2003 Annual Report on Implementation of 2000 Consent Decree for 1836 Treaty-Ceded Waters of the Great Lakes

Prepared for:

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May 15, 2004

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Introduction

The September 27, 2001 Memorandum of Understanding (MOU) between the State of Michigan, Department of Natural Resources and the Michigan United Conservation Clubs, Inc., Michigan Fisheries Resource Conservation Coalition, and Bay de Noc Great Lakes Sportfishermen, Inc. specified that an annual report would be provided detailing implementation of the August 7, 2000 court-ordered Consent Decree. This report provides the information requirements listed in the MOU for the 1836 Treaty-ceded waters of the Great Lakes for 2003.

I. General Information

A. Large-mesh gill net retirement

In an effort to reduce the amount of large-mesh gill net used by tribal fishers, the Consent Decree calls for the Sault Tribe to remove at least 14 million feet of large-mesh gill-net effort from Lakes Michigan and Huron by 2003. Removal of large-mesh gill-net effort by other Tribes also counts towards this commitment. The amount of gill net retired is based on comparison with the average effort during the base years 1993 through 1998 (Table 1). Gill net retirement is being accomplished through the trap-net conversion program and other methods.

The 2003 tribal large-mesh gill-net effort in Lakes Michigan and Huron was approximately 25.5 million feet (Table 1) less than the 1993-1998 average. For all three lakes, approximately 23.5 million feet less effort was fished in 2003 compared to the 1993-1998 average.

Table 1. Amount of large-mesh gill-net effort in the 1836 Treaty-ceded waters of the Great Lakes during base years 1993 to 1998 and in 2001, 2002, and 2003.

Lake	Management Unit	1993-1998 average	2001 effort	2002 effort	2003 effort	2003 effort reduction
Michigan	MM-1, 2, 3	17,912	8,089	5,170	4,089	13,823
	MM-4	1,794	733	835	326	1,468
	MM-5	240	188	63	96	144
Huron	MH-1	16,470	11,517	8,015	6,383	10,087
	MH-2	6	0	0	0	6
Superior	MI-6	780	949	414	1,357	-577
	MI-7	2,028	3,119	2,578	2,080	-52
	MI-8	6,578	3,826	3,905	8,027	-1,449
Totals		45,808	28,421	20,980	22,358	23,450

[a] Increase, rather than reduction, of large-mesh gill-net effort.

B. Report from Modeling Subcommittee and modeling process description

The Modeling Subcommittee (MSC) of the Technical Fisheries Committee (TFC) authored a report entitled "Summary Status of Lake Trout and Lake Whitefish Populations in the 1836 Treaty-ceded waters of Lakes Superior, Huron, and Michigan in 2002, with recommended yield and effort levels for 2003" (referred to as 2003 Status of the Stocks Report). This report is provided as a separate document. It documents the status of lake trout and lake whitefish stocks at the time the 2003 harvest limits were developed and describes the parameters used in the 2003 modeling efforts.

The modeling process contains three parts, beginning with the estimation of parameters that describe the population dynamics of lake trout and whitefish stocks over time. The type of modeling utilized is statistical catch-at-age analysis (SCAA). Models are developed for stocks in each defined management area with data from both standard assessments and commercial and recreational fisheries. Age-specific abundance and mortality rates are estimated for each year for which data are available. Each model is

tested for accuracy by comparing predictions to actual observations. The agreement between predictions and observations is measured by statistical likelihood. The set of adjustable parameters that gives the maximum likelihood (highest agreement) is used as the best estimate. After parameters are estimated, the fish population is projected forward through the next fishing season in order to make short-term projections of harvest and yield that will meet criteria, such as target mortality rates and spawning biomass, set forth in the Consent Decree. The final step of modeling encompasses long-term projections under potential management scenarios.

All fish populations are regulated by three forces or dynamic rate functions, including growth, mortality, and recruitment. These rates are estimated in the first stage of the modeling process, and are then incorporated into the projection models. Growth is described using mean length at age, which is fit to a nonlinear regression model based on evidence that growth slows as fish approach a maximum size. Mortality is estimated from age structure data by examining the decline in catch at age across age classes. Generally, there is a steady decline in the relative abundance of successive age classes over time. Total mortality is comprised of fishing and natural mortality. Fishing mortality includes recreational, subsistence, and commercial harvest, as well as mortality of fish returned to the water due to hooking and netting injuries. Harvest is monitored annually for each user group through direct reporting, wholesale fish reports, charter boat reports, and creel surveys. Models incorporate an estimate of hooking mortality (approximately 15%) for lake trout derived from a controlled study on the Great Lakes. The estimate of hooking mortality is applied to age classes of catchable size. Natural mortality is comprised of losses due to old age, disease, parasitism, and predation.

Natural mortality is usually estimated by subtracting exploitation, or the percentage of fish harvested from the population, from the total annual mortality. Additionally, sea lamprey mortality is calculated from wounds observed during assessments, along with the estimated probability of surviving an attack. Finally, recruitment is the process of reproduction and growth to a certain size class in the first year of life that is beyond the initial catastrophic mortality. Recruitment may also imply the entry into a fishery of individuals of legal size for harvest. Most exploited fisheries demonstrate variable recruitment due to an assortment of abiotic or biotic conditions. Recruitment variability is measured by assessing the relative abundance of a single age class using a standard effort, location, and time of year. For example, managers may use the relative abundance of age-3 fish in spring gill net surveys as an index of year-class strength. In the case of a fishery that relies almost entirely on stocking (lake trout in Lakes Michigan and Huron), recruitment is essentially known.

In order to describe the dynamics of a population over time, modelers specify the initial numbers of fish at each age in the first year and recruitment of the youngest age in subsequent years. In Lakes Michigan and Huron, lake trout recruitment is defined as the number of yearlings stocked or migrating into an area less those migrating out of the area. Movement into an area is calculated from tag return data and incorporated into a movement matrix, which shows the proportion of fish stocked in one unit that are actually recruited to another unit. For wild lake trout and whitefish, recruitment is estimated from a Ricker stock-recruit function. In general, a stock-recruit relationship describes how the number of young fish (recruits) relates to the number of spawners.

After parameters have been estimated, the second step is the short-term projection of total allowable catches (TACs). The model is used as an abstract of reality in our case to predict a recommended harvest that will permit sustainable yield in the fishery. Harvest levels are set in order to not exceed target mortality rates set forth in the Consent Decree, and are derived by applying various fishing mortality rates to the population abundance estimated at the start of the year. Target mortality rates are comprised of an assortment of age-specific mortality rates. Additionally, the target mortality rates are defined by taking into consideration the concept of spawning stock biomass per recruit, or the amount of spawning biomass that an average recruit is expected to produce. This provision ensures that there is an adequate amount of spawning stock per recruit and that more than one age class is contributing considerably to the spawning population.

The final step of the modeling process involves long-term projections of the fish stocks under potential management scenarios, which is called "gaming". Because management under the Consent Decree is still in its infancy, gaming scenarios have been limited to this date. The need for determining how changing length limits in the recreational fishery affects the model projections of TAC's has recently been identified as a charge for the MSC. An extensive description of the entire modeling process is contained in the *Stock Assessment Models* section of the 2003 Status of the Stocks Report.

C. Model estimates used during negotiation

During the final stages of negotiations, model estimates of harvest quotas, total allowable catch, and total allowable effort were projected under likely scenarios for the commercial and recreational fisheries over the life of the Consent Decree. For lake trout,

the projections are separated into a phase-in period (where applicable), and rehabilitation period or sustainable management period. Phase-in periods are intended to allow for a more gradual transition to target mortality rates and final allocation percentages. For comparison, a reference period is also included for each management unit. Information regarding the lake trout fishery is detailed by management unit in Appendix 1. Information regarding the whitefish fishery is detailed by whitefish management unit in Appendix 2.

II. Harvest Quotas, TAC's and TAE's (Total Allowable Effort)

A. Lake trout

As required by the Consent Decree, the Modeling Subcommittee of the Technical Fisheries Committee (TFC) calculates annual harvest and effort limits for lake trout and provides these recommendations to the TFC. After reviewing the recommendations, the TFC is to present final harvest and effort limits to the parties by April 30 of each year; these figures were sent to the parties on May 5, 2003. The 2003 lake trout harvest and effort limits for each management unit are provided in Table 2. A map of lake trout management units is provided as Figure 1. The TFC reached consensus on harvest and effort limits for all management units.

