



**Biological and Commercial Catch Statistics
from the Chippewa Inter-Tribal Gill Net Fishery
within Michigan Waters of Lake Superior
During 2003**

by

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ABSTRACT

The 2003 commercial inter-tribal fishery in the 1842 treaty-ceded waters of Michigan consisted of six (6) large boats and 15 small boats, representing 21 tribal licensees from the Keweenaw Bay, Bad River and Red Cliff Bands of Lake Superior Chippewa. Gill nets were the primary gear used in the fishery. For the third consecutive year, trap nets were also fished.

The fishing season for whitefish and lake trout was closed from November 1 through November 27 and commercial fishing was prohibited during October in eight seasonal refuges. Target fishing for lean lake trout (fishing in water < 35 fathoms) in areas outside the refuges was prohibited during October to reduce the impact of fishing on spawning stocks of lake trout. The Keweenaw Bay tribe managed their lake herring fishery through a quota system.

Fishermen reported fishing 4.2 million feet of gill net, 5 nights of trap nets, and harvesting 515,441 dressed pounds (610,975 round pounds) of fish. Whitefish was the primary target species, making up 79% of the total, followed by lake trout (19%), lake herring (1%), and siscowet (0.4%). The remaining 0.6% consisted of walleye, salmon, menominee, and rainbow trout.

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INTRODUCTION

The Red Cliff, Bad River and Keweenaw Bay Bands of Lake Superior Chippewa entered into an agreement to establish an inter-tribal off-reservation assessment fishery in the western Michigan waters of Lake Superior (from the Wisconsin- Michigan state line to the West Entry in the Keweenaw Peninsula) on 23 August 1984. In 1988 tribal off-reservation commercial fishing expanded to include more fishermen and fishing in waters east of the Keweenaw Peninsula. An inter-tribal agreement was developed to manage this expanded fishery. Since 1990 Bad River and Red Cliff have managed their fishery within the guidelines of this inter-tribal agreement, while Keweenaw Bay manages their fishery through a fisheries management plan. Results of the early assessment fishery and the expanded commercial fishery have been reported annually as administrative reports to the Great Lakes Indian Fish and Wildlife Commission Biological Services Division, titled "Biological and commercial catch statistics from the Chippewa inter-tribal gill net fishery within Michigan waters of Lake Superior".

Biological and commercial fishery statistics were summarized for calendar year 2003 from the inter-tribal fishery in the 1842 treaty-ceded territory within Michigan waters of Lake Superior (Figure 1), and compared to those from previous years. Statistics were reported by management unit, grid, and gear type as indicated on individual catch reports.

Description of the Fishery

The commercial fishery consisted of six (6) large boats and 15 small boats, representing 21 tribal licenses from the Keweenaw Bay, Bad River and Red Cliff Bands. As in previous years, the area south of a line from the East Entry of Keweenaw Peninsula to Point Abbaye (Figure 1) was open only to Keweenaw Bay small boat fishermen. Gill nets were the primary gear used in the fishery. For the third consecutive year, trap nets were also fished.

The fishing season for whitefish and lake trout was closed from November 1 through November 27. Fishing for siscowet was prohibited in water less than 35 fathoms during the closed season for lake trout and whitefish. Commercial fishing was prohibited during October in seasonal refuges, of which four were created in 1988, three in 1989, and one in 2000 (Figure 1). Target fishing for lean lake trout in other areas was prohibited during October to reduce the impact of fishing on spawning stocks of lake trout. The Keweenaw Bay tribe employed a quota system for regulating lake herring harvest by its fishermen. The Bad River and Red Cliff tribes did not use this system for lake herring. Also, the three bands allowed fishing for lake herring year-round (i.e. no seasonal restriction).

Quota Management System

Since 1984, the tribes have used a quota management system to regulate harvest of lake trout to limit mortality on recovering lake trout stocks (Ebener and Bronte 1986). Total Allowable Catch (TAC's, expressed as number of fish) was estimated annually for each management unit with the exception of 1985, when each gill net tug was assigned a lake trout quota of 3,750 or 15,000 pounds depending on tribal affiliation. TAC's are calculated for each *fishing year*, beginning in November and running through October of the next year. Tribal quotas and TAC's by management unit and fishing year were as follows;

UNIT		YEARS			
		pre-1990 ¹	1990-1994 ²	1995-1999 ³	2000-2004 ⁴
MI-2	TAC	19,800	10,400	9,700	6,606
	Tribal	9,900	5,200	4,850	3,303
MI-3	TAC	5,000	7,600	6,600	4,950
	Tribal	2,500	3,800	3,300	2,475
MI-4	TAC	20,600	53,400	46,920	40,440
	Tribal	10,300	26,700	23,460	20,220
MI-5	TAC	16,100	15,700	17,080	33,130
	Tribal	4,830	4,710	5,124	16,565
Total	TAC	61,500	87,100	80,300	85,126
	Tribal	27,530	40,410	36,734	42,563

¹GLIFWC. 1987.

²Ebener et al. 1989.

³Mattes. 1994.

⁴Mattes. 2000.

Harvest quotas applied only to lean lake trout (referred to as "lake trout" in this report). Harvest of siscowet, a deep water form of lake trout, was not regulated by quotas.

METHODS

Effort and harvest data were collected from mandatory daily catch reports filed bi-weekly by all fishermen who sold fish in their names, or by the boat captain who reported all effort and catch for his vessel. Gill net effort was reported as linear feet of gill net lifted and trap net effort was reported as equivalent to 1,000 linear feet of gill net for each night that a trap net was set. Harvest was reported in both round and dressed pounds. Species for which harvest was reported as dressed pounds and conversion factors used to calculate round pounds are given below. Harvest of burbot, walleye, and smelt was reported in round pounds.

Species	Conversion
Whitefish	1.17
Lake trout	1.25
Siscowet	1.25
Salmon	1.25
Herring	1.20
Round whitefish	1.15
Chub	1.20

Biological statistics were derived from biological monitoring data. Biological monitoring of catches occurred several times a month by the Keweenaw Bay Natural Resources Department, the Red Cliff Fisheries Department, and the Great Lakes Indian Fish and Wildlife Commission.

RESULTS AND DISCUSSION

Commercial Catch and Effort Statistics

Fishermen reported fishing 4.2 million feet of gill net, 5 nights of trap nets, and harvesting 515,441 dressed pounds (610,975 round pounds) of fish. Whitefish was the primary target species, making up 79% of the total, followed by lake trout (19%), lake herring (1%), and siscowet (0.4%). The remaining 0.6% consisted of walleye, salmon, menominee, and rainbow trout.

Unit MI-2

Effort. Six percent of the total gill net effort was expended in MI-2 (Table 1) which was fished by two tribes (Table 2). Fishing effort was 264,000 feet with gill nets of 4 ½ inch mesh accounting for 59%, a mix of 4 ½ to 5 ½ inch mesh accounting for 23%, and 5 ½ inch mesh accounting for 17% of the unit effort (Table 3, Figure 2). Three inch mesh accounted for 1% of the unit effort. Fishing occurred in four grids grouped into three general areas: Union Bay (grid 1315), Black River (grids 1413 and 1414), and Fourteen Mile Point (grid 1318) (Figure 1). Sixty-five percent of the effort occurred at Black River, 28% at Union Bay, and the remaining 7% at Fourteen Mile Point.

Harvest. Nine percent of the total harvest (46,713 dressed or 54,788 round pounds) was taken in MI-2 (Tables 1 and 3). Whitefish made up 81%, lake trout 6%, herring 5%, walleye 4%, and siscowet 4% of this harvest. The majority of harvest occurred around Black River (67%). For whitefish, 71% of the harvest was from grids near Black River, 22% was from Union Bay, and 7% was from Fourteen Mile Point. Sixty-one percent of the lake trout harvest was from Black River, 38% from Union Bay, and 1% from Fourteen Mile Point. For siscowet 59% were harvested near Black River and 41% near Union Bay, while all herring were harvested from near Black River.

Target Effort and Harvest. Fishing effort in MI-2 was targeted for whitefish, lake trout, and herring (Tables 4 and 5). Target effort (261,600 feet) and harvest (37,887 pounds) of whitefish was greater than the 1985-2003 average (208,795 feet and 33,163 pounds). Target lake trout harvest (2,910 pounds) continued to remain low (1985-2003 average: 7,218 pounds). Target herring harvest was 1,200 pounds in 2,400 feet of effort. No target fishing was directed at siscowet.

Catch per effort (CPE or pounds harvested per 1,000 feet of gill net) for targeted fishing in the four grids fished in MI-2 varied from 111-168 pounds for whitefish and averaged 145 pounds (Table 4), within the range of average CPE's (29-308) recorded over the past 18 years (1985-2002) (Table 5). Lake trout CPE ranged from 2-15 and averaged 11 pounds, similar to the 2002 CPE (10 pounds), but below the 1985-2003 average CPE (33 pounds). For whitefish, average CPE was highest in the grids fished near Black River (average: 158 pounds) followed by the grid fished near Fourteen Mile Point (153 pounds) and the grid fished near Union Bay (111 pounds). For lake trout, CPE was highest near Union Bay (15 pounds), followed by Black River (average: 10 pounds), and Fourteen Mile Point (2 pounds).

Unit MI-3

Effort. Forty-two percent of the total gill net effort (Table 1) was expended in MI-3, which was fished by three tribes (Table 2). Fishing effort was 1.8 million feet and all gill nets were 4 ½ inch mesh (Table 3, Figure 2). Grids fished were grouped into four general areas: Misery Bay (grid 1219), Redridge/West Entry (grids 1121 and 1122), 5 Mile Point (grid 1023), and Eagle River (grid 1024). The percent of total gill net effort fished at Redridge/West Entry was 51%, followed by 30% at 5 Mile Point, 15% at Misery Bay, and 4% at Eagle River.

Harvest. Forty-one percent of the total harvest (208,859 dressed or 245,372 round pounds) was taken in MI-3 (Tables 1 and 3). Whitefish made up 94% and lake trout 6% of the reported harvest. Siscowet were captured, however were not reported. Of the whitefish harvest 63% were from 5 Mile Point, 21% from Redridge/West Entry, 8% from Eagle River, and 8% from Misery Bay. For lake trout 52% were taken from 5 Mile Point, 42% from Redridge/West Entry, 5% from Misery Bay, and 1% from Eagle River.

Target Effort and Harvest. All fishing effort in MI-3 was targeted at whitefish and lake trout (Table 4). Target gill net effort (1.8 million feet) was near the 1985-2003 average of 1.9 million feet (Table 5). Target harvest of whitefish (196,274 pounds) was above the 1985-2003 average (160,588 pounds). Target harvest of lake trout (12,585 pounds) was 8,258 pounds below the 1985-2003 average (20,843 pounds).

Catch per effort. CPE for targeted gill net fishing in MI-3 grids varied from 41-232 pounds for whitefish and averaged 114 pounds (Table 4). CPE for lake trout ranged from 1-20 pounds and averaged 7 pounds. For whitefish CPE's were highest at 5 Mile Point at 232 pounds, followed by Eagle River at 216 pounds, Misery Bay at 62 pounds, and Redridge/West Entry at 45 pounds. For lake trout CPE's were highest at 5 Mile Point at 12 pounds, followed by Redridge/West Entry at 10 pounds, Eagle River at 9 pounds, and Misery Bay at 7 pounds.

Unit MI-4

Effort. Since 1986 this unit had annually received the majority of tribal effort, however in 2003 MI-3 received slightly more effort (42%) (Table 5). In 2003, 41% percent of the total gill net effort (Tables 1 and 2) and 100% of the total trap net effort (Table 6) was fished in MI-4. Gill net effort was 1.7 million feet with large mesh gill nets of 4 ½ inch mesh accounting for 99% of the effort and small mesh (3.0 and 2 ¾ inch mesh) accounting for 1% (Table 3, Figure 2). Trap net effort was 5 net nights (Table 6).

Fishing occurred in 9 grids grouped into five general areas: Keweenaw Point (grid 1027), Traverse Bay to Bete Grise (grids 1026, 1125, and 1126), Traverse Island (grid 1224), Keweenaw Bay (grids 1323 and 1423), and Huron Islands (grid 1325 and 1424) (Figure 1, Table 1). In 2003, most of the gill net fishing effort occurred in the Traverse Bay to Bete Grise area (48% or 0.8 million feet) followed by the Traverse Island area (33% or 0.6 million feet), Huron Islands (9% or 0.2 million feet), Keweenaw Bay (8% or 0.1 million feet), and Keweenaw Point (2% or 0.03 million feet). Trap nets were fished at Traverse Island (3 nights or 60%) and Traverse Bay (2 nights or 40%) (Table 6).

Harvest. Forty percent of the total harvest (207,103 dressed or 246,057 round pounds) was taken in MI-4 (Tables 1, 3, and 6). For gill net harvest, whitefish made up 76%, lake trout 22%, and herring 1% (Table 1). Other species made up the remaining 1% (siscowet, salmon, walleye, menominee). Percentages of whitefish taken by area were 61% from Traverse Bay to Bete Grise, 22% from Traverse Island, 8% from Huron Islands, 6% from Keweenaw Point, and 3% from Keweenaw Bay. For lake trout, 55% of the harvest was from Traverse Island, followed by 18% from the Huron Islands, 14% at Keweenaw Bay, 12% from Traverse Bay to Bete Grise, and 1% from Keweenaw Point. All of the siscowet harvest was from Traverse Bay to Bete Grise. Gill net harvest for herring occurred in four grids in 2003. The Traverse Bay to Bete Grise area (grids 1026 and 1125) accounted for 56% of the harvest, while grid 1423 in Keweenaw Bay accounted for 43%. The remaining 1% of the herring harvest was from Traverse Island (grid 1224). All of the salmon harvest (140 pounds) was from the Keweenaw Bay gill net fishery. For trap net harvest, whitefish made up 100% of the harvest (Table 6), with 78% harvested from Traverse Island and 22% from Traverse Bay.

Target Effort and Harvest. The majority of fishing effort (99%) was targeted at whitefish and lake trout with the remaining 1% directed at lake herring (12,050 feet) and salmon (1,200 feet) (Table 4). No effort was targeted at siscowet in 2003. The target effort for whitefish and lake trout in 2003 (1.7 million feet), was lower than in 2002 (1.9 million feet) (Table 5). Target harvest of whitefish was 158,437 pounds, target harvest of lake trout was 45,406 pounds, and target harvest of herring was 979 pounds. Trap net effort (5 trap net nights) provided a harvest of 270 pounds of whitefish (Table 6).

Catch per effort. CPE for targeted gill net fishing in the 9 grids of MI-4 varied from 39-302 pounds per 1,000 feet for whitefish (average: 92 pounds) and 6-125 pounds for lake trout (average: 27 pounds) (Table 4). For grid 1423 where some gill net effort was directed at herring (12,050 feet) and salmon (1,200 feet) CPE was 81 pounds for herring and 40 pounds for salmon.

For whitefish, CPE was highest at Keweenaw Point (302 pounds) followed by an average of 139 pounds from Traverse Bay to Bete Grise, an average of 77 pounds in Keweenaw Bay, an average of 71 pounds at the Huron Islands, and 62 pounds at Traverse Island (Table 4). For lake trout, CPE was highest in Keweenaw Bay (average: 88 pounds) followed by Traverse Island (average: 44 pounds), the Huron Islands (average: 43 pounds), Traverse Bay to Bete Grise (average: 18 pounds), and the Keweenaw Peninsula (13 pounds).

Unit MI-5

Effort. Eleven percent of the total gill net effort was fished in MI-5 (Table 1), by one tribe fishing the area (Table 2). Fishing effort was 454,400 feet, an increase of 276,500 feet from 2002 (178,000) (Tables 3 and 5). All fishing effort was large mesh net targeted at whitefish and lake trout (Figure 2, Table 4), consisting of 4 ½ (93%) and 5.0 (7%) inch mesh. Fishing occurred in two grids: one at Granite Island (grid 1428) and one at Presque Isle (grid 1529) (Table 1).

Harvest. Ten percent of the total harvest (52,766 dressed or 64,758 round pounds) was taken from MI-5 (Tables 1 and 3). Lake trout made up 71% of the harvest followed by whitefish at 28%. The remaining 1% of the harvest consisted of salmon (60 pounds), herring (7 pounds) and siscowet (5 pounds). For whitefish, 67% were taken from Granite Island and 33% from Presque

Isle, while for lake trout 56% were taken from Presque Isle and 44% from Granite Island.

Target Effort and Harvest. Targeted whitefish harvest was 14,988 dressed pounds, below the 1986-2003 average of 26,685 pounds (Table 5). Targeted lake trout harvest was 37,706 dressed pounds, which was 19,364 pounds higher than the 1986 to 2003 average (17,737 pounds).

Catch per effort. Catch per effort for targeted fishing in the two grids averaged 33 pounds per 1,000 feet for whitefish and 83 pounds for lake trout (Table 4). Whitefish CPE's were similar at Granite Island (35 pounds) and Presque Isle (32 pounds), while lake trout CPE's were higher at Granite Island (147 pounds) than at Presque Isle (53 pounds).

Biological Statistics

Lake Trout MI-2

Only one lake trout was sampled in MI-2 during 2003. It was 27.0 inches and 7.7 pounds with no lamprey marks (Tables 7 and 8). A mortality estimate could not be made (Table 9).

Lake Trout MI-3

Eleven age groups of wild lake trout (6-14, 17, and 19) and eight age groups of hatchery fish (5-8, and 10-13) were represented in the 171 fish aged (Table 10). Mean age of 148 wild fish was 9.2 and mean age of 23 hatchery fish was 8.3. Mean length and weight for the 150 wild fish sampled was 22.3 inches and 3.5 pounds round, and was 21.1 inches and 3.2 pounds round for the 26 hatchery fish sampled. Average size at age of 7-10 year old wild lake trout has decreased and become narrower since 1985 (Figure 3). Average length of 7-10 year old hatchery fish has fluctuated since 1990, probably due to low sample sizes.

Overall lamprey marking rates were 1.0 wounds and 3.0 scars/100 fish, with fish greater than 25 inches exhibiting the highest scarring rates (Table 8). Annual total mortality rate for wild fish 7-14 years old was estimated at 23% ($Z=0.28 \pm 0.08$) (Table 9).

Lake Trout MI-4

Eight age groups of hatchery fish (5-8, 10-12, 15) and fourteen year classes of wild trout (4-17) were represented in a sample of 102 lake trout aged from MI-4 (Table 11). Mean age of hatchery and wild fish was 8.9 and 9.3 years, respectively. Fish ten years and older made up 48% of the wild component of the catch.

Mean length and weight of the 129 fish sampled was 22.2 inches and 3.2 round pounds (Table 11). The average size of wild fish (22.3 inches, 3.2 pounds) was similar to hatchery fish (22.0 inches, 3.7 pounds). Average length of wild and hatchery fish at ages 7-10 has been tracked since 1985 (Figure 3). The variation in the average length of wild fish at ages 7-10 has become narrower since 1985. Average length of hatchery fish has fluctuated greatly primarily due to low numbers of fish sampled.

Lamprey marking rates were 0.8 wounds and 0.8 scars/100 fish, with only the larger, older

fish exhibiting wounds and scars (Table 8). Annual total mortality was estimated to be 23% ($Z=0.26 \pm 0.05$) for wild fish ages 8-17 and 24% ($Z=0.27 \pm 0.04$) for wild and hatchery fish combined (Table 9).

Lake Trout MI-5

Four age groups of hatchery fish (6-8, 13) and twenty-two year classes of wild trout (4-22, 24, 25, 27) were represented in a sample of 136 lake trout aged from MI-5 (Table 12). Mean age of hatchery and wild fish was 8.4 and 12.9 years, respectively. Fish ten years and older made up 77% of the wild component of the catch.

Mean length and weight of the 142 fish sampled was 25.1 inches and 5.7 round pounds (Table 12). The average size of wild fish (25.2 inches, 5.8 pounds) was larger than hatchery fish (22.8 inches, 3.7 pounds).

Lamprey marking rates were 1.4 wounds and 12.7 scars/100 fish, with the larger older fish exhibiting the greatest occurrence of both wounding and scarring (Table 8). Annual total mortality was estimated to be 23% ($Z=0.26 \pm 0.05$) for wild fish ages 12-22 and 24% ($Z=0.27 \pm 0.05$) for wild and hatchery fish combined (Table 9).

Lake Whitefish MI-2

No whitefish were sampled from MI-2 in 2003.

Lake Whitefish MI-3

Ten age groups (5-14) were represented in the 1,398 whitefish aged in MI-3 which had a mean age of 9.2 years (Table 13). The 1990-93 year classes (age 10-13), which had been dominant since 1996, comprised 40% of the sample, while 48% percent of the aged fish were from the 1994 and 1995 year classes (ages 8 and 9). Average length and weight of lake whitefish was 19.4 inches and 2.4 pounds based on a sample size of 1,460 fish. The average length of age 7 to 10 year old fish has generally been similar since 1995 (Figure 4). Annual total mortality was estimated at 54% ($Z=0.78 \pm 0.10$) for ages 9-14.

Lake Whitefish MI-4

Thirteen age groups (4-15, 19) were represented in the 616 whitefish aged in MI-4 which had a mean age of 8.4 years (Table 13). The 1990-93 year classes (age 10-13), which had been dominant since 1996, comprised only 25% of the sample. Sixty-one percent of the aged fish were from the 1994-96 year classes (age 7-9). Average length and weight of lake whitefish was 19.9 inches and 2.6 pounds based on a sample size of 629 fish. The average length of age 7 to 10 year old fish which had increased from 1998-2002 declined in 2003 (Figure 4). Annual total mortality was estimated at 52% ($Z=0.74 \pm 0.08$) for ages 8-15.

Lake Whitefish MI-5

Ten age groups (5-12, 14, 15) were represented in the 82 whitefish aged in MI-5 (Table 13). The 1994-96 year classes (age 7-9) were dominant, comprising 50% of the fish aged. For the 90 whitefish sampled in MI-5 the mean age was 8.0 years, mean length was 21.1 inches, and mean weight was 3.6 round pounds. Annual total mortality was estimated at 27% ($Z=0.31 \pm 0.07$) for ages 7-12.

Siscowet

There were twenty age groups (4, 5, 7-24) of siscowet in the 66 fish sampled in units MI-3 and MI-4 (Table 14). The mean age for siscowets was 14.6 in MI-3, where mean size was 21.5 inches and 3.2 pounds for 71 fish sampled. In MI-4 only one age 5 fish was sampled with a length of 19.1 inches and weight of 3.3 pounds. Small sample size and a wide age distributions prevented the calculation of mortality rates.

Lake Herring and Menominee Whitefish

Few lake herring were sampled outside of MI-4 where eleven age groups (4-12, 14, 15) were represented in 84 fish aged; mean age was 7.9 (Table 15). For the fourth year otoliths replaced scale samples as the aging structure used to assign age to individual fish. The 1989-92 year classes (ages 11-14), which had been dominant since 1993, comprised only 8% of the sample. Thirty-seven percent of the aged fish were from the 1994-95 year classes (ages 8-9), and 26% of the aged fish were from the 1996-97 year classes (ages 6-7). Mean size for 84 herring sampled from MI-4 was 14.9 inches and 0.9 round pounds. Total annual mortality was 59% ($Z=0.88 \pm 0.34$) for fish aged 8-11.

No menominee whitefish were sampled in 2003.

Coho and Chinook Salmon

Two coho salmon were sampled from MI-4 in 2003. These fish had an averaged age of 2, an average length of 17.7 inches, and an average weight of 1.9 round pounds. No chinook salmon were sampled in 2003.

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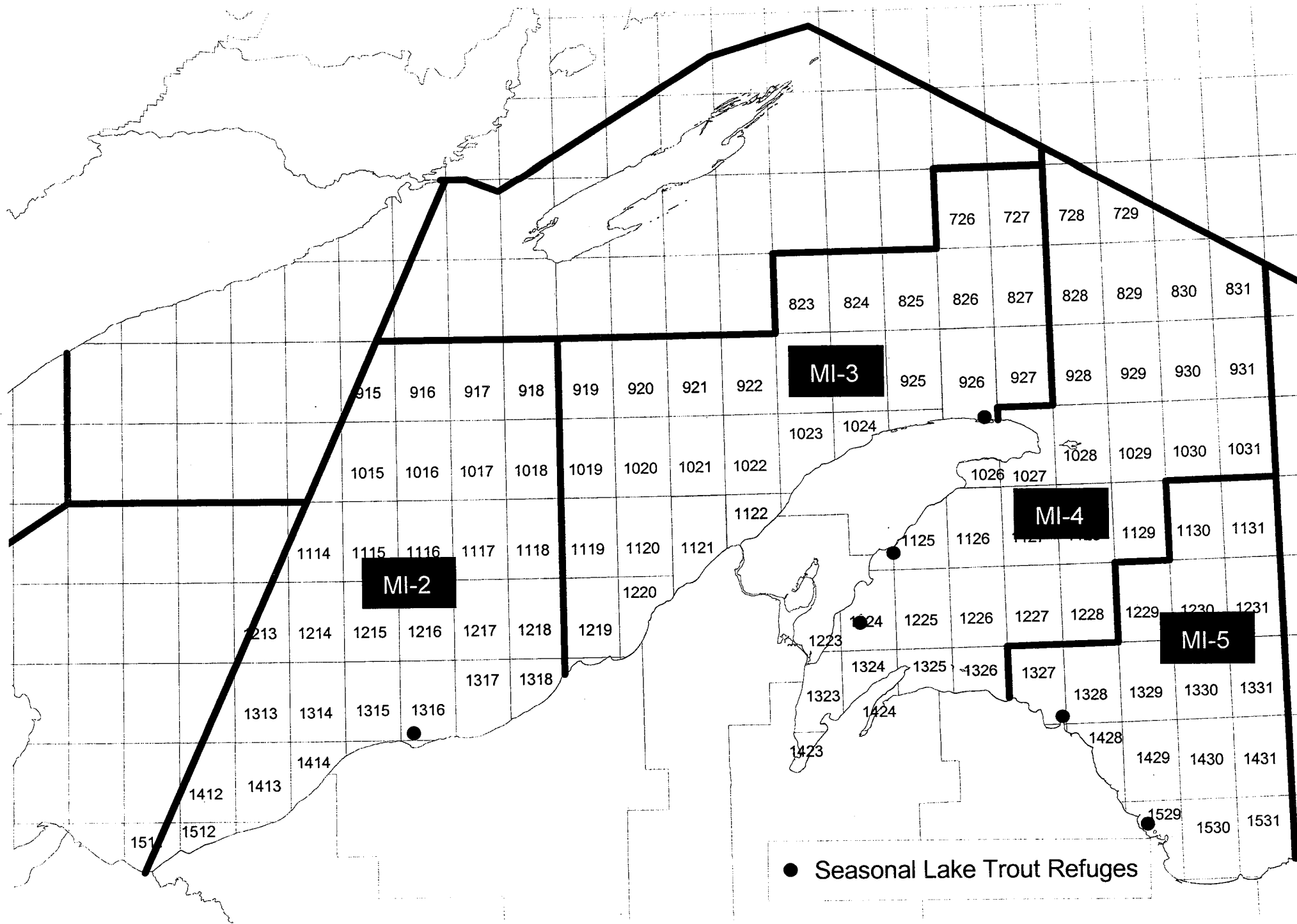


Figure 1. Management units and statistical grids in the 1842 treaty ceded area within Michigan waters of Lake Superior.

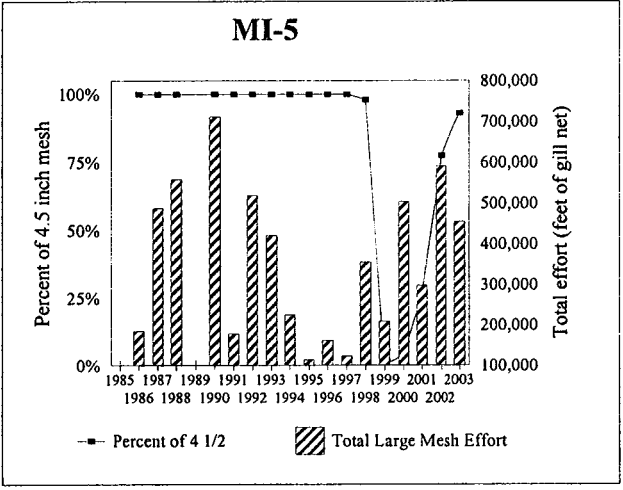
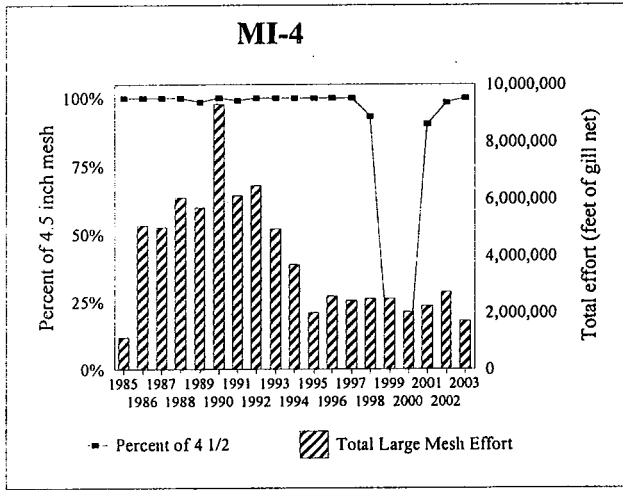
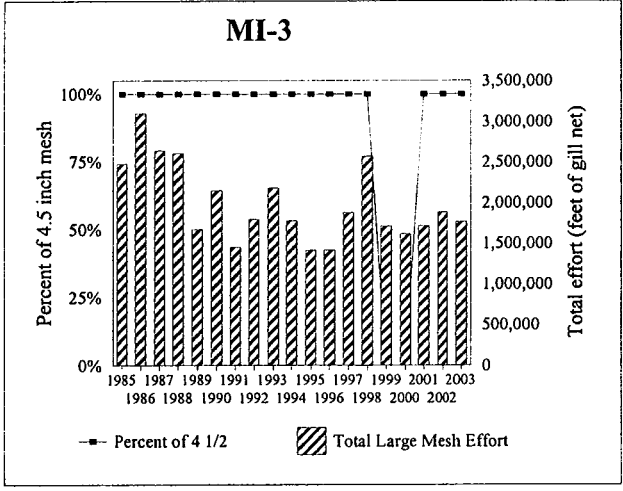
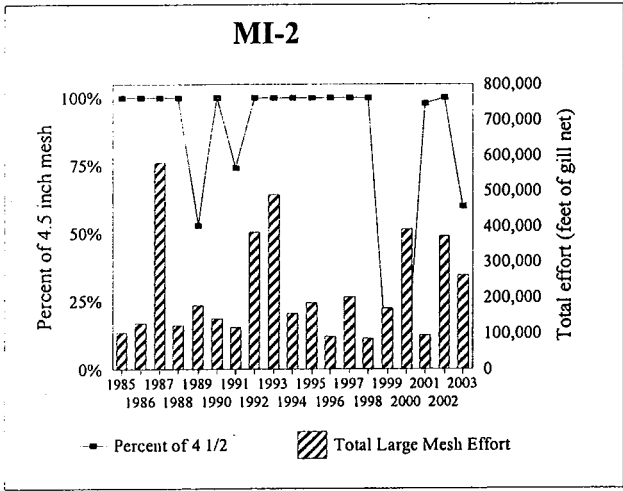
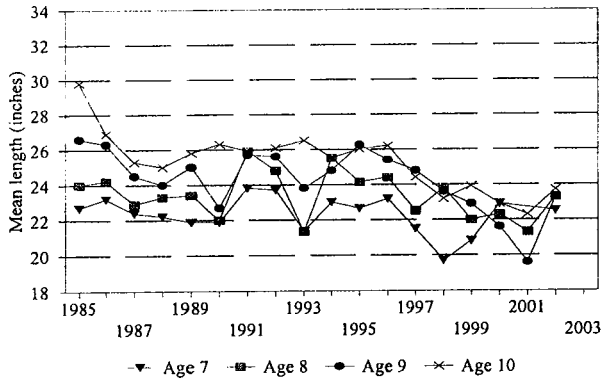
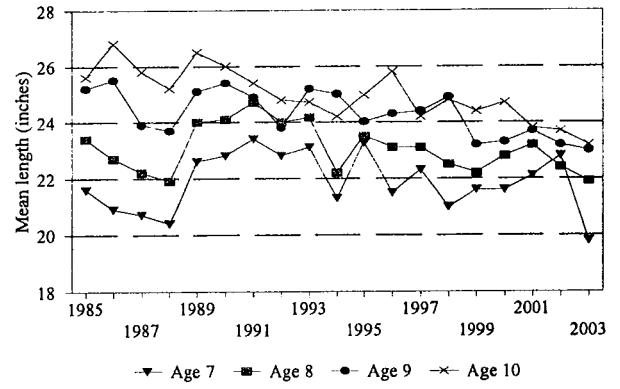


Figure 2. Total tribal large mesh gill net effort and percent composed of 4 1/2 inch mesh by management unit, 1986 to 2003.

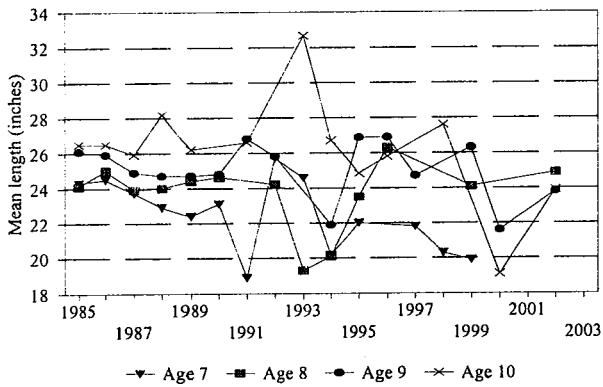
Wild Lake Trout MI-3



Wild Lake Trout MI-4



Hatchery Lake Trout MI-3



Hatchery Lake Trout MI-4

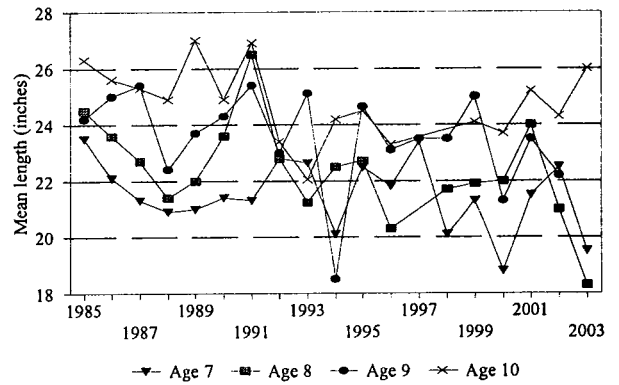
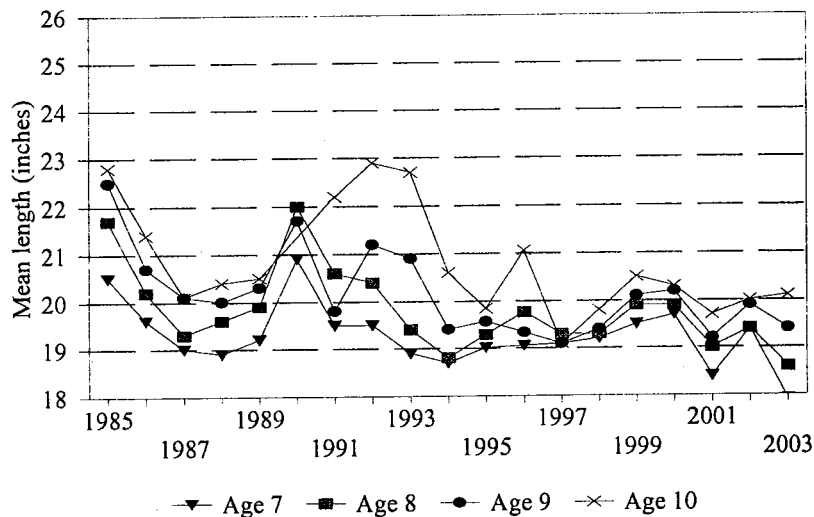


Figure 3. Trends in average length (inches) of hatchery and wild lake trout (ages 7-10) in Michigan management units MI-3 and MI-4, from 1985-2003.

Whitefish MI-3



Whitefish MI-4

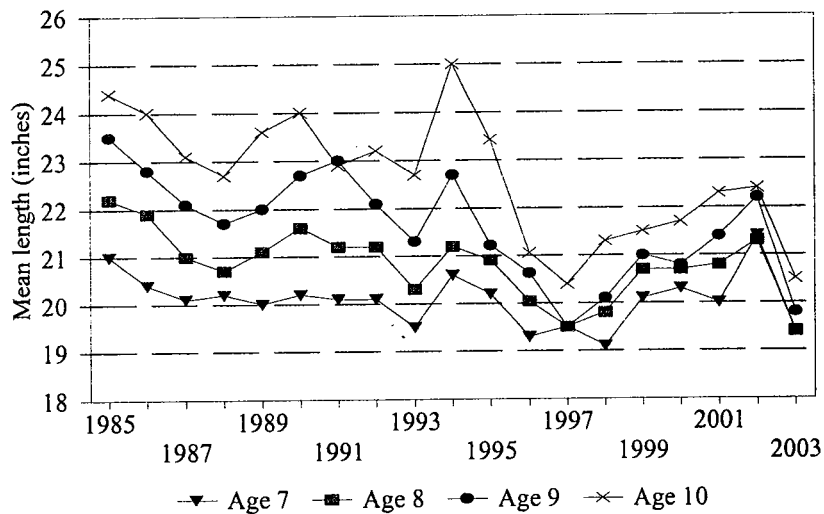


Figure 4. Trends in average length (inches) of whitefish (ages 7-10) in Michigan management units MI-3 and MI-4, from 1985-2003.

Table 1. Total tribal commercial gill net effort (feet) and harvest by management unit and grid from the 1842 ceded area within Michigan waters of Lake Superior in 2003. Lake trout, whitefish, siscowet, herring, salmon, menominee, and chubs are dressed pounds, all others are round.

Management Unit	Grid	Effort	Lake trout	Whitefish	Siscowet	Herring	Salmon	Menominee	Chub	Burbot	Walleye	Smelt
MI-2												
	1315	74,200	1,115	8,224	700	0	0	0	0	0	763	0
	1318	18,000	30	2,761	0	0	0	0	0	0	0	0
	1413	49,000	655	6,709	0	9	0	0	0	0	0	0
	1414	122,800	1,110	20,193	1,000	2,400	0	0	0	0	1,044	0
	Subtotal:	264,000	2,910	37,887	1,700	2,409	0	0	0	0	1,807	0
MI-3												
	1023	528,000	6,514	122,735	0	0	0	0	0	0	0	0
	1024	76,000	132	15,790	0	0	0	0	0	0	0	0
	1121	660,000	518	32,135	0	0	0	0	0	0	0	0
	1122	240,000	4,802	9,815	0	0	0	0	0	0	0	0
	1219	255,000	619	15,799	0	0	0	0	0	0	0	0
	Subtotal:	1,759,000	12,585	196,274	0	0	0	0	0	0	0	0
MI-4												
	1026	345,000	2,612	44,420	210	485	0	0	0	0	0	0
	1027	31,000	406	9,350	0	0	0	0	0	0	0	0
	1125	490,800	2,984	51,551	290	805	0	0	0	0	36	0
	1126	3,000	125	550	0	0	0	0	0	0	0	0
	1224	569,000	25,090	35,300	0	12	0	0	0	0	0	0
	1323	2,400	300	276	0	0	0	0	0	0	0	0
	1325	151,000	7,775	12,100	0	0	0	0	0	0	0	0
	1423	129,650	5,901	4,520	0	1,001	140	8	0	0	0	0
	1424	6,000	213	370	0	0	0	0	0	0	0	0
	Subtotal:	1,727,850	45,406	158,437	500	2,303	140	8	0	0	36	0
MI-5												
	1428	144,000	21,164	4,985	0	0	0	0	0	0	0	0
	1529	310,500	16,542	10,003	5	7	60	0	0	0	0	0
	Subtotal:	454,500	37,706	14,988	5	7	60	0	0	0	0	0
Grand Total:		4,205,350	98,607	407,586	2,205	4,719	200	8	0	0	1,843	0

Table 2. Total and target harvest and effort statistics by tribe for lake trout, whitefish, and siscowet in Michigan waters of Lake Superior in 2003. Pounds are in dressed weight, effort is feet of net lifted and CPE is pounds/1000 ft of net lifted. Target species was assigned to each lift based on reported target species from individual catch reports. Target effort for whitefish and lake trout was combined.

Unit	Tribe	TOTAL HARVEST							TARGET HARVEST							
		Effort	Whitefish pounds	CPE	Lake trout pounds	CPE	Siscowet pounds	CPE	Effort	Whitefish pounds	CPE	Lake trout pounds	CPE	Effort	Siscowet pounds	CPE
MI-2	Bad River	231,000	35,739	155	2,641	11	1,700	7	228,600	35,739	156	2,641	12	0	0	0
	Keweenaw Bay	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red Cliff	33,000	2,148	65	269	8	0	0	33,000	2,148	65	269	8	0	0	0
	subtotal	264,000	37,887	144	2,910	11	1,700	6	261,600	37,887	145	2,910	11	0	0	0
MI-3	Bad River	520,000	122,410	235	6,490	12	0	0	520,000	122,410	235	6,490	12	0	0	0
	Keweenaw Bay	64,000	4,700	73	4,700	73	0	0	64,000	4,700	73	4,700	73	0	0	0
	Red Cliff	1,175,000	69,164	59	1,395	1	0	0	1,175,000	69,164	59	1,395	1	0	0	0
	subtotal	1,759,000	196,274	112	12,585	7	0	0	1,759,000	196,274	112	12,585	7	0	0	0
MI-4	Bad River	366,000	25,925	71	15,175	41	0	0	366,000	25,925	71	15,175	41	0	0	0
	Keweenaw Bay	521,650	32,445	62	23,964	46	0	0	508,400	32,445	64	23,964	47	0	0	0
	Red Cliff	840,200	100,067	119	6,267	7	500	1	840,200	100,067	119	6,267	7	0	0	0
	subtotal	1,727,850	158,437	92	45,406	26	500	0	1,714,600	158,437	92	45,406	26	0	0	0
MI-5	Bad River	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Keweenaw Bay	454,500	14,988	33	37,706	83	5	0	454,500	14,988	33	37,706	83	0	0	0
	Red Cliff	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	subtotal	454,500	14,988	33	37,706	83	5	0	454,500	14,988	33	37,706	83	0	0	0
Total	Bad River	1,117,000	184,074	165	24,306	22	1,700	2	1,114,600	184,074	165	24,306	22	0	0	0
	Keweenaw Bay	1,040,150	52,133	50	66,370	64	5	0	1,026,900	52,133	51	66,370	65	0	0	0
	Red Cliff	2,048,200	171,379	84	7,931	4	500	0	2,048,200	171,379	84	7,931	4	0	0	0
	All Tribes	4,205,350	407,586	97	98,607	23	2,205	1	4,189,700	407,586	97	98,607	24	0	0	0

Table 3. Tribal commercial harvest by management unit and gill net mesh size from the 1842 ceded area within Michigan waters of Lake Superior in 2003. Burbot and walleye are in round pounds, all others are dressed.

Unit	Mesh	Effort	Lake trout	Whitefish	Siscowet	Herring	Salmon	Menominee	Chub	Burbot	Walleye	Rainbow Trout
MI-2												
	3	2,400	0	0	0	1,200	0	0	0			
	4.5	156,600	1,850	24,972	1,700	1,209	0	0	0	0	50	0
	5.5	45,000	660	5,092	0	0	0	0	0		1,757	
	4.5 - 5.5	60,000	400	7,823	0	0	0	0	0			
	subtotal:	264,000	2,910	37,887	1,700	2,409	0	0	0	0	1,807	0
MI-3												
	4.5	1,759,000	12,585	196,274	0	0	0	0	0	0	0	0
	subtotal:	1,759,000	12,585	196,274	0	0	0	0	0	0	0	0
MI-4												
	2.75	2,800	0	0	0	76	67	0	0	0	0	0
	3.0	10,450	0	0	0	903	72	1	0	0	0	3
	4.5	1,714,600	45,106	158,437	500	1,324	1	7	0	0	36	0
	HOOK		300	0	0	0	0	0	0	0	0	0
	subtotal:	1,727,850	45,406	158,437	500	2,303	140	8	0	0	36	3
MI-5												
	4.5	422,500	32,821	13,853	5	7	60	0	0	0	0	0
	5.0	32,000	4,885	1,135	0	0	0	0	0	0	0	0
	subtotal:	454,500	37,706	14,988	5	7	60	0	0	0	0	0
Total:		4,205,350	98,607	407,586	2,205	4,719	200	8	0	0	1,843	3

Table 4. Gill net harvest and effort statistics for target species by grid and management unit in Michigan waters of Lake Superior in 2003. Pounds are in dressed weight, effort is feet of net lifted and CPE is pounds/1,000 ft of net lifted. Target species was assigned to each lift based on reported target species from individual catch reports. Target effort for whitefish and lake trout was combined.

Unit	Grid	Whitefish			Lake trout			Siscowet			Herring			Salmon		
		Effort	pounds	CPE	Effort	pounds	CPE	Effort	pounds	CPE	Effort	pounds	CPE	Effort	pounds	CPE
MI-2	1315	74,200	8,224	111	74,200	1,115	15									
	1318	18,000	2,761	153	18,000	30	2									
	1413	49,000	6,709	137	49,000	655	13									
	1414	120,400	20,193	168	120,400	1,110	9				2,400	1,200	500			
	subtotal	261,600	37,887	145	261,600	2,910	11	0	0	0	2,400	1,200	500	0	0	0
MI-3	1023	528,000	122,735	232	528,000	6,514	12									
	1024	76,000	15,790	208	76,000	132	2									
	1121	660,000	32,135	49	660,000	518	1									
	1122	240,000	9,815	41	240,000	4,802	20									
	1219	255,000	15,799	62	255,000	619	2									
subtotal	1,759,000	196,274	112	1,759,000	12,585	7	0	0	0	0	0	0	0	0	0	0
MI-4	1026	345,000	44,420	129	345,000	2,612	8									
	1027	31,000	9,350	302	31,000	406	13									
	1125	490,800	51,551	105	490,800	2,984	6									
	1126	3,000	550	183	3,000	125	42									
	1224	569,000	35,300	62	569,000	25,090	44									
	1323	2,400	276	115	2,400	300	125									
	1325	151,000	12,100	80	151,000	7,775	51									
	1423	116,400	4,520	39	116,400	5,901	51				12,050	979	81	1,200	48	40
	1424	6,000	370	62	6,000	213	36									
subtotal	1,714,600	158,437	92	1,714,600	45,406	26	0	0	0	12,050	979	81	1,200	48	40	
MI-5	1428	144,000	4,985	35	144,000	21,164	147									
	1529	310,500	10,003	32	310,500	16,542	53									
	subtotal	454,500	14,988	33	454,500	37,706	83	0	0	0	0	0	0	0	0	0
Grand Total		4,189,700	407,586	97	4,189,700	98,607	24	0	0	0	14,450	2,179	151	1,200	48	40

Table 5. Tribal commercial gill net effort (feet), harvest (dressed pounds), and catch per unit effort (CPE, pounds/1,000 feet) statistics for whitefish, lake trout and siscowet by management unit and year from the 1842 ceded area within Michigan waters of Lake Superior from 1985-2003. Target effort for whitefish and lake trout was combined.

Unit	Year	Whitefish				Lake trout				Siscowet			
		Target effort	Target harvest	CPE	Total Harvest	Target effort	Target harvest	CPE	Total Harvest	Target effort	Target harvest	CPE	Total Harvest
MI-2	1985	101,100	5,664	56	5,664	101,100	9,238	91	9,238	0	0	0	45
	1986	128,000	16,234	127	16,234	128,000	7,550	59	7,550	0	0	0	63
	1987	611,300	84,756	139	84,756	611,300	20,253	33	20,318	3,200	0	0	2,059
	1988	98,000	2,809	29	2,809	98,000	17,374	177	17,374	24,000	4,945	206	5,377
	1989	178,000	33,511	188	33,511	178,000	13,488	76	13,488	0	0	0	4,181
	1990	113,000	22,867	202	24,012	113,000	2,789	25	3,269	28,000	8,145	291	13,308
	1991	136,800	32,003	234	32,003	136,800	5,273	39	5,273	0	0	0	812
	1992	217,000	44,814	207	45,377	217,000	2,290	11	2,332	166,000	25,946	156	27,476
	1993	419,100	74,220	177	74,473	419,100	7,780	19	8,263	52,400	10,029	191	18,680
	1994	148,200	17,629	119	17,629	148,200	7,790	53	7,790	5,000	747	149	1,990
	1995	155,000	11,236	73	12,160	155,000	9,729	63	10,104	15,000	3,307	221	6,682
	1996	89,600	4,418	49	4,418	89,600	7,777	87	7,777	1,200	3	3	189
	1997	196,300	19,512	99	19,512	196,300	10,675	54	11,302	5,000	1,608	322	2,311
	1998	85,400	10,250	120	10,250	85,400	3,125	37	3,125	0	0	0	250
	1999	170,100	31,466	185	31,466	170,100	1,130	7	1,130	0	0	0	3,628
	2000	391,800	120,494	308	120,494	391,800	3,925	10	3,925	0	0	0	3,911
	2001	95,000	16,944	178	16,944	95,000	463	5	463	0	0	0	1,483
	2002	371,800	43,377	117	43,377	371,800	3,582	10	3,582	0	0	0	6,667
	2003	261,600	37,887	145	37,887	261,600	2,910	11	2,910	0	0	0	1,700
Average:		208,795	33,163	159	33,315	208,795	7,218	35	7,327	15,779	2,881	183	5,306
MI-3	1985	2,475,200	309,525	125	309,525	2,475,200	31,501	13	31,501	0	0	0	6,098
	1986	2,936,200	265,269	90	266,919	2,936,200	39,682	14	39,888	161,000	26,172	163	44,384
	1987	2,063,800	131,843	64	140,735	2,063,800	34,724	17	35,655	538,800	58,797	109	78,320
	1988	2,427,300	222,321	92	225,440	2,427,300	32,677	14	33,158	176,400	21,934	124	34,289
	1989	1,596,000	134,078	84	134,182	1,596,000	28,215	18	28,224	68,000	10,660	157	22,461
	1990	2,127,500	110,615	52	110,615	2,127,500	28,361	13	28,361	20,000	2,967	148	28,771
	1991	1,329,900	62,714	47	65,264	1,329,900	22,507	17	23,790	123,400	14,458	117	30,005
	1992	1,675,200	119,291	71	120,176	1,675,200	19,537	12	19,912	84,600	8,272	98	27,350
	1993	2,100,100	172,270	82	172,488	2,100,100	16,958	8	17,255	63,700	5,933	93	22,052
	1994	1,703,800	73,556	43	74,632	1,703,800	12,651	7	13,433	71,000	5,053	71	22,099
	1995	1,408,400	91,358	65	91,358	1,408,400	8,013	6	8,013	0	0	0	9,774
	1996	1,359,700	135,822	100	136,622	1,359,700	9,843	7	10,798	56,000	2,750	49	6,277
	1997	1,854,100	136,221	74	136,971	1,854,100	15,954	9	16,435	18,000	1,546	86	13,270
	1998	2,556,700	267,336	105	267,411	2,556,700	24,629	10	24,759	9,500	400	42	11,706
	1999	1,706,300	178,485	105	178,485	1,706,300	12,430	7	12,430	0	0	0	11,455
	2000	1,609,300	204,065	127	204,065	1,609,300	8,951	6	8,951	0	0	0	3,389
	2001	1,711,600	154,154	90	154,154	1,711,600	17,246	10	17,246	0	0	0	7,819
	2002	1,879,000	85,980	46	85,980	1,879,000	19,558	10	19,558	0	0	0	8,986
	2003	1,759,000	196,274	112	196,274	1,759,000	12,585	7	12,585	0	0	0	0
Average:		1,909,426	160,588	84	161,647	1,909,426	20,843	11	21,155	73,179	8,365	114	20,448
MI-4	1985	1,083,275	218,666	202	219,376	1,083,275	43,118	40	44,289	0	0	0	241
	1986	4,864,900	526,710	108	527,148	4,864,900	129,258	27	129,565	105,800	25,924	245	32,038
	1987	4,110,190	300,332	73	301,898	4,110,190	71,863	18	72,864	768,200	136,596	178	160,297
	1988	5,547,065	245,246	44	246,854	5,547,065	117,982	21	119,281	266,000	34,653	130	53,689
	1989	6,781,675	371,247	55	372,637	6,781,675	112,829	17	114,353	70,000	21,781	311	58,127
	1990	8,557,900	377,190	44	382,839	8,557,900	133,645	16	139,272	600,500	38,606	64	81,902
	1991	5,945,200	278,295	47	286,046	5,945,200	94,581	16	104,481	789,300	55,800	71	96,699
	1992	5,152,100	299,967	58	313,370	5,152,100	74,849	15	86,074	950,750	46,489	49	96,550
	1993	3,939,425	165,440	42	176,357	3,939,425	65,184	17	76,105	747,500	55,090	74	92,518
	1994	2,801,325	88,866	32	95,085	2,801,325	53,075	19	62,290	559,050	38,703	69	60,395
	1995	1,529,225	74,466	49	84,682	1,529,225	47,471	31	61,986	376,000	35,363	94	51,510
	1996	2,096,400	101,931	49	108,219	2,096,400	43,737	21	50,828	336,900	23,662	70	38,361
	1997	2,238,988	127,998	57	129,103	2,238,988	54,929	25	56,302	137,986	41,753	303	65,555
	1998	2,202,700	136,100	62	139,384	2,202,700	60,014	27	63,419	196,870	19,377	98	33,038
	1999	2,338,100	141,873	61	143,432	2,338,100	69,671	30	70,896	79,400	14,920	188	25,154
	2000	1,922,025	128,261	67	129,288	1,922,025	78,318	41	79,097	43,700	6,616	151	17,851
	2001	2,211,200	118,128	53	118,944	2,211,200	67,924	31	68,545	22,800	6,949	305	34,091
	2002	1,922,025	128,261	67	166,789	1,922,025	78,318	41	92,278	0	0	0	19,050
	2003	1,714,600	158,437	92	158,437	1,714,600	45,406	27	45,406	0	0	0	500
Average:		3,524,122	209,864	60	215,784	3,524,122	75,904	22	80,912	318,461	31,699	100	53,556

Table 5. Continued.

Unit	Year	Whitefish				Lake trout				Siscowet			
		Target effort	Target harvest	CPE	Total Harvest	Target effort	Target harvest	CPE	Total Harvest	Target effort	Target harvest	CPE	Total Harvest
MI-5	1986	180,000	25,205	140	25,205	180,000	10,667	59	10,667	4,000	750	188	1,772
	1987	440,000	32,095	73	33,126	440,000	13,509	31	13,509	48,000	2,502	52	6,269
	1988	551,900	47,233	86	47,363	551,900	32,105	58	32,105	6,000	333	56	5,449
	1989	225,500	42,809	190	42,809	225,500	12,661	56	12,661	0	0	0	2,785
	1990	706,000	80,394	114	80,394	706,000	18,490	26	18,490	0	0	0	10,026
	1991	305,500	24,355	80	24,540	305,500	7,789	26	7,899	36,000	405	11	9,787
	1992	426,000	35,827	84	37,169	426,000	8,042	19	8,977	72,000	2,970	41	8,672
	1993	416,000	21,375	51	21,522	416,000	25,555	61	25,597	4,500	206	46	2,833
	1994	211,000	5,318	25	5,388	211,000	24,974	118	24,974	14,000	290	21	2,878
	1995	113,400	9,288	82	9,288	113,400	8,445	75	8,445	0	0	0	1,839
	1996	161,400	7,672	48	7,672	161,400	8,040	50	8,040	0	0	0	1,033
	1997	102,300	17,997	176	18,831	102,300	5,249	51	6,105	8,000	200	25	1,855
	1998	280,300	23,950	85	24,452	280,300	14,942	53	16,247	74,000	1,989	27	4,023
	1999	178,000	12,213	69	12,813	178,000	18,342	103	19,824	15,500	1,222	79	4,038
	2000	481,800	44,454	92	44,842	481,800	48,030	100	48,479	7,500	578	77	3,073
2001	292,700	22,949	78	22,949	292,700	6,377	22	7,321	0	0	0	0	
2002	178,000	12,213	69	31,329	178,000	18,342	103	23,010	0	0	0	1,849	
2003	454,500	14,988	33	14,988	454,500	37,706	83	37,706	0	0	0	5	
Average:		316,906	26,685	84	28,038	316,906	17,737	56	18,336	16,083	636	40	3,788
All units	1985	3,659,575	533,855	146	534,565	3,659,575	83,857	23	85,028	0	0	0	6,384
	1986	8,109,100	833,418	103	835,506	8,109,100	187,157	23	187,670	270,800	52,846	195	78,257
	1987	7,225,290	549,026	76	560,515	7,225,290	140,349	19	142,346	1,358,200	197,895	146	246,945
	1988	8,624,265	517,609	60	522,466	8,624,265	200,138	23	201,918	472,400	61,865	131	98,804
	1989	8,781,175	581,645	66	583,139	8,781,175	167,193	19	168,726	138,000	32,441	235	87,554
	1990	11,504,400	591,066	51	597,860	11,504,400	183,285	16	189,392	648,500	49,718	77	134,007
	1991	7,717,400	397,367	51	407,853	7,717,400	130,150	17	141,443	948,700	70,663	74	137,303
	1992	7,470,300	499,899	67	516,092	7,470,300	104,718	14	117,295	1,273,350	83,677	66	160,048
	1993	6,874,625	433,305	63	444,840	6,874,625	115,477	17	127,220	868,100	71,258	82	136,083
	1994	4,864,325	185,369	38	192,734	4,864,325	98,490	20	108,487	649,050	44,793	69	87,362
	1995	3,206,025	186,348	58	197,488	3,206,025	73,658	23	88,548	391,000	38,670	99	69,805
	1996	3,707,100	249,843	67	256,931	3,707,100	69,397	19	77,443	394,100	26,415	67	45,860
	1997	4,391,688	301,728	69	304,417	4,391,688	86,807	20	90,144	168,986	45,107	267	82,991
	1998	5,125,100	437,636	85	441,497	5,125,100	102,710	20	107,550	280,370	21,766	78	49,017
	1999	4,392,500	364,037	83	366,196	4,392,500	101,573	23	104,280	94,900	16,142	170	44,275
2000	4,404,925	497,274	113	498,689	4,404,925	139,224	32	140,452	51,200	7,194	141	28,224	
2001	4,310,500	312,175	72	312,991	4,310,500	92,010	21	93,575	22,800	6,949	305	43,393	
2002	4,350,825	269,831	62	327,475	4,350,825	119,800	28	138,428	0	0	0	36,552	
2003	4,189,700	407,586	97	407,586	4,189,700	98,607	24	98,607	0	0	0	2,205	
Average:		5,942,569	428,896	72	437,307	5,942,569	120,768	20	126,766	422,656	43,547	103	82,898

Table 6. Tribal commercial trap net nights and harvest by management unit and grid from nets fished in the 1842 ceded area within Michigan waters of Lake Superior in 2003. Lake trout and whitefish were the only species caught and reported. Trap net nights were not reported for all nights that traps were set.

Management Unit	Grid	Trap net nights	Lake trout (dressed pounds)	Whitefish (dressed pounds)
MI-4				
	1125	2	0	60
	1224	3	0	210
Subtotal:		5	0	270
Grand Total:		5	0	270

Table 7. Age and size composition of hatchery (H) and wild (N) lake trout in tribal commercial harvests from unit MI-2 during 2003. Weight is in round pounds, length is in inches, and sd=standard deviation.

Unit	Origin	Age	Number		Length (in.)		Weight (lbs)	
			Aged	Measured	mean	sd	Weighed	mean
MI-2	H		0	1	27.0		1	7.7
Sample Size:			0	1			1	
Means:					27.0			7.7
Sample Size:			0	1			1	
Means:					27.0			7.7

Table 8. Lamprey wounding and scarring rates (marks/100 fish) on lake trout, per Lake Superior Technical Committee protocol, captured in the tribal commercial harvests from management units in the 1842 ceded area within Michigan waters of Lake Superior during 2003.

Unit	Length Category (Inches)	Fish Examined	Type AI, AII, AIII Wounds	Wounds per 100 fish	Scars	Scars per 100 fish
MI-2						
	4: 25-28.9	1	0	0.0	0	0.0
	Total:	1	0	0.0	0	0.0
MI-3						
	1: < 17	6	0	0.0	0	0.0
	2: 17-20.9	63	0	0.0	0	0.0
	3: 21-24.9	97	1	1.0	2	2.1
	4: 25-28.9	30	1	3.3	2	6.7
	5: > 29	2	0	0.0	2	100.0
	Total:	198	2	1.0	6	3.0
MI-4						
	1: < 17	2	0	0.0	0	0.0
	2: 17-20.9	45	0	0.0	0	0.0
	3: 21-24.9	62	0	0.0	0	0.0
	4: 25-28.9	13	0	0.0	1	7.7
	5: > 29	7	1	14.3	0	0.0
	Total:	129	1	0.8	1	0.8
MI-5						
	1: < 17	1	0	0.0	0	0.0
	2: 17-20.9	14	0	0.0	0	0.0
	3: 21-24.9	68	0	0.0	1	1.5
	4: 25-28.9	39	0	0.0	5	12.8
	5: > 29	20	2	10.0	12	60.0
	Total:	142	2	1.4	18	12.7

the 1842 ceded area within Michigan waters of Lake Superior for data collected
January-December 1988-2003.

Management Unit	Year	Ages	Instantaneous total mortality Z	95% confidence limit for Z	Annual total mortality A	Annual Survival S
<u>Wild Lake Trout</u>						
MI-2	2002	9-11	0.458	+/- 0.030	0.369	0.631
	2001	9-15	0.326	+/- 0.098	0.281	0.719
	2000	9-13	0.220	+/- 0.342	0.198	0.802
	1999	7-13	0.256	+/- 0.157	0.229	0.771
	1998	7-13	0.385	+/- 0.111	0.316	0.684
	1990	8-11	0.750	+/- 0.416	0.528	0.472
	1988	9-13	0.406	+/- 0.306	0.334	0.666
MI-3	2003	7-14	0.282	+/- 0.078	0.244	0.872
	2002	7-20	0.307	+/- 0.035	0.267	0.733
	2000	7-11	0.204	+/- 0.454	0.184	0.814
	1999	7-16	0.215	+/- 0.099	0.197	0.803
	1997	7-11	0.176	+/- 0.212	0.165	0.835
	1996	8-13	0.238	+/- 0.267	0.213	0.787
	1995	8-11	0.522	+/- 0.325	0.405	0.595
	1991	8-11	0.469	+/- 0.353	0.375	0.625
	1989	8-12	0.723	+/- 0.084	0.513	0.487
	1988	9-13	0.651	+/- 0.396	0.478	0.522
MI-4	2003	8-17	0.258	+/- 0.048	0.229	0.881
	2002	7-12	0.227	+/- 0.068	0.206	0.794
	2001	7-15	0.364	+/- 0.051	0.302	0.698
	2000	6-13	0.323	+/- 0.586	0.276	0.724
	1999	7-12	0.202	+/- 0.069	0.181	0.819
	1998	7-12	0.220	+/- 0.166	0.197	0.803
	1997	7-12	0.455	+/- 0.182	0.369	0.631
	1996	7-12	0.556	+/- 0.162	0.429	0.571
	1995	7-12	0.200	+/- 0.226	0.181	0.819
	1994	7-12	0.281	+/- 0.103	0.244	0.756
	1993	6-11	0.349	+/- 0.334	0.295	0.705
	1992	5-11	0.430	+/- 0.105	0.349	0.651
	1991	6-11	0.592	+/- 0.130	0.446	0.554
	1990	6-11	0.723	+/- 0.153	0.513	0.487
	1989	7-11	0.786	+/- 0.395	0.546	0.454
1988	9-13	0.912	+/- 0.134	0.598	0.402	
MI-5	2003	12-22	0.264	+/- 0.047	0.229	0.881
	2001	7-15	0.268	+/- 0.074	0.237	0.763
	2000	10-16	0.188	+/- 0.336	0.171	0.829
	1991	5-8	0.744	+/- 0.563	0.523	0.477
<u>Wild and Hatchery Lake Trout Combined</u>						
MI-2	2002	9-11	0.458	+/- 0.030	0.369	0.631
	2001	9-15	0.341	+/- 0.099	0.288	0.712
	2000	9-13	0.220	+/- 0.300	0.197	0.803
	1999	7-13	0.287	+/- 0.162	0.252	0.748
	1998	7-13	0.389	+/- 0.106	0.323	0.677
	1990	8-12	0.706	+/- 0.247	0.508	0.492
MI-3	2003	7-14	0.287	+/- 0.072	0.252	0.868
	2002	7-20	0.312	+/- 0.036	0.267	0.733
	2000	7-11	0.200	+/- 0.450	0.181	0.819
	1999	7-16	0.039	+/- 0.090	0.197	0.803
	1997	7-11	0.208	+/- 0.196	0.189	0.811
	1996	8-13	0.276	+/- 0.190	0.244	0.756
	1995	8-11	0.563	+/- 0.328	0.429	0.571
	1992	7-13	0.372	+/- 0.355	0.309	0.691
	1991	8-11	0.396	+/- 0.334	0.330	0.670
	1989	8-11	0.642	+/- 0.094	0.473	0.527
1988	11-13	0.779	+/- 0.445	0.541	0.459	
MI-4	2003	8-17	0.273	+/- 0.041	0.237	0.876
	2002	7-12	0.268	+/- 0.058	0.237	0.763
	2001	7-15	0.366	+/- 0.064	0.309	0.691
	2000	5-13	0.270	+/- 0.520	0.237	0.763
	1999	7-12	0.254	+/- 0.030	0.221	0.779
	1998	7-12	0.299	+/- 0.129	0.259	0.741
	1997	7-12	0.339	+/- 0.115	0.288	0.712
	1996	7-12	0.572	+/- 0.154	0.434	0.566
	1995	7-12	0.252	+/- 0.170	0.221	0.779
	1994	7-12	0.305	+/- 0.094	0.267	0.733
	1993	6-11	0.300	+/- 0.242	0.259	0.741
	1992	5-11	0.448	+/- 0.081	0.362	0.638
	1991	6-11	0.577	+/- 0.104	0.440	0.560
	1990	6-11	0.591	+/- 0.088	0.446	0.554
	1989	7-11	0.705	+/- 0.218	0.508	0.492
1988	8-13	0.540	+/- 0.276	0.417	0.583	
MI-5	2003	12-22	0.266	+/- 0.047	0.237	0.876
	2001	7-15	0.279	+/- 0.067	0.244	0.756
	2000	10-16	0.165	+/- 0.256	0.156	0.844
	1991	5-8	0.602	+/- 0.452	0.451	0.549

Table 10. Age and size composition of hatchery (H) and wild (N) lake trout in tribal commercial harvests from unit MI-3 during 2003. Weight is in round pounds, length is in inches, and sd=standard deviation.

Unit	Origin	Age	Number Aged	Number Measured	Length (in.)		Number Weighed	Weight (lbs)	
					mean	sd		mean	sd
MI-3									
	H								
			0	3	23.4	1.3	3	3.8	0.2
		5	1	1	16.6		1	1.4	
		6	5	5	19.3	1.8	5	2.5	0.7
		7	8	8	19.5	1.4	8	2.4	0.6
		8	1	1	18.3		1	1.7	
		10	2	2	26.0	2.1	2	5.9	2.0
		11	2	2	22.5	0.4	2	3.4	0.2
		12	2	2	22.7	0.8	2	4.1	1.0
		13	2	2	24.9	0.2	2	4.6	0.5
Sample Size:			23	26			26		
Means:			8.3		21.1	2.8		3.2	1.3
	N								
			0	2	23.7	2.1	2	4.1	0.2
		6	14	14	20.3	2.7	14	2.7	1.6
		7	20	20	19.8	2.9	20	2.6	1.4
		8	38	38	21.9	2.4	38	3.4	1.2
		9	18	18	23.0	1.7	18	3.9	0.9
		10	18	18	23.2	2.1	18	3.9	1.2
		11	10	10	23.4	2.5	10	4.2	2.0
		12	20	20	23.4	2.1	20	3.9	1.7
		13	5	5	24.1	1.1	5	4.1	0.5
		14	3	3	25.4	1.9	3	4.2	0.7
		17	1	1	24.6		1	4.5	
		19	1	1	33.4		1	2.4	
Sample Size:			148	150			150		
Means:			9.2		22.3	2.8		3.5	1.4
Sample Size:			171	176			176		
Means:			9.1		22.1	2.8		3.5	1.4

Table 11. Age and size composition of hatchery (H) and wild (N) lake trout in tribal commercial harvests from unit MI-4 during 2003. Weight is in round pounds, length is in inches, and sd=standard deviation.

Unit	Origin	Age	Number		Length (in.)		Weight (lbs)		
			Aged	Measured	mean	sd	Number Weighed	mean	sd
MI-4									
H									
			0	3	21.5	1.5	3	2.7	0.5
		5	2	2	17.5	0.8	2	2.9	0.8
		6	2	2	21.1	1.1	2	2.5	0.4
		7	1	1	21.5		1	3.3	
		8	5	5	20.6	2.0	5	2.9	1.3
		10	2	2	21.1	0.8	2	2.8	0.4
		11	1	1	22.7		1	3.3	
		12	1	1	25.4		1	5.5	
		15	2	2	30.9	1.1	2	7.9	0.6
Sample Size:			16	19			19		
Means:			8.9		22.0	3.7		3.5	1.8
N									
			0	24	21.9	1.9	23	2.8	0.7
		4	8	8	18.7	2.0	8	2.2	1.1
		5	5	5	19.0	1.5	5	3.0	1.0
		6	7	7	20.5	0.8	7	2.2	0.3
		7	3	3	20.2	0.7	3	2.1	0.3
		8	8	8	21.5	2.3	8	2.6	0.7
		9	14	14	20.7	1.2	13	2.4	0.6
		10	8	8	23.5	2.8	8	3.6	1.2
		11	15	15	22.8	1.2	15	3.4	0.6
		12	4	4	24.6	1.7	4	4.3	0.9
		13	4	4	25.5	2.1	4	5.0	1.0
		14	5	5	26.9	1.8	5	5.3	0.9
		15	2	2	29.7	9.1	2	10.1	9.2
		16	2	2	29.4	2.1	2	6.9	1.9
		17	1	1	31.4		1	9.6	
Sample Size:			86	110			108		
Means:			9.3		22.3	3.2		3.3	1.9
Sample Size:									
Sample Size:			102	129			127		
Means:			9.3		22.2	3.2		3.4	1.9

Table 12. Age and size composition of hatchery (H) and wild (N) lake trout in tribal commercial harvests from unit MI-5 during 2003. Weight is in round pounds, length is in inches, and sd=standard deviation.

Unit	Origin	Age	Number		Length (in.)		Weight (lbs)		
			Aged	Measured	mean	sd	Number Weighed	mean	sd
MI-5									
	H								
			0	1	24.4		1	4.7	
		6	1	1	20.8		1	2.6	
		7	1	1	23.2		1	4.1	
		8	2	2	22.2	0.1	2	3.3	0.0
		13	1	1	23.8		1	4.0	
Sample Size:			5	6			6		
Means:					22.8	1.3		3.7	0.7
	N								
			0	6	24.0	1.1	6	4.8	0.7
		4	1	1	17.9		1	1.9	
		5	4	4	19.1	1.9	4	2.5	0.7
		6	6	6	20.9	1.0	6	3.4	0.7
		7	7	7	21.7	1.9	7	3.4	1.1
		8	6	6	22.0	1.3	6	3.7	0.8
		9	6	6	23.4	2.9	6	4.9	1.8
		10	6	6	22.6	2.7	6	3.9	1.2
		11	9	9	23.4	0.8	9	4.1	0.6
		12	18	18	24.1	2.1	18	5.1	2.0
		13	13	13	24.6	1.6	13	5.0	1.2
		14	7	7	27.0	1.5	7	6.5	1.4
		15	15	15	25.8	1.6	15	5.6	1.0
		16	6	5	27.1	1.9	6	6.4	1.3
		17	10	10	27.8	3.0	10	7.3	2.8
		18	5	5	30.5	2.9	5	10.2	3.6
		19	4	4	31.8	1.8	4	11.7	1.9
		20	1	1	32.6		1	10.9	
		21	3	3	31.3	2.6	3	11.2	3.0
		22	1	1	34.0		1	14.9	
		24	1	1	35.1		1	14.1	
		25	1	1	36.3		1	14.9	
		27	1	1	33.7		1	12.7	
Sample Size:			131	136			137		
Means:					25.2	3.8		5.8	3.0
Sample Size:			136	142			143		
Means:					25.1	3.8		5.7	3.0

Table 13. Age and size composition of whitefish in tribal commercial harvests from management units in the 1842 ceded area within Michigan waters of Lake Superior during 2003. Weight is in round pounds, length is in inches, and sd=standard deviation.

Unit	Age	Number		Length (in.)		Weight (lbs)		
		Aged	Measured	mean	sd	Weighed	mean	sd
MI-3								
		0	62	18.8	1.4	62	2.3	0.4
	5	1	1	16.4		1	1.9	
	6	26	26	17.0	1.1	26	1.7	0.3
	7	134	134	17.9	1.0	134	2.0	0.4
	8	291	291	18.6	1.2	291	2.2	0.4
	9	376	376	19.4	1.3	376	2.4	0.4
	10	304	304	20.1	1.3	304	2.6	0.4
	11	175	175	20.4	1.3	175	2.8	0.6
	12	65	65	20.9	1.5	65	3.1	0.7
	13	14	14	21.0	1.5	14	3.0	0.8
	14	12	12	23.1	3.4	12	3.7	1.2
Sample Size:		1,398	1,460			1,460		
Means:		9.2		19.4	1.6		2.4	0.6
MI-4								
		0	13	20.1	1.5	13	2.8	0.7
	4	1	1	17.4		1	1.5	
	5	24	24	19.2	0.9	24	2.2	0.4
	6	56	56	19.1	1.1	56	2.2	0.5
	7	120	120	19.4	1.3	120	2.4	0.5
	8	130	130	19.4	1.3	130	2.5	0.5
	9	125	125	19.8	1.2	125	2.6	0.6
	10	79	79	20.5	1.0	79	2.8	0.5
	11	48	48	21.3	1.6	48	3.3	0.6
	12	19	19	21.7	1.3	19	3.3	0.8
	13	10	10	22.6	1.1	10	3.7	0.7
	14	2	2	23.6	0.4	2	4.1	0.4
	15	1	1	26.3		1	5.2	
	19	1	1	33.7		1	15.6	
Sample Size:		616	629			629		
Means:		8.4		19.9	1.6		2.6	0.8

Table 13. Continued.

Unit	Age	Number		Length (in.)		Number	Weight (lbs)	
		Aged	Measured	mean	sd	Weighed	mean	sd
MI-5								
	5	8	8	18.8	0.5	8	2.6	0.1
	6	15	15	20.0	1.3	15	2.9	0.6
	7	15	15	20.1	1.1	15	3.1	0.4
	8	13	13	21.0	1.1	13	3.4	0.8
	9	13	13	21.9	1.3	13	3.9	0.9
	10	6	6	22.2	1.0	6	3.9	0.5
	11	7	7	22.7	1.7	7	4.6	0.9
	12	3	3	24.7	1.2	3	5.5	1.3
	14	1	1	26.5		1	7.9	
	15	1	1	26.6		1	6.2	
Sample Size:		82	82			82		
Means:		8.0		21.1	2.0		3.6	1.1

Table 14. Age and size composition of siscowet in tribal commercial harvests from management units in the 1842 ceded area within Michigan waters of Lake Superior during 2003. Weight is in round pounds, length is in inches, and sd=standard deviation.

Unit	Age	Number		Length (in.)		Number		Weight (lbs)	
		Aged	Measured	mean	sd	Weighed	mean	sd	
MI-2									
	8	1	1	17.4		1	1.3		
Sample Size:		1	1			1			
Means:		8.0		17.4			1.3		
MI-3									
		0	6	21.7	2.9	6	3.4	1.9	
	4	1	1	16.9		1	1.4		
	5	3	3	17.0	1.6	3	1.5	0.6	
	7	3	3	18.2	1.3	3	1.9	0.3	
	8	5	5	16.9	0.6	5	1.4	0.2	
	9	3	3	21.1	1.5	3	2.9	0.7	
	10	1	1	14.4		1	1.8		
	11	2	2	18.8	4.6	2	2.0	1.6	
	12	5	5	18.0	2.2	5	1.6	0.4	
	13	1	1	22.8		1	3.5		
	14	6	6	21.0	2.0	6	2.8	1.2	
	15	2	2	22.4	0.2	2	3.0	0.5	
	16	4	4	23.2	1.1	4	4.7	2.7	
	17	5	5	21.9	1.8	5	3.1	0.8	
	18	9	9	23.9	1.3	9	3.9	0.6	
	19	5	5	24.2	1.4	5	4.4	1.1	
	20	2	2	24.7	0.4	2	4.4	0.5	
	21	4	4	24.3	1.2	4	4.2	0.6	
	22	2	2	24.5	2.1	2	5.0	1.4	
	23	1	1	26.7		1	4.9		
	24	1	1	28.2		1	5.7		
Sample Size:		65	71			71			
Means:		14.6		21.5	3.3		3.2	1.5	
MI-4									
	5	1	1	19.1		1	3.3		
Sample Size:		1	1			1			
Means:		5.0		19.1			3.3		

Table 15. Age and size composition of lake herring in tribal commercial harvests from management units in the 1842 ceded area within Michigan waters of Lake Superior during 2003. Weight is in round pounds, length is in inches, and sd=standard deviation.

Unit	Age	Number		Length (in.)		Weight (lbs)		
		Aged	Measured	mean	sd	Weighed	mean	sd
MI-3								
	7	1	1	16.1		1	1.0	
	11	1	1	14.8		1	1.0	
Sample Size:		2	2			2		
Means:	9.0			15.5	0.9		1.0	0.0
MI-4								
	4	3	3	14.0	1.6	3	0.8	0.4
	5	12	12	13.8	1.3	12	0.8	0.3
	6	11	11	14.3	1.2	11	0.9	0.3
	7	11	11	14.5	1.1	11	0.8	0.3
	8	15	15	14.9	1.2	15	0.9	0.3
	9	16	16	15.3	1.8	16	1.0	0.4
	10	8	8	15.7	2.1	8	1.1	0.5
	11	1	1	14.6		1	0.8	
	12	4	4	15.9	0.3	4	1.1	0.2
	14	2	2	17.8	0.9	2	1.5	0.2
	15	1	1	15.8		1	1.2	
Sample Size:		84	84			84		
Means:	7.9			14.9	1.6		0.9	0.3
MI-5								
	9	1	1	19.9		1	2.3	
Sample Size:		1	1			1		
Means:	9.0			19.9			2.3	

Table 16. Age and size composition of coho salmon in tribal commercial harvests during 2003. Weight is in round pounds, length is in inches, and sd=standard deviation.

Unit	Age	Number		Length (in.)		Weight (lbs)		
		Aged	Measured	mean	sd	Weighed	mean	sd
MI-4	2	2	2	17.7	1.9	2	1.9	0.8
Sample Size:		2	2			2		
Means:	2.0			17.7	1.9		1.9	0.8