	**	**	**	**	**	**	**	1	0.2%	2	0.25	4.00
	STISSABAGAMA L	SAWYER	110				**	**	**	**	**	**	**	**	**	**	**	**	0				
WHITEFISH L	SAWYER					**	**	**	**	**	**	**	**	**	**	**	**	42	38.2%	4	4.06	10.34	
						sub-total:	3747												1523	40.6%	109	121.49	12.54















APPENDIX C (continued)

Total number of walleye per inch group that were speared during spring 1989. Data arranged by tribe and alphabetically by County and Lake.

LAKE COUNT	TRIBE	LAKE	COUNTY	INCH GROUP																															TOTAL NUMBER	TOTAL INCHES	MEAN LENGTH	
				8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31											
82		FOREST L	VILAS			1	3	10	11	17	18	3	2	3	1	1																			71	1,184.7	16.7	
83		HARRIS L	VILAS			6	18	16	15	14	12	6	4	1	2	1	1	2	1																99	1,687.7	17.0	
84		HIGH L	VILAS			2	12	15	19	10	1	3	5	1	1	2	1	1																	73	1,105.4	15.1	
85		ISLAND L	VILAS		1	3	9	16	28	56	35	15	10	6	2	3	1	2																	187	2,957.4	15.8	
86		LAURA L	VILAS			18	28	38	28	22	6	2	3	2	2	1	1	1																	156	2,421.5	15.5	
87		LITTLE ARBOR	VILAS			1	2	3	2	6	10	6	4	4	1	1	1																		37	647.1	17.5	
88		LONG L	VILAS			1	8	12	16	9	6	3	1	2	1	1																			60	1,020.6	17.0	
89		LYNX L	VILAS			1	1	1	1	1	1	3	1	1	1	1																			7	129.7	16.5	
90		MANITOWISH L	VILAS			3	3	4	5	11	5	5	1	1	2	1	1																		48	741.0	15.4	
91		N TWIN L	VILAS			6	25	34	13	7	4	7	3	1	1																				100	1,495.9	15.0	
92		OXBOW L	VILAS			1	2	3	9	5	3																								24	360.1	15.0	
93		PAPOOSE L	VILAS			1	2	9	16	15	10	15	8	5	1	2	2																		88	1,367.6	15.5	
94		PLUM L	VILAS			2	4	11	27	29	27	12	10	8	4	4	2	1	1	1																143	2,337.7	16.3
95		PRESQUE ISLE L	VILAS			6	9	32	52	41	19	10	11	4	2	4	1																			192	3,133.9	16.3
96		REST L	VILAS			1	2	6	19	18	20	14	7	4	1	1	1	1																		97	1,495.7	15.4
97		S TURTLE L	VILAS			1	2	1	7	3	8	11	6	5	1	2																				47	748.0	15.9
98		S TWIN L	VILAS			3	9	23	31	45	36	14	6	1																						4	60.6	15.2
99		SQUAM L	VILAS			1	5	28	34	14	8	3	3	1	1	1																				168	2,397.7	14.3
100		STAR L	VILAS			42	39	25	18	14	5	7	4	3	2	4	3	2	4	1	1															100	1,682.7	16.8
101		TROUT L	VILAS																																	175	2,856.8	16.3
		SUB-TOTAL:				0	2	33	150	425	812	1197	1108	855	535	363	213	118	80	47	29	29	24	19	20	14	6	3	1					6083	95,814.4	15.8		
101		TOTAL:				1	4	60	306	925	1684	2222	2154	1919	1390	1010	634	328	210	109	76	67	48	45	31	18	8	3	2					13254	211,644.6	16.0		

\* = WALLEYE HARVESTED FROM LAKE BY TWO TRIBES.

\*\* = LAKE NAMED BY MOLE LAKE BUT HARVEST OF 30 WALLEYE BY LDF SPEARER WAS APPLIED TO LDF QUOTA.

APPENDIX D

Number of walleye per inch group taken during spring spearing seasons from 1985-1989.

INCH GROUP	NUMBER OF WALLEYE IN:					5 YEAR TOTAL	PERCENT OF TOTAL	CUMULATIVE PERCENT
	1989	1988	1987	1986	1985			
5						0	0.0%	0.0%
6				1		1	0.0%	0.0%
7						0	0.0%	0.0%
8	1	3				4	0.0%	0.0%
9	4	10	17	3	2	36	0.0%	0.0%
10	60	121	123	49	5	358	0.6%	0.7%
11	306	678	558	358	31	1931	3.5%	4.2%
12	925	1688	1282	680	140	4715	8.5%	12.7%
13	1684	2755	1892	928	265	7524	13.5%	26.2%
14	2222	3289	2133	1068	286	8998	16.2%	42.4%
15	2154	2951	1895	985	293	8278	14.9%	57.3%
16	1919	2311	1666	939	247	7082	12.7%	70.1%
17	1390	1658	1374	801	172	5395	9.7%	79.8%
18	1010	1297	1113	458	145	4023	7.2%	87.0%
19	634	932	811	255	118	2750	4.9%	92.0%
20	328	596	513	149	33	1619	2.9%	94.9%
21	210	316	259	72	25	882	1.6%	96.5%
22	109	214	148	50	18	539	1.0%	97.4%
23	76	134	116	23	18	367	0.7%	98.1%
24	67	124	86	9	11	297	0.5%	98.6%
25	48	89	76	10	7	230	0.4%	99.1%
26	45	75	57		9	186	0.3%	99.4%
27	31	56	42	3	10	142	0.3%	99.6%
28	18	32	28	1	5	84	0.2%	99.8%
29	8	30	25		8	71	0.1%	99.9%
30	3	9	8		11	31	0.0%	100.0%
31	2		2		6	10	0.0%	100.0%
32					2	2	0.0%	100.0%
33					1	1	0.0%	100.0%
34						0	0.0%	100.0%
35						0	0.0%	100.0%
TOTAL NO. MEASURED:	13,254	19,368	14,224	6,842	1,868	55,556	100.0%	
TOTAL LNG:	211,645	306,926	226,789	106,051	30,382	881,792		
AVG. LNG:	16.0	15.8	15.9	15.5	16.3	15.9		
TOTAL NO. SPEARED	16,054	25,969	21,321	6,940	2,761	73,045		

APPENDIX E

Number of muskellunge per inch group taken during spring spearing seasons from 1985-1989.

INCH GROUP	NUMBER OF MUSKELLUNGE IN:					5 YEAR TOTAL	PERCENT OF TOTAL	CUMULATIVE PERCENT
	1989	1988	1987	1986	1985			
15						0	0.0%	0.0%
16			1			1	0.2%	0.2%
17		3				3	0.5%	0.7%
18						0	0.0%	0.7%
19		1				1	0.2%	0.9%
20			2			2	0.3%	1.2%
21						0	0.0%	1.2%
22						0	0.0%	1.2%
23				1		1	0.2%	1.4%
24				1		1	0.2%	1.6%
25	1		1		1	3	0.5%	2.1%
26	2	1				3	0.5%	2.6%
27	2	3	3			8	1.4%	4.0%
28	5	1	3		2	11	1.9%	5.9%
29	3	5	7	2	2	19	3.3%	9.2%
30	6	6	4	3	8	27	4.7%	13.8%
31	9	9	14	3	6	41	7.1%	20.9%
32	11	13	15	2	7	48	8.3%	29.2%
33	8	10	12	6	3	39	6.7%	36.0%
34	8	10	16	1	8	43	7.4%	43.4%
35	10	10	12	7	7	46	8.0%	51.4%
36	6	7	12	4	2	31	5.4%	56.7%
37	10	11	17	8	8	54	9.3%	66.1%
38	7	9	12	6		34	5.9%	72.0%
39	6	10	10	1	2	29	5.0%	77.0%
40	5	6	8	2	1	22	3.8%	80.8%
41	3	9	5	2	1	20	3.5%	84.3%
42	5	6	4	1	1	17	2.9%	87.2%
43	3	6	3	2	2	16	2.8%	90.0%
44	0	7	3		2	12	2.1%	92.0%
45	2	8	4			14	2.4%	94.5%
46	0	3	4	1		8	1.4%	95.8%
47	2	1	2		3	8	1.4%	97.2%
48	1	1	4	1		7	1.2%	98.4%
49	1	1	2		1	5	0.9%	99.3%
50	1				1	2	0.3%	99.7%
51	0	1				1	0.2%	99.8%
52						0	0.0%	99.8%
53				1		1	0.2%	100.0%
54						0	0.0%	100.0%
55						0	0.0%	100.0%
TOTAL NO. MEASURED:	117	158	180	55	68	578	100.0%	
TOTAL LNG:	4174.9	5805	6507.4	1993.7	2406.9	20887.9		
AVG. LNG:	35.7	36.7	36.2	36.2	35.4	36.1		
NO. < 32"	28	29	35	10	19	121		
% < 32"	23.9%	18.4%	19.4%	18.2%	27.9%	20.9%		
NO. >= 45"	7	15	16	3	5	46		
% >= 45"	6.0%	9.5%	8.9%	5.5%	7.4%	8.0%		
TOTAL NO. SPEARED	118	158	196	55	86	613		

APPENDIX F

Number of bass per inch group taken during spring spearing seasons from 1985-1989.

INCH GROUP	NUMBER OF BASS IN:					5 YEAR TOTAL	PERCENT OF TOTAL	CUMULATIVE PERCENT
	1989	1988	1987	1986	1985			
5							0.0%	0.0%
6							0.0%	0.0%
7	1					1	0.2%	0.2%
8			1			1	0.2%	0.4%
9			2	1	1	4	0.8%	1.2%
10	1	4	2			7	1.3%	2.5%
11	7		8	1	1	17	3.3%	5.8%
12	10	7	16	2	2	37	7.1%	12.9%
13	14	21	43	6	3	87	16.7%	29.6%
14	17	27	33	2		79	15.2%	44.7%
15	17	21	25	8	7	78	15.0%	59.7%
16	19	19	30	12		80	15.4%	75.0%
17	11	15	20	3		49	9.4%	84.5%
18	4	9	15	2	1	31	6.0%	90.4%
19	8	11	7		1	27	5.2%	95.6%
20	1	7	5	1		14	2.7%	98.3%
21		1	2	1	1	5	1.0%	99.2%
22	1	1	1			3	0.6%	99.8%
23							0.0%	99.8%
24							0.0%	99.8%
25		1				1	0.2%	100.0%
TOTAL NO. MEASURED:	111	144	210	39	17	521	100.0%	
TOTAL LNG:	1694.2	2275.2	3199.4	602	255.2	8026		
AVG. LNG:	15.3	15.8	15.2	15.4	15.0	15.4		
TOTAL NO. SPEARED	113	167	275	39	21	615		

APPENDIX G

Number of northern pike per inch group taken during spring spearing seasons from 1986-1989.

INCH GROUP	NUMBER OF NORTHERN PIKE IN:				4 YEAR TOTAL	PERCENT OF TOTAL	CUMULATIVE PERCENT
	1989	1988	1987	1986			
10							0.0%
11							0.0%
12				1	1	1.0%	1.0%
13		1			1	1.0%	2.0%
14							2.0%
15			1		1	1.0%	3.0%
16							3.0%
17	1	2	1	1	5	5.1%	8.1%
18	1	1	1		3	3.0%	11.1%
19	1	2			3	3.0%	14.1%
20	5	2		2	9	9.1%	23.2%
21	1	10	2		13	13.1%	36.4%
22		2	3	2	7	7.1%	43.4%
23		2	2	1	5	5.1%	48.5%
24		2	3	1	6	6.1%	54.5%
25		1	1		2	2.0%	56.6%
26		5			5	5.1%	61.6%
27	1	1	1		3	3.0%	64.6%
28	1	2	7		10	10.1%	74.7%
29	1	1			2	2.0%	76.8%
30		1	1		2	2.0%	78.8%
31		3	2		5	5.1%	83.8%
32		2	3		5	5.1%	88.9%
33	1			1	2	2.0%	90.9%
34							90.9%
35							90.9%
36		2		1	3	3.0%	93.9%
37	1	1			2	2.0%	96.0%
38							96.0%
39		1		1	2	2.0%	98.0%
40				1	1	1.0%	99.0%
41		1			1	1.0%	100.0%
TOTAL NO. MEASURED:	14	45	28	12	99	100.0%	
TOTAL LNG:	333.9	1152	724.1	311.7	2521.7		
AVG. LNG:	23.8	25.6	25.9	26.0	25.5		
TOTAL NO. SPEARED*	14	59	41	13	127		

\* 4 YEAR TOTAL DOES NOT INCLUDE 2 UNMEASURED NORTHERNS TAKEN IN 1985.

APPENDIX H

Number of fish caught on 4 dates during summer 1989 by Lac du Flambeau members using 3 inch mesh (stretch) gill nets. CPE (number per 100 feet) for walleye and cisco only.

	JUNE 16	JUNE 30	JULY 1	JULY 2	TOTAL
LAKE	MINOCQUA	TROUT	MINOCQUA	BIG ARBOR VITAE	
COUNTY	ONEIDA	VILAS	ONEIDA	VILAS	
AREA IN ACRES	1360	3816	1360	1090	
PRE-NETTING CALCULATIONS					
MEAN LENGTH (INCHES) OF ADULT WALLEYE IN LAKE:	15.00	16.32	15.00	14.87	
GEAR DETERMINED BY:	SPEARING	SPEARING	SPEARING	SPEARING	
YEAR:	1989	1989	1989	1989	
REQUIRED MESH SIZE:	3.0	3.0	3.0	3.0	
PREDICTED RANGE FOR MEAN LENGTH (INCHES) OF CATCH:	13.5 - 16.49	13.5 - 16.49	13.5 - 16.49	13.5 - 16.49	
FEET OF NET SET:	600	600	600	600	2400
NETTING RESULTS					
WALLEYE:					
NUMBER:	0	22	13	12	47
MEAN LENGTH:		15.99	14.40	15.16	15.34
CPE:	0	3.7	2.2	2.0	2.0
CISCO:					
NUMBER:	72		104		176
* MEAN LENGTH:	12.3		12.4		12.4
** CPE:	12.0		17.3		14.7
MUSKELLUNGE: ***			1		1
SUCKER SP: ***		8	1		9
ROCK BASS:		4			4
YELLOW PERCH:		2			2

\* SIX CISCO WERE NOT MEASURED ON JUNE 16.

\*\* DETERMINED FOR MINOCQUA LAKE ONLY.

\*\*\* MUSKELLUNGE ON JULY 1 AND 2 SUCKERS ON JUNE 30 WERE RELEASED.