In 2002, lake trout harvest limits were exceeded by greater than 15% by the state in MI-6 and MH-2 and by the tribes in MH-1. The Consent Decree indicates that overharvest penalties in the amount a party exceeded the limit will be deducted from that party's next year's harvest limit and added to the other party's limit. In 2003, the state was subject to an overharvest penalty of 4,600 pounds in MI-6 and 17,600 pounds in

MH-2. The tribes incurred an overharvest penalty of 16,500 pounds in MH-1. These amounts were deducted from the model-output TACs for the units involved.

The Consent Decree has a provision that harvest limits in fully phased units should not change by more than 15% over the previous year unless the parties agree a greater change is appropriate. In 2003, there were three fully phased management units where the model recommendation represented a change of greater than 15% above the 2002 harvest limit; MI-6, MM-5, and MH-2. The TFC agreed to adopt the model recommendations in these units either because lake trout stocks have increased or the models were adjusted to more accurately reflect the stocks. In management unit MM-6,7, the model was corrected for an error in the 2002 recreational harvest, which resulted in a output greater than 15% below the 2002 harvest limit. The TFC accepted the model output in this case because of the correction in the model, and the fact that harvest was not expected to exceed the limit in 2003. In management units MI-5 and MI-7 the 15% rule was invoked and the change in harvest limits was restricted to 15% less than the 2002 limits.

Table 2. Model estimates of total allowable catch [TAC (pounds)] and total allowable effort [TAE (linear feet of gill net)] for lake trout by management unit in 1836 Treaty-ceded waters of the Great Lakes for the 2003 fishing season.

		Model-output TACs		Final TACs		
Lake	Unit	State	Tribal	State	Tribal	Tribal TAE
Michigan	MM-1,2,3	28,700	453,000	28,700	453,000	9,360,000
	MM-4	46,100	60,000	46,100	60,000	1,030,000
	MM-5	69,100	38,700	69,100	38,700	565,000
	MM-6,7	431,400	40,300	431,400	40,300	NA
Huron	MH-1[a]	15,300	147,700	31,800	131,200	8,668,000
	MH-2[b]	78,600	3,500	61,000	21,100	NA
Superior	MI-5[c]	113,600	5,000	113,600	5,500	NA
	MI-6[d]	27,500	23,200	22,900	27,800	2,978,000
	MI-7[e]	29,800	58,500	33,800	78,900	4,045,000

[a] Final TACs reflect Tribal overharvest penalty (16,500 lbs) added to State TAC.
[b] Final TACs reflect State overharvest penalty (17,600 lbs) added to Tribal TAC.
[c] Tribal TAC subject to 15 % rule; adjusted to 2002 TAC minus 15%.
[d] Final TACs reflect State overharvest penalty (4,600 lbs) added to Tribal TAC.
[e] State and Tribal TAC subject to 15 % rule; adjusted to 2002 TAC minus 15%.

B. Lake Whitefish

As required by the Consent Decree, the Modeling Subcommittee of the TFC calculates annual whitefish harvest limits for shared management units, and provides these recommendations to the TFC. For each whitefish management unit that is not shared, the tribes set a harvest regulation guideline (HRG) in accordance with their Tribal Management Plan. The Modeling Subcommittee generates recommendations for HRGs that are considered by the tribes. After reviewing the recommendations, the TFC is to present final harvest limits to the parties by December 1 for the subsequent year; these figures were sent to the parties on March 21, 2003. The 2003 whitefish harvest limits for each management unit are provided in Table 3. A map of whitefish management units is provided as Figure 2.

The Modeling Subcommittee was able to generate recommendations for harvest limits or HRGs in all but two management units. In unit WFH-03 there is an insufficient

series of data, thus the model is not reliable for estimating a harvest limit. The HRG for this unit reflects the previous 3-year average (1999-2002) commercial harvest. Additionally, there is no model for WFM-07. There has only recently been minimal harvest in this unit and there is no time series of survey data with which to build a model. The TFC reached consensus on harvest limits for all shared whitefish management units. The tribes accepted model-generated output for HRGs in all but two units. Tribes established HRGs for WFH-02 and WFH-04 that were reflective of the average commercial harvest for the previous three years.

Table 3. Model estimates of total allowable catch [TAC (pounds)] or harvest regulation guideline [HRG (pounds)] for whitefish by management unit in 1836 Treaty-ceded waters of the Great Lakes for the 2003 fishing season.

Lake	Unit	Final State TAC	Model output Tribal TAC	Final Tribal TAC or HRG
Michigan	WFM-01	102,000	916,000	916,000
	WFM-02	0	514,000	514,000
	WFM-03	0	1,462,000	1,462,000
	WFM-04	0	540,000	540,000
	WFM-05	0	345,000	345,000
	WFM-06	65,000	156,000	156,000
	WFM-08	500,000	1,352,000	1,352,000
Huron	WFH-01	0	375,000	375,000
	WFH-02[a]	0	221,000	340,000
	WFH-03[b]	0	-	318,000
	WFH-04[a]	0	333,000	588,000
	WFH-05	0	875,000	875,000
Superior	WFS-04	20,000	180,000	180,000
	WFS-05	119,000	626,000	626,000
	WFS-06	0	98,000	98,000
	WFS-07	0	502,000	502,000
	WFS-08[a]	0	67,000	87,000

[a] HRG reflects average commercial harvest from previous 3 years.
[b] No reliable model output – HRG reflects average harvest from previous 3 years.

III. Harvest and Effort Reporting

A. State-licensed commercial and recreational fishing

1. Lake Trout

Lake trout harvest by the state consists almost entirely of harvest by sport anglers. Lake trout harvest by state-licensed recreational fishers in 2003 was below harvest limits in all management units. The harvest limit and reported harvest represent lean lake trout in Lake Superior. Throwback mortality from the State recreational fishery (lake trout caught by hook and line and returned to the water that subsequently die) was estimated for each management unit. This weight was added to the weight of lake trout harvested in the recreational fishery (Table 4).

In order to stay within 2003 lake trout harvest limits, new lake trout harvest regulations for the recreational fishery were implemented in many management units. The Consent Decree requires a party that exceeds a harvest limit to take management action to prevent overharvest in the subsequent year. In 2002, the state exceeded the lake trout harvest limit in MI-6 and MH-2. In response to the state exceeding the harvest limit, regulation changes were implemented for 2003, as follows:

MI-6

- Size limit changed twice during 2003. For the period April 1 through June 17, the size limit of 15 inches minimum and a maximum size limit of 24 inches, except that one fish in the daily possession limit could be 34 inches or greater in length, was in effect. On June 18, the maximum size limit was increased to 29 inches. Fish greater than 29 inches and less than 34 inches could not be retained.
- The daily possession limit was reduced from three (3) to two (2) lake trout.
- The season was changed from open all year to open during the period January 1 through April 30 and May 24 through September 1.

MH-2

- Size limit changed from a minimum size limit of 20 inches to a 22 inches minimum.
- The daily possession limit remained the same at three (3) lake trout.

- The season was changed from May 1 through Labor Day to May 1 through September 30.

Lake trout regulation changes were made in a number of other management units to prevent exceeding the harvest limit, as follows:

- Size limit: Minimum size limits in Lake Michigan were increased from 20 inches to 22 inches in MM-4, from 22 inches to 24 inches in MM-5, and from 10 inches to 20 inches in MM-8. Size limits in Lake Huron units MH-1 changed from a minimum of 20 inches to a minimum of 15 inches and a maximum of 19 inches with one fish 34 inches or larger. In all Lake Superior units except MI-6 described above and Lake Huron units MH-3 through MH-6, the minimum size limit was increased from 10 inches to 15 inches.
- Daily possession limit: In Lake Michigan, the creel limit was increased from 2 to 3 lake trout lakewide.
- The open season was extended in Lake Michigan units MM-5 through MM-8 and all Lake Huron units from May 1 through Labor Day to May 1 through September 30.

Estimated state-licensed recreational harvest of walleye, yellow perch, and chinook and coho salmon are also listed in Table 4. Effort indicated is for all species combined. Harvest limits are not set for these species. It is noted that harvest of yellow perch and walleye in MH-1 appear larger in 2003 compared to previous years which is due to both the addition of the Drummond Island site to this unit, and a change in estimation methods.

Table 4. Summary of estimated state-licensed recreational harvest [number and weight (pounds)] and effort (angler hours) by management unit in 1836 Treaty-ceded waters of the Great Lakes for the 2003 fishing season.

Lake	Management unit	Total effort (angler hours)	Lake trout[a,b]		Walleye		Yellow perch		Chinook salmon		Coho salmon	
			Number	Weight	Number	Weight	Number	Weight	Number	Weight	Number	Weight
Michigan	MM-1	566,543	0	0	23,213	53,390	75,049	15,010	3,442	41,992	19	76
	MM-2	25,514	31	189	242	557	6	1	969	11,822	36	144
	MM-3	61,636	331	2,088	0	0	5	2	6,003	79,240	8	32
	MM-4	174,525	2,395	13,174	1	2	45,135	18,505	11,882	180,606	235	940
	MM-5	180,211	2,384	13,825	0	0	0	0	25,039	333,019	7,030	28,120
	MM-6	693,513	9,836	60,986	13	30	0	0	91,342	1,141,775	14,401	100,807
	MM-7	516,564	3,477	23,988	93	214	76,278	36,613	57,926	637,186	6,863	45,296
Totals		2,218,506	18,454	114,250	23,562	54,193	196,473	70,131	196,603	2,425,640	28,592	175,415
Huron	MH-1	319,242	504	1160	40,746	134,462	64,480	19,344	28,387	312,257	108	464
	MH-2	160,315	3,470	18,391	317	1,807	41	10	22,672	238,056	84	420
Totals		479,557	3,974	19,551	41,063	136,269	64,521	19,354	51,059	550,313	192	884
Superior	MI-5[c]	45,561	11,779	40,283	12	32	0	0	376	1,188	961	1,518
	MI-6	47,406	3,574	11,724	0	0	390	207	167	386	1,322	2,446
	MI-7[d]	17,361	1,608	5,355	2	5	33	17	120	404	610	1,159
Totals		110,328	16,961	57,362	14	37	423	224	663	1,978	2,893	5,123
Grand totals		2,808,391	39,389	191,163	64,639	190,499	261,417	89,709	248,325	2,977,931	31,677	181,422

[a] Lake Superior lake trout number and weight do not include Siscowets; number of Siscowet harvested were estimated at 256, 69, and 1,609 fish, for MI-5, MI-6, and MI-7, respectively.

[b] Includes throwback mortality for all units.

[c] Includes recreational harvest from entire unit; harvest from 1842 Treaty area was not removed.

[d] Used average weight for walleye from MI-5 and average weight for yellow perch from MI-6.

2. Lake Whitefish

Whitefish harvest by state-licensed commercial fishers was below harvest limits in all whitefish management units. The commercial whitefish harvest reported in Table 5 includes catch from targeted effort (trap nets). Catch of lake whitefish in chub nets is minimal most years and was zero for 2003.

There is one major sport fishery for whitefish in Lake Michigan waters that takes place in unit WFM-05 (Grand Traverse Bay area). Recreational harvest of whitefish in WFM-05 was an estimated 13,961 pounds in 2003. There are three sport fisheries for whitefish in Lake Superior, including units WFS-04 (Marquette area), WFS-05 (Munising area), and WFS-06 (Grand Marais area). Estimated recreational harvest of whitefish in these areas was 980; 5,206; and 5,267 pounds, respectively. The state does not estimate targeted recreational effort for whitefish in these units.

Table 5. Summary of state-licensed commercial whitefish harvest (pounds) and effort (trap-net lifts) by whitefish management unit in 1836 Treaty-ceded waters of the Great Lakes for the 2003 fishing season.

Lake	Unit	Harvest	Effort
Michigan	WFM-01	39,962	99
	WFM-06	8,290	43
	WFM-08	268,025	356
Lake totals		316,277	498
Superior	WFS-04	15,715	61
	WFS-05	61,877	560
Lake totals		77,592	621
Grand totals		393,869	1,119

B. Tribal commercial and subsistence fishing

1. Lake trout

Lake trout harvest by tribal commercial fishers was below harvest limits in all management units in 2003. Lake trout are harvested by tribal commercial fishers as bycatch in the lake whitefish fishery; thus, effort is not reported in Table 6 (see Table 7). The tribes estimated the discard mortality from trap and gill nets in MH-1 where they have special regulations. The pounds of discarded lake trout killed count against the harvest limit in MH-1.

Table 6. Summary of tribal commercial lake trout harvest (pounds) by management unit in 1836 Treaty-ceded waters of the Great Lakes for the 2003 fishing season.

Lake	Unit	Trap-net harvest	Gill-net harvest	Total harvest
Michigan	MM-1,2,3	6,871	159,092	165,963
	MM-4	2,019	19,510	21,529
	MM-5	0	2,530	2,530
	MM-6,7	0	0	0
Lake total		8,890	181,132	190,022
Huron	MH-1	2,226	75,470	77,696
	MH-2	0	0	0
Lake total		2,226	75,470	77,696
Superior	MI-5	0	0	0
	MI-6	0	7,079	7,079
	MI-7	0	21,938	21,938
	MI-8	7,509	42,019	49,528
Lake total		7,509	71,036	78,545
Grand total		18,625	327,638	346,263

2. Lake Whitefish

Whitefish harvest by tribal commercial fishers was below harvest limits and HRGs in all management units. In shared whitefish management zones, overharvest penalties are incurred when a party exceeds the harvest limit by greater than 25%; no

harvest limits were exceeded in shared zones. In management units that are not shared the Tribes manage the fishery in accordance with the Tribal Plan and no penalty is incurred for overharvest. In non-shared zones, HRGs were set higher than the model output in three management units, WFH-02 (DeTour), WFH-04 (Hammond Bay), and WFS-08 (Brimley). The harvest exceeded the model output in two Lake Huron management units. The model output for WFH-02 was 221,000 pounds, the HRG was 340,000 pounds, and the harvest was 252,707 pounds. WFH-04 had a model output of 333,000 pounds, a HRG of 588,000 pounds, and a harvest of 410,395 pounds. These harvests exceeded model-output TACs by 14% and 23%, respectively.

Table 7. Summary of tribal commercial whitefish harvest (pounds) and effort (trap net-lifts or 1,000 feet of gill net) by management unit in 1836 Treaty-ceded waters of the Great Lakes for the 2003 fishing season. Harvest from small-mesh gill nets is included in gill-net harvest.

		Trap nets		Gill nets		Total
Lake	Unit	Harvest	Effort	Harvest	Effort	harvest
Michigan	WFM-01	410,147	736	0	0	410,147
	WFM-02	93,347	399	70,492	1,080	163,839
	WFM-03	592,159	1,411	61,752	689	653,911
	WFM-04	82,729	623	104,776	1,326	187,505
	WFM-05	13,429	97	92,251	1,320	105,680
	WFM-06	5,500	35	7,237	96	12,737
	WFM-07	68,720	110	0	0	68,720
	WFM-08	0	0	0	0	0
Lake totals		1,266,031	3,411	336,508	4,511	1,602,539
Huron	WFH-01	192,524	480	115,043	2,291	307,567
	WFH-02	227,083	827	25,624	635	252,707
	WFH-03	269,463	774	0	0	269,463
	WFH-04	301,845	882	108,550	3,479	410,395
	WFH-05	505,819	507	0	0	505,819
Lake totals		1,496,734	3,470	249,217	6,405	1,745,951
Superior	WFS-04	0	0	0	0	0
	WFS-05	35,353	154	58,098	1,357	93,451
	WFS-06	0	0	11,757	330	11,757
	WFS-07	184,809	531	260,356	5,493	445,165
	WFS-08	49,540	286	8,610	124	58,150
Lake totals		269,702	971	338,821	7,304	608,523
Grand totals		3,032,467	7,852	924,546	18,220	3,957,013

3. Walleye

Commercial fishing for walleye is allowed in and around Grand Traverse Bay and the Manitou Islands, in northeastern Lake Michigan (Naubinway to Gros Cap), and around the Les Cheneaux Islands in Lake Huron. There are gear, season, depth, size, and area restrictions on the various walleye fisheries, though no harvest limits are set forth in the Consent Decree. The largest walleye harvest in 2003 occurred in Lake Michigan management unit MM-4 (5,740 pounds) and in Lake Huron management unit MH-1

(13,383 pounds; Table 8). Walleye are occasionally harvested as incidental catch; thus, sometimes there is harvest with no effort listed for a unit because the fishers were actually targeting other species.

Table 8. Summary of tribal commercial walleye harvest (pounds) and targeted effort (trap-net lifts or 1,000 feet of small or large mesh gill net) by management unit in 1836 Treaty-ceded waters of the Great Lakes for the 2002 fishing season.

		Trap nets		Gill nets		Total
Lake	Unit	Harvest	Effort	Harvest	Effort	harvest
Michigan	MM-1,2,3	295	0	3,242	44	3,537
	MM-4	0	0	5,740	163	5,740
Lake totals		295	0	8,982	207	9,277
Huron	MH-1	399	0	12,984	152	13,383
Lake totals		399	0	12,984	152	13,383
Superior	MI-7	0	0	16	0	16
	MI-8	29	18	2,484	85	2,513
Lake totals		29	18	2,500	85	2,529
Grand totals		723	18	24,466	444	25,189

4. Yellow perch

Commercial fisheries for yellow perch exist in northeastern Lake Michigan around Grand Traverse Bay and the Manitou Islands, around the Beaver Islands, and near the northeastern shore. A yellow perch fishery also exists in Lake Huron around the Les Cheneaux Islands. The fishery has gear, depth, area, season, and size restrictions; though no harvest limits are set forth in the Consent Decree. Yellow perch harvest was largest in Lake Michigan unit MM-5 and Lake Superior unit MI-8, where harvests were 110 and 385 pounds, respectively (Table 9). Yellow perch are occasionally harvested as incidental catch; thus, sometimes there is harvest with no effort listed for a unit because the fishers were actually targeting other species.

Table 9. Summary of tribal commercial yellow perch harvest (pounds) and targeted effort (trap-net lifts or 1,000 feet of large mesh and small mesh gill net) by management unit in 1836 Treaty-ceded waters of the Great Lakes for the 2003 fishing season.

		Trap nets		Gill nets		Total
Lake		Harvest	Effort	Harvest	Effort	Harvest
Michigan	MM-1,2,3	0	0	47	0	47
	MM-4	0	0	54	8	54
	MM-5	0	0	110	0	110
	MM-6	38	0	0	0	38
Lake totals		38	0	211	8	249
Superior	MI-8	0	0	385	36	385
Lake totals		0	0	385	36	385
Grand totals		38	0	596	44	634

5. Chinook and coho salmon

Tribal commercial fisheries for salmon exist in northeastern Lake Michigan nearshore from McGulpin Point south to Seven Mile Point, around the tip of the Leelanau Peninsula, and in Suttons Bay. Fisheries in northern Lake Huron exist in St Martin Bay, and nearshore from Cordwood Point to Hammond Bay Harbor light. Fishing is restricted by season, gear, depth, and area, though no harvest limits are set. The largest chinook salmon harvest occurred in Lake Michigan unit MM-1,2,3 (2,718 pounds) and in Lake Huron unit MH-1 (232,207 pounds; Table 10). Coho salmon were harvested from Lake Superior only (Table 11).

Table 10. Summary of tribal commercial chinook salmon harvest (pounds) and effort (trap-net or 1,000 feet of gill net) by management unit in 1836 Treaty-ceded waters of the Great Lakes for the 2003 fishing season.

		Trap nets		Gill nets		Total
Lake		Harvest	Effort	Harvest	Effort	harvest
Michigan	MM-1,2,3	261	0	2,457	0	2,718
	MM-4	0	0	356	2	356
Lake totals		261	0	2,813	2	3,074
Huron	MH-1	1,708	0	230,499	1,285	232,207
Lake totals		1,708	0	230,499	1,285	232,207
Superior	MI-7	0	0	38	0	38
	MI-8	0	0	142	0	142
Lake totals		0	0	180	0	180
Grand totals		1,969	0	233,492	1,287	235,461

Table 11. Summary of tribal commercial coho salmon harvest (pounds) and effort (trap-net lifts or 1,000 feet of gill net) by management unit in 1836 Treaty-ceded waters of the Great Lakes for the 2003 fishing season.

		Trap nets		Gill nets		Total
Lake		Harvest	Effort	Harvest	Effort	harvest
Superior	MI-6	0	0	1,357	0	1,357
	MI-7	0	0	404	0	404
	MI-8	12	0	242	0	254
Lake totals		12	0	2,003	0	2,015

6. Subsistence fishing

Subsistence fishing as defined in the Consent Decree means taking fish for personal or family consumption and not for sale or trade. Tribal subsistence fishing is allowed in all 1836 Treaty waters with some exceptions. These exceptions include: no gill nets in lake trout refuges; no nets within 100 yards of a break wall or pier; no nets within a 0.3-mile radius of some stream mouths (listed in section IV.C.8 of the Consent Decree); no prevention of fish passage into and out of streams that flow into 1836 Treaty waters; no gill nets or walleye possession in portions of the Bays De Noc during March 1

- May 15; no gill nets within 50 feet of other gill nets. Fishers are limited to 100 pounds aggregate catch of all species in possession, and catch may not be sold or traded. Subsistence fishers may use impoundment gear, hooks, spears, seines, dip nets, and gill nets. Gill netting is limited to one 300-ft or smaller net per vessel per day. In the St. Marys River a single gill net may not exceed 100 ft in length. All subsistence gear must be marked clearly with floats, and Tribal identification numbers. Tribal fishers must obtain subsistence licenses issued by their Tribe, and must abide by provisions of the Tribal Code. Additionally, subsistence fishing with gill or trap nets requires a Tribal permit that may be limited in duration and by area. The Michigan Department of Natural Resources (MDNR) is to be provided with copies of all subsistence permits.

Currently, reporting of tribal subsistence harvest and effort is inadequate. The Chippewa Ottawa Resource Authority (CORA) Code calls for monthly reporting by subsistence fishers to their Tribe. The CORA must provide data from subsistence harvest reports to parties of the Consent Decree within six months. The CORA is also obligated to develop a tribal subsistence effort sampling system, and must provide all parties with effort sampling results. In the early stages of implementing the Consent Decree, parties have not yet met all required obligations. Consequently, the subsistence harvest reported is summarized only by lake (Table 12).

Table 12. Summary of tribal subsistence harvest (pounds) by species in 1836 Treaty - ceded waters of the Great Lakes for the 2003 fishing season.

Lake	Lake trout	Whitefish	Walleye	Yellow perch	Chinook & coho salmon
Michigan	211	1,758	2,469	312	56
Huron[a]	28	1,246	280	62	131
Superior	281	579	0	0	265
Totals	520	3,583	2,749	374	452

[a] Includes St. Mary's River.

IV. Enforcement

A. Introduction

The 2000 Consent Decree establishes a Law Enforcement Committee (LEC) as the primary body for consultation and collaboration on enforcement issues pertaining to the fishery in 1836 Treaty-ceded waters of the Great Lakes. The LEC is composed of the chief law enforcement officer or designee of each Tribe and the chief law enforcement officer or designee of the MDNR. The LEC is required to meet four times a year with the first meeting taking place in January. The Consent Decree requires that the LEC review summary reports of all law enforcement activities of member agencies during the previous year. This report provides a summary of 1836 Treaty fishery enforcement activity of the MDNR for the year 2003. Information is also provided in the tables regarding other commercial fisheries enforcement activities.

B. General Information

The Consent Decree requires that the State maintains adequate staffing and equipment to allow for implementation of enforcement activities.

1. Staffing

The MDNR began the 2003 calendar year with seven full time conservation officer positions whose primary responsibilities are commercial fish enforcement. Six of the seven officers, commercial fish enforcement specialists (CFS), are assigned to locations within the 1836 Treaty-ceded area of the Great Lakes. Two specialists are stationed in Grand Traverse County, one specialist and the Unit supervisor, a sergeant, are assigned to Charlevoix County, one specialist is stationed in Presque Isle County, and one specialist is assigned to Delta County. An additional position, an eighth, remains vacant in Presque Isle County. Intentions are to fill the vacancy as overall staffing levels permit. The remaining officer is assigned to the Saginaw Bay Area. While this officer's primary enforcement efforts are directed toward the state-licensed commercial fishery of southern Lake Huron and Lake Erie, the officer does provide both manpower and equipment assistance to officers working in 1836 Treaty-ceded waters. A detective whose responsibility is commercial fish investigations was established late in the year 2001. The detective provided assistance to local CFSs and monitored the wholesale industry. Wholesale fish dealers were monitored to ensure compliance with both State and Consent Decree reporting requirements.

The MDNR Law Enforcement Division restructured the manner in which time that is accumulated during the enforcement of fish and game regulations is coded. As a result it is no longer possible to track hours spent on state-licensed commercial fish enforcement. Because of the common funding source, all activities involving fish and game are coded the same, therefore it is not possible to differentiate between hours spent enforcing deer hunting regulations from hours spent enforcing state commercial or

wholesale fish regulations. However, after a review of activity records it is believed that hours invested in the enforcement of state commercial fishing regulations are comparable to last year's totals. Table 13 represents the total manpower hours dedicated to Great Lakes Consent Decree enforcement for the calendar year 2003.

Table 13. 2003 officer hours worked to address Consent Decree and State-licensed commercial fishery issues. LED represents hours worked by other MDNR Law Enforcement Division personnel to address commercial fish issues.

	CFS (hrs)	Overtime (CFS)	LED (hrs)	Total (hrs)
Consent Decree	9,462	779.1	1,049.4	11,290.5

2. Equipment

The Commercial Fish Enforcement Unit of the MDNR has an inventory of five Great Lakes patrol boats. The boats are assigned to ports in the counties where our commercial fish specialists are stationed (Leland, Charlevoix, Rogers City, Caseville and Escanaba). In addition to the boats assigned to the CFS Unit, a number of smaller boats are assigned to officers at shoreline locations throughout the Treaty-ceded waters and the remainder of the state. At times, CFSs will utilize these smaller boats to supplement enforcement efforts or to conduct patrols when their boats are down for repairs. All boats assigned to Great Lakes ports engage in commercial fisheries enforcement to some degree. The vast majority of on water enforcement is however accomplished by the boats assigned to the CFS Unit.

MDNR Commercial Fish Enforcement Specialists who are assigned to operate the Unit's five patrol boats are USCG licensed Captains. Officers have

successfully completed training and testing and have received 50 Gross Ton Master of the Great Lakes licenses.

A 40-foot Dauntless Class SeaArk (The “William Alden Smith”) is assigned to Charlevoix and is moored under lease at the USCG Station Charlevoix. The boat is powered by twin Caterpillar diesel engines. Electronics on the vessel as well as three of the four remaining Unit boats include Furuno radar, DGPS chart plotter, and color display fishfinder. The boats are also equipped with Law Division’s AVL GPS system that allows the boats location to be monitored by personnel logged onto the division’s computer system. All boats are equipped with 800 MHz radio systems as well as conventional Hi and Lo Band radio systems. Additional communications capabilities include I-Com VHF radios and cell phones. Four of the five boats are equipped with laptop computers. Computers allow each vessel to have access to a variety of resources and references, as well as the AVL-GPS system and future interface with DGPS charting capabilities.

Safety equipment available on all vessels includes; six person off-shore self inflating life rafts, Stearns Survival Worksuits, Mustang cold water immersion suits and EPIRBs. Additionally, all other equipment required by State and Federal regulations is assigned to each boat. Inspection schedules for re-certifying life saving equipment are strictly observed.

In addition to its duties of patrolling the waters on northern Lake Michigan the “William Alden Smith” acts as the primary vessel during many of the Unit’s group patrols. During the year the “Smith” monitored the commercial fishery on southern Lake Michigan, Lake Huron from Detour to Rogers City, and on Lake Superior from Sault Ste.

Marie to the Huron Islands. The "Smith" is utilized because of its ability to handle rougher seas and to accommodate larger crews while traveling longer distances.

A 32-foot Boston Whaler (PB-5) is assigned to Rogers City PB-5 is equipped as detailed above and has the primary responsibility of patrolling the waters of Northern Lake Huron from the State/Tribal "Disputed Zone" to the Detour/Drummond Island area. At this time PB-5 is the only Unit boat equipped with a gill net lifter. Twin 454 MerCruiser gas engines with Bravo II out drives power PB-5. The engines were re-built during the 2001-2002 off-season but it was still necessary to replace the cam shaft on the starboard engine during the summer of 2003. Downtime attributable to the repair period resulted in a seven week reduction in seasonal hours. Our objective is to have all vessels ready for launch no later than April 1st. Patrols will commence as soon as ice is out of the lakes and harbors.

PB-7, a 32-foot Boston Whaler, is assigned to Escanaba. PB-7 is equipped similar to PB-5, and has the primary responsibility of patrolling the waters of west-northern Lake Michigan. PB-7 monitors the Bays De Noc, Green Bay, and northern Lake Michigan to Naubinway. The specialist assigned to Delta County also has the responsibility of monitoring the fishery on Lake Superior. The specialist responsible for PB-7 utilizes local conservation officers to supplement his crew during commercial fish enforcement patrols. These efforts serve to accomplish our primary enforcement objectives and to provide commercial fish enforcement training for officers assigned to Great Lakes ports.

A 28-foot Dauntless class SeaArk (the "M.W. Neal") is assigned to Leland and is the shared responsibility of the two specialists stationed in Grand Traverse County. The

"Neal" is equipped in a similar fashion as the three vessels above and has a primary patrol area that extends from Grand Traverse Bay to the Indiana, Illinois, and Wisconsin state lines. Installation of new Yanmar engines was completed during January of 2003. One test run was conducted and the boat was winterized and stored for the season. The boat was returned to service at ice out and remained in service with only minor maintenance issues the remainder of the year. The two CFS who share the responsibility for the "Neal" report that the performance of the Yanmar Diesels has been excellent.

A 23-foot commander series SeaArk (The "Emil Skoglund") is assigned to the Saginaw Bay area. The "Skoglund" is a trailerable boat powered by a 200 Hp outboard engine. Because of its smaller size and lack of weather tight pilothouse the "Skoglund" is unable to accommodate AVL-GPS or a laptop. All other electronics and safety equipment are in place. The "Skoglund's" responsibilities outside of Saginaw Bay include central and southern Lake Huron as well as Lake Erie. Because of its trailerable nature, the "Skoglund" is used to provide assistance during group patrols and to conduct patrols should the need arise after other boats have been stored for the season.

Plans for the 2004 season are to replace the "Skoglund" with the "Neal"; this upgrade will extend the season and increase the on-water range of the local CFS. The "Neal" proved to be slightly undersized for the conditions encountered on the open waters of Lake Michigan but should prove to be better suited for the more protected waters of Saginaw Bay. During the year, we began the process of developing specifications for a 36-foot Dauntless class SeaArk. The boat will be assigned to Leland to replace the "Neal" and will result in an expansion of the conditions in which the Grand Traverse Specialists are able to operate.

Sea service hours for the season are shown in Table 14 below.

Table 14. MDNR Commercial Fish Enforcement Unit vessel service hours in 2003. Hours accumulated on non-Unit boats are also shown (other vessels).

Vessel	1836 Treaty waters	State fishery	1842 Treaty waters	Totals
William Alden Smith	337	N/A	14	351
Patrol Boat No. 5	213.3	N/A	V	213.3
Patrol Boat No. 7	95	29	V	124
M.W. Neal	289	N/A	V	289
Emil Skoglund	10	300	V	310
Other Vessels	77	5	18	100
Totals	1,021.3	334	32	1,387.3

During the 2003 season, the MDNR Commercial Fish Enforcement Unit conducted a total of 276 patrols aboard the Unit's assigned and supplemental vessels. CFS Unit boats consumed a total of 11,282.75 gallons of fuel at a cost of $19,097.94 (Table 15.).

Table 15. Commercial fish enforcement patrols, fuel consumption and fuel costs for 2003.

Vessel	Patrols	Fuel (gals.)	Cost ($)
William Alden Smith	51	2,684.0	3,758.00
Patrol Boat No. 5	47	3,369.4	6,719.85
Patrol Boat No. 7	20	1,983	3,836.00
M.W. Neal	59	2,132.4	3,371.69
Emil Skoglund	80	990.2	1,177.09
Other Vessels (est.)	19	123.8	235.31
Totals	276	11,282.8	19,097.94

C. Enforcement

1. Complaints

MDNR commercial fish specialists received approximately 148 complaints (Table 16) related to commercial fish activity during the year. The complaints were submitted from a variety of sources. Forty-seven complaints were assigned to CFS through the State's "Report All Poaching" system. Additional complaints were submitted by the public, tribal fishers, tribal law enforcement and other law enforcement personnel and agencies as well other MDNR personnel.

All complaints were investigated, many proved to be unfounded, and others resulted in a verbal warning, a citation from a CFS or a request for warrants from the appropriate tribal court, or were referred to the proper tribal law enforcement agency. The overwhelming majority of complaints (73) were related to tribal nets in 1836 Treaty-ceded waters. The primary reason for net complaints was concern about net markings.

Additional concerns pertaining to nets in treaty waters revolved around nets being fished in closed areas, and complaints regarding abandoned or unattended nets. Gill nets discovered in closed waters or gill nets deemed to be abandoned were pulled by CFS. Gill nets suspected of being unattended were tagged according to the dictates of the CORA Code and were either subsequently removed by MDNR CFS or referred to tribal authorities.

The Consent Decree requires that a 24-hour, toll free "hotline" be established. The purpose of the hotline is for registering complaints related to violations of fishing regulations, harassment of fishers, and vandalism to fishing gear. A hotline number has been established and activated. Final details need to be worked out by the LEC prior to publication of the number and advertisement of its existence and purpose.

Table 16. 2003 Commercial fish related complaints investigated by MDNR Commercial Fish Specialists.

Complaints	1836 Treaty Fishery	State-licensed Fishery	1842 Treaty Fishery	Totals
Nets	73	7	2	82
Licensing	6	2	N/A	8
Access	4	N/A	N/A	4
Wholesale	1	23	N/A	24
Closed area/ season	6	N/A	1	7
Other	6	17	N/A	23
Totals	96	49	3	148

2. Inspections

A total of 1,158 inspections were conducted by MDNR Commercial Fish Specialists statewide (Table 17). There were 550 inspections of 1836 Tribal fishers or

their gear in the Treaty-ceded waters; 440 involved inspections of nets, and 110 involved inspections of Tribal fishing vessels either at the dock or on the water.

Overall there was a 30% increase in the reported number of inspections of state and tribal commercial fish operations. The increased number of complaints concerning nets in the 1836 Treaty-ceded waters resulted in a 27% increase in inspections of tribal nets. There was also a 33% overall increase in the number of inspections of state-licensed fishers, their gear and wholesale facilities. During the 2003 calendar year, CFSs more than doubled their inspection of state-licensed nets, and executed comprehensive statewide inspections of wholesale fish businesses. Statewide wholesale inspections increased by 52% over 2002 levels. The latter is a directly attributable to the work being done by the WRPS Commercial Fish Investigator/Detective. Final numbers are not available but there has been a marked increase in the number of citations issued to wholesale fish dealers for licensing and reporting infractions.

Table 17. 2003 MDNR CFS commercial fish enforcement inspections.

Inspections	1836 Treaty Fishery	State-licensed Fishery	1842 Treaty Fishery	Totals
Nets	440	362	10	812
Boardings	42	21	1	64
Docksides	68	77	0	145
State Wholesale*	N/A	137	N/A	137
Totals	550	597	11	1,158

* No Tribally-licensed wholesalers.

3. Violations

Inspections and investigation of complaints revealed a total of 39 reported violations of the CORA Code or related regulations (Table 18). MDNR Commercial Fish Specialists submitted a total of 12 cases to various tribal courts for prosecution. In

addition, MDNR CFS referred 21 instances of violations of the CORA Code to various tribal law enforcement agencies. Six verbal warnings were also issued. Several of these cases remain open or have resulted in unknown dispositions. The Law Enforcement Committee is required to update and share case disposition information at each Committee meeting. Disposition sharing as an official agenda item has yet to be accomplished. It is suggested that LEC representatives bring information regarding open cases to each LEC meeting. Dispositions or updates could then be provided to the requesting agency prior to, or at the next scheduled meeting. Fulfillment of this LEC requirement will help to limit the number of unresolved cases.

Eight citations were submitted to Sault Ste. Marie Tribe of Chippewa Indians Tribal Court. Five citations were for net marking violations (unmarked nets, improperly marked nets). Two SSM fishers were charged with allowing unlicensed individuals on board their fishing vessels. One of the two fishers was charged twice for two different incidents involving two separate unlicensed individuals.

Two Citations were submitted to Grand Traverse Band of Ottawa and Chippewa Indian fishers. One fisher was charged with the failure to mark his net. The second individual was charged with a criminal offense for resisting and opposing an enforcement officer engaged in enforcing CORA regulations. The GTB fishers was found guilty of resisting and opposing, sentencing has yet to take place.

Two Bay Mills Indian Community fishers were cited in their tribal court. One fisher was charged with a net marking violation, the other was charged with the illegal retention of lake trout from a trap net.

Of the 21 referrals 12 were for net marking violations, and 4 were for violations of access site use permits. There were 2 each for fishing in closed waters and for allowing unlicensed individuals on board fishing vessels. The remaining referral involved a long term unattended gill net.

Table 18. MDNR CFS 2003 summary of commercial fisheries related violations.

Violations	1836 Treaty Fishery	State-licensed Fishery	1842 Treaty Fishery	Totals
Arrests	12	5	N/A	17
Referrals	21	N/A	N/A	21
Warnings	6	10	N/A	16
Totals	39	15	N/A	54

4. Joint Patrols

Officers from the State's Commercial Fish Enforcement Unit conducted patrols jointly with officers from the five signatory tribes. Joint patrols consisted of routine patrols with one or more tribal law enforcement officers. These joint patrols do not include Law Enforcement Committee (LEC) sponsored group patrols which are summarized below. MDNR CFS reported conducting a total of 20 joint patrols with tribal law enforcement officers.

5. Group Patrols

The Consent Decree requires the LEC to schedule a minimum of eight group patrols during the year. In an effort to meet this requirement each MDNR CFS is required by the State to act as lead worker on at least one LEC sponsored group patrol. The responsibilities of the lead worker include notifying the five Tribal law enforcement

agencies of the following: the area to be covered, the date(s) and time(s) of the proposed patrol, boat assignments, launching sites, communication arrangements, and the information that is to be shared at the completion of the patrol.

The Law Enforcement Committee scheduled a total of six group patrols at the March 13th, 2003 meeting. In addition to the scheduled patrols, a total of four trout and salmon tournaments were added to the schedule with the intent that all law enforcement agencies would attempt to provide a presence during these events. MDNR CFS acted as lead workers on four of the six group patrol efforts during the 2003 calendar year. Following are short summaries for those four group patrols.

The first patrol was organized by MDNR CFS Richard Bonner and took place during the period of May 3rd and 4th on Lake Michigan from Charlevoix to Ludington. MDNR boats, the "Smith" and the "Neal" were utilized and representatives from the Sault, Little Traverse and Grand Traverse tribes participated. A total of 15 nets were inspected, all but one were appropriately marked. Contact was made with the fisher responsible for the latter and the problem was corrected. A complaint of an additional unmarked net was investigated and later substantiated. As it turned out the same fisher who was responsible for the previously discovered unmarked net was also responsible for the second. In the second instance the fisher was cited for failing to mark his net.

The second patrol was scheduled for the Big Bay De Noc area of northwestern Lake Michigan for June 18th through the 20th. MDNR CFS Ken Johnson organized the patrol and submitted the summary report. A total of five boats were used at various stages of the patrol - three MDNR vessels and one each from Bay Mills and Little Traverse Bay Bands. Representatives from the MDNR, Bay Mills Indian Community,

Little Traverse Bay and Grand Traverse Bands as well as the Sault Ste. Marie Tribe of Chippewa Indians participated. A total of 45 tribal nets were inspected along with six state-licensed trap nets. In addition, seven tribal fishing vessels were boarded and inspected. Three improperly marked tribal nets were encountered and referred to SSM enforcement. One warning was given for failure to exhibit a consultant's permit. Two complaints were investigated. One concerned a floating portion of an abandoned trap net. The net was discovered and approximately 200 feet of line and net were pulled. The other complaint involved two separate abandoned and floating trap nets along the Stonington Peninsula. The existence of these nets was verified as well and the locations were forwarded to Sault tribal law enforcement.

The third patrol for which a MDNR CFS was the lead worker took place on October 6th and 7th and was again based out of Escanaba. The patrol which centered around the Bays De Noc and the Michigan-Wisconsin state line was organized and reported by CFS Steve Huff. Three patrol boats were utilized, one each from the MDNR, Little Traverse Bay Band, and Little River Band. Bay Mills officers had intended to bring a boat, but trailer problems prevented its use. All five Tribes and the MDNR were represented during portions of the two days. A total of 30 nets were inspected; one was improperly marked, two were deemed to be a hazard to navigation, and a third abandoned net's location was reconfirmed as being located off of Peninsula Point of the Stonington Peninsula. All nets and complaints were referred to the appropriate tribe. Two dockside inspections were conducted at Fairport; a combined total of 83 boxes of Whitefish were reported, and no violation was encountered.

The forth and last patrol for which a MDNR CFS acted as organizer and lead worker took place on northern Lake Huron between October 20th and 22nd. CFS John Morey organized the effort. Five patrol vessels were involved, one of which was a USCG vessel out of Sault Ste. Marie. Officer Morey also coordinated the patrol with the USCG Air Station at Traverse City. Helicopter support on the 22nd located 3 fishing vessels whose coordinates were relayed to patrol vessels. The fishing vessels were located and boarded, no violations were encountered. In addition to the MDNR and USCG vessels, boats were also supplied by Little Traverse Bay, Bay Mills and Sault Ste. Marie Law Enforcement. Representatives from the Grand Traverse and Little River Bands were not present. A total of 47 nets were inspected. Complaints of two unattended gill nets off of St. Martin Point in northern Lake Huron were substantiated and tagged during the patrol. SSM officers later contacted the fisher and issued a citation. A total of seven fishing vessels were contacted and boarded, no violations were observed.

Of the four group patrols MDNR CFS organized, only once were all six LEC agencies represented. The full participation of all agencies is essential. While unforeseen circumstances arise, it is hoped that full participation will be a renewed commitment in the coming year.

6. MDNR Patrols

In addition to the LEC Group Patrols, and the joint patrols conducted with tribal law enforcement officers, officers from the MDNR Wildlife Resource Protection Section Commercial Fish Enforcement Unit organized and executed several additional multi-day patrols to address complaints that were received during the year.

To address complaints of improperly marked nets, and to follow up on concerns of potentially unmarked trap nets, an extensive patrol was planned to the Beaver Island Chain during June 23rd through the 25th. The CFS vessels "Smith" and "Neal" joined two boats from Law Enforcement Division's District 5 in northwestern Lower Michigan. In addition to the CFS and District 5 officers, five recruit, or probationary conservation offices, took part in the patrol. The officers were exposed to many aspects of the commercial fish industry and commercial fishery enforcement. Twenty-two nets were inspected, three were found to be improperly marked. The unmarked trap nets were not located and are believed to have been removed. Two fishing vessels were boarded, no violations were observed.

Several complaints concerning an abandoned trap net lead were received from sportfishers fishing out of Frankfort on Lake Michigan. During July, patrols were conducted in an effort to locate the net for removal. Buoys marking its suspected location were deployed and arrangements were made with the Grand Traverse County Dive Team to conduct a dive on the location. Our intention was to locate the lead and prepare it for removal. Two days of grappling and one day of diving did not reveal the location of the suspected abandoned lead. As sport fishing activity moved to deeper water no additional complaints were received.

Local officers from Munising had raised concerns about several improperly marked nets in both Munising Bay and in Lake Superior between Munising and Whitefish Bay. To address these and other concerns, a two-week patrol involving local officers and all the CFS was planned for Lake Superior during the month of September. CFSs were also joined by Bays Mills Law Enforcement Officer Bill Schofield for a day

during the patrol. The patrol extended as far west as the Huron Island and involved several days working out of Presque Isle Harbor in Marquette as well as Munising, Grand Marais and Sault Ste. Marie.

A total of 53 nets, both tribal and state-licensed, were inspected. Tickets were written to two tribal fishers for improperly marked nets. An additional ticket was written to a tribal fisher for allowing an unlicensed fisher on board the vessel. During the days leading up to this patrol effort, the local CFS issued tickets or requested warrants for an additional eight violations; six involved tribal fishers, two involved non-tribal members participating in the tribal fishery. The latter two cases were submitted to State Court for violations of State Commercial Fish Law. The remaining cases were forwarded to Tribal Court. At this time several of these cases are still pending.

Complaints concerning shallow nets and floating lines in the Ludington area had been received during the course of the 2003 fishing season. While there is no regulation prohibiting nets from being fished at the surface or prohibiting fishers from allowing excess line to float on the surface, there are concerns about the hazards the situation presents. As a result, CFS addressed the issue by working in conjunction with Little River Band fishers, Little River Band Enforcement, and the USCG in an effort to encourage a resolution to the concerns.

A patrol was conducted form October 9th through 11th to the Ludington area to determine the status of shallow nets. Twelve nets were inspected in the area between the waters north of Ludington and south of the Ludington Pumped Storage Facility. Eight of the 12 belonged to state-licensed commercial fishers. Four were identified as belonging to LRB fishers. Of these four, two were found to have as much as 250 feet of excess line

floating on the surface. CFS coiled and retied the lines so that they were suspended below the surface. One of the nets was improperly marked and one was without identification numbers. Information on the above was forwarded to Little River Band Law Enforcement for further action. During the patrol, three vessels were boarded; two tribal and one state-licensed, and no violations were observed.

D. Law Enforcement Committee

The LEC resumed a regular quarterly meeting schedule and accomplished a great deal during the 2003 calendar year. The addition of Bev Aikens as the regularly attending secretary proved to be a great addition to the committee's efforts. Bev has seen to it that detailed minutes are recorded and shared with committee members, and she has provided timely meeting and agenda notices which have helped to keep the committee on track. Committee members have adopted a standardized annual report format and are working toward approval of a standardized group patrol summary report form.

With all the positive accomplishments much work remains to be accomplished. A sub-committee was formed to address the issue of abandoned trap nets, but its work remains undone. This is a particularly contentious issue due to the fact that several known abandoned trap nets will spend another winter frozen in the ice of northern Lake Michigan and Huron. Come spring these nets will once again present themselves as a hazard to boaters.

MDNR representatives look forward to working with other LEC members to address these and additional objectives during the coming year. Preparation of an annual work plan, implementation of standardized report forms, and the development and

implementation of a standardized information system that will allow the sharing of plans, activity records, patrol actions and other enforcement information as required by the Consent Decree are but a few of the issues we hope to tackle during 2004.

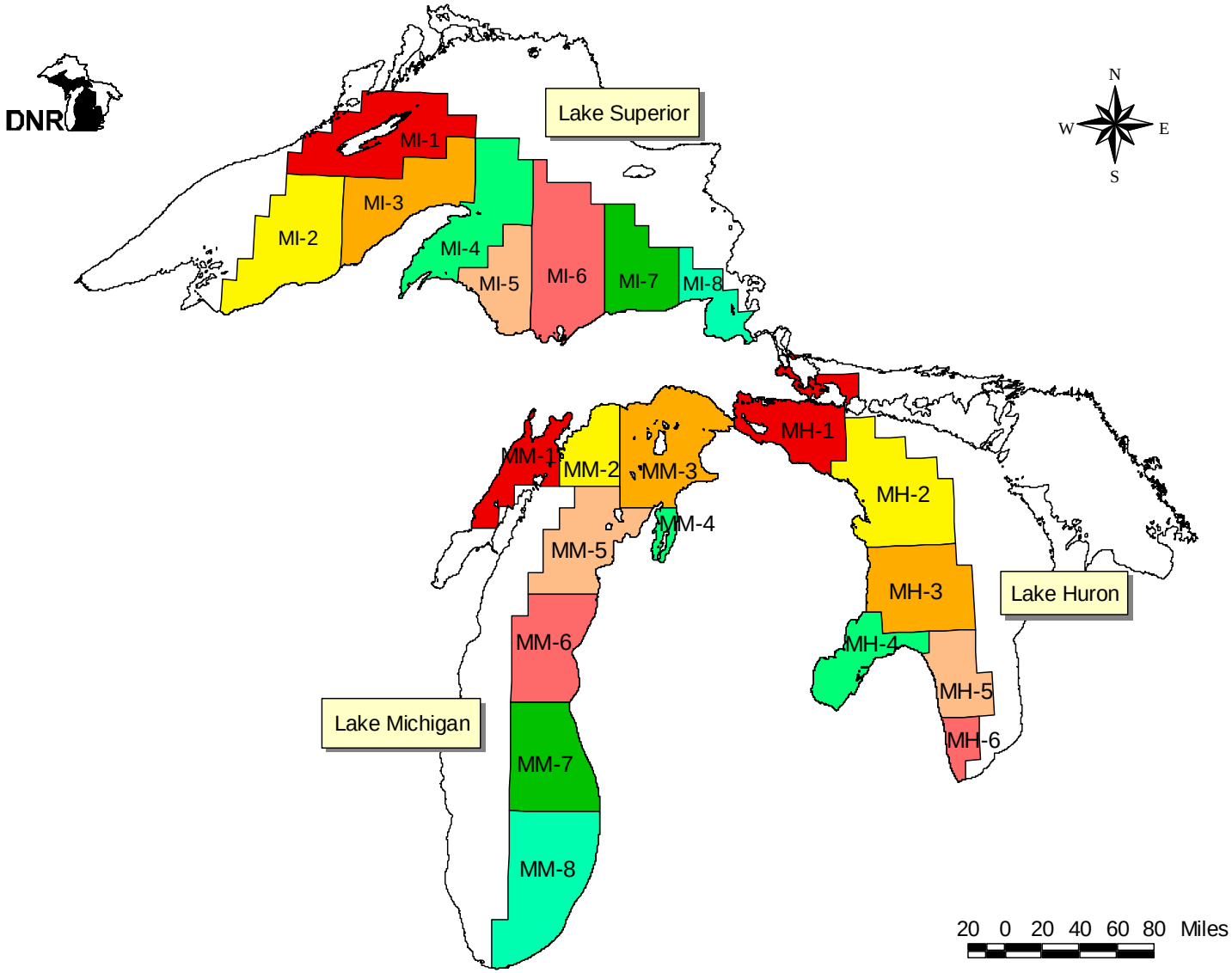

Figure 1. Lake trout management units for Lakes Superior, Michigan and Huron.

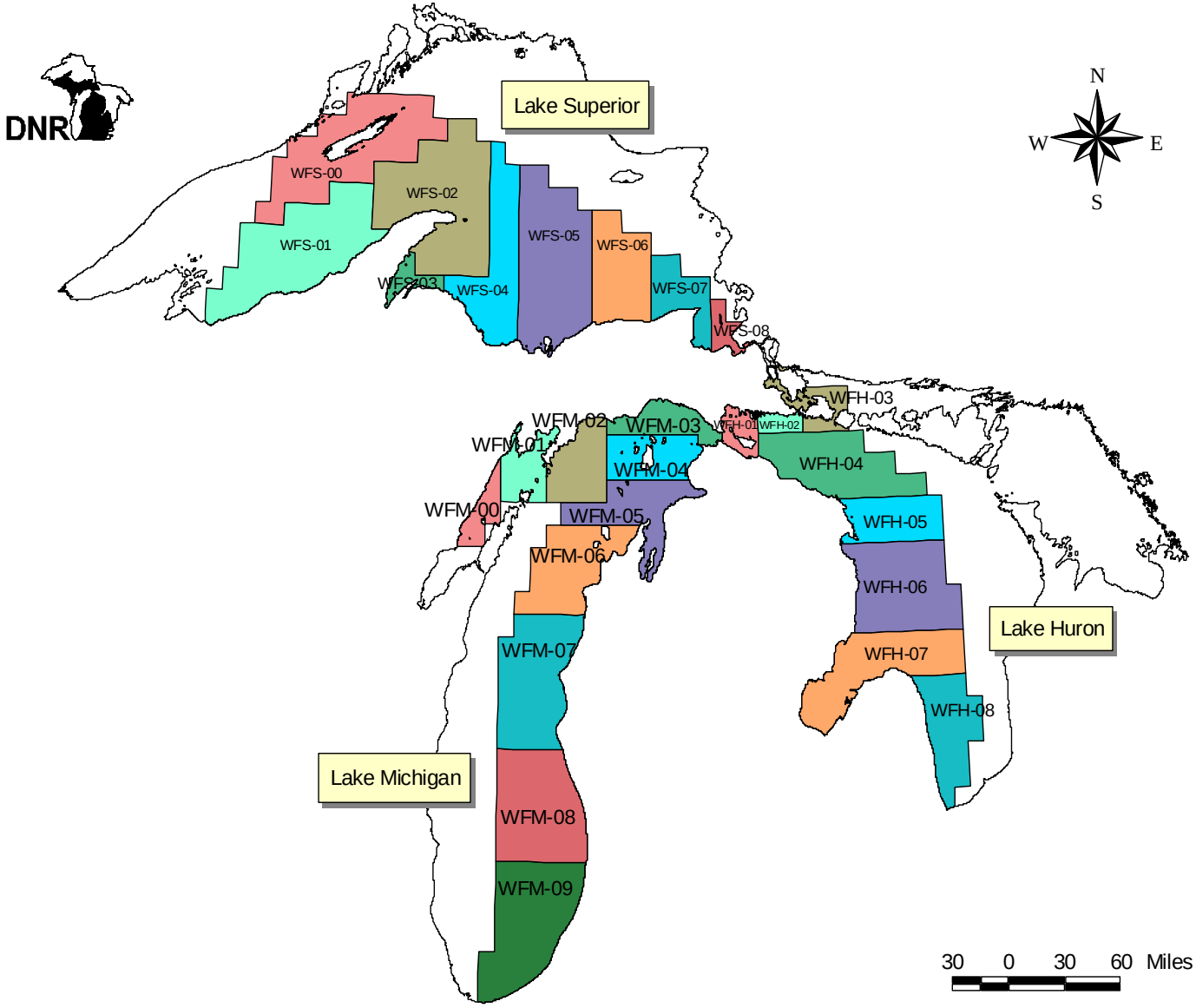

Figure 2. Lake whitefish management units for Lakes Superior, Michigan and Huron.

Appendices

Appendix 1. Model estimates of harvest quota for lake trout by lake trout management unit in the 1836 Treaty-ceded waters of the Great Lakes as used during the final stages of negotiations.

Appendix 2. Model estimates of harvest quota for lake whitefish by whitefish management unit in the 1836 Treaty-ceded waters of the Great Lakes as used during the final stages of negotiations.

Apppendix 1. Lake Trout, Lake Huron, MH-1

Scenario =Effort-based, phase-in on commercial fishery from 2001 through 2005. Phase in a 24-in minimum size limit on sport fishery by 2005.
Extended phase-in of allocation percentages at 47% TAM from 2006 through 2011. Rehabiltation period at 45% TAM from 2012 through 2020.
Starting in 2002, stock 0.6 per acre of federal yearlings plus 100,000 MDNR yearlings. No change in Canadian commercial effort.

47% SSBR = 0.11
45% SSBR = 0.13

	Commercial (Tribal)				Recreational (State)							Lake trout population	
Year	Effort limit (million feet)	Harvest limit (pounds)	CPUE (pounds per million feet)	Percent of allowable harvest	Potential effort (hours)	Minimum size limit	Harvest limit (pounds)	CPUE (fish per 100 hours)	CPUE (pounds per 100 hours)	Average size (pounds)	Percent of allowable harvest	Female spawning biomass	SSBR
Reference Period													
1996	17.155	242,057	14,110	94%	116,026	10	15,869	4.0	13.7	3.4	6%		
1997	13.107	163,885	12,504	93%	124,637	10	12,665	2.8	10.2	3.6	7%		
1998	13.139	130,863	9,960	92%	129,874	10	11,939	2.3	9.2	4.0	8%	8,782	
Phase-in Period (Effort-Based for Commercial Fishery, Size Limit-Based for Recreational Fishery)													
2001	12.297	155,548	12,649	94%	123,512	20	9,400	2.0	7.6	3.8	6%	10,929	0.03
2002	7.957	112,004	14,077	91%	123,512	20	10,793	2.2	8.7	3.9	9%	15,974	0.04
2003	6.655	104,682	15,730	92%	123,512	22	9,141	1.8	7.4	4.1	8%	22,439	0.06
2004	5.787	107,177	18,521	91%	123,512	22	11,029	2.1	8.9	4.2	9%	30,473	0.09
2005	5.787	137,309	23,728	93%	123,512	24	9,919	1.9	8.0	4.2	7%	40,315	0.10
Extended Phase-in Period (TAM = 47%, Phase in of Allocation Percentages)													
2006	5.497	160,708	29,233	92%	135,864	24	13,934	2.4	10.3	4.3	8%	52,623	0.11
2007	5.931	196,919	33,199	92%	142,039	24	17,734	2.8	12.5	4.5	8%	67,344	0.11
2008	6.221	220,556	35,455	91%	148,215	24	21,113	3.1	14.2	4.6	9%	82,793	0.11
2009	6.365	233,171	36,631	91%	154,390	24	23,952	3.3	15.5	4.7	9%	96,081	0.11
2010	6.365	237,507	37,312	90%	154,390	24	25,410	3.4	16.5	4.8	10%	106,565	0.11
2011	6.510	245,712	37,743	90%	154,390	24	26,540	3.5	17.2	4.8	10%	114,382	0.11
Rehabilitation Period (TAM = 45%, Final Allocation - Tribal Share=88%, State Share=12%)													
2012	5.642	217,239	38,503	88%	158,096	24	28,378	3.7	18.0	4.9	12%	122,637	0.13
2013	5.642	223,029	39,530	88%	158,096	24	29,784	3.8	18.8	4.9	12%	130,495	0.13
2014	5.642	226,658	40,173	88%	158,096	24	30,920	3.9	19.6	5.0	12%	137,403	0.13
2015	5.787	234,045	40,445	88%	154,390	24	30,984	4.0	20.1	5.0	12%	142,788	0.13
2016	5.787	234,278	40,485	88%	154,390	24	31,483	4.0	20.4	5.0	12%	146,676	0.13
2017	5.787	234,257	40,482	88%	154,390	24	31,827	4.1	20.6	5.1	12%	149,351	0.13
2018	5.787	234,192	40,470	88%	154,390	24	32,069	4.1	20.8	5.1	12%	151,166	0.13
2019	5.787	234,147	40,463	88%	154,390	24	32,241	4.1	20.9	5.1	12%	152,418	0.13
2020	5.787	234,126	40,459	88%	154,390	24	32,364	4.1	21.0	5.1	12%	153,296	0.13

Appendix 1. Lake Trout, Lake Huron, MH-2

Scenario = Phase in a 24-in minimum size limit on sport fishery by 2005. Assume minimal subsistence fishing.
Assume sport fishing effort gradually increases by 25%. No change in Canadian commercial effort.

40% SSBR = 0.32

	Commercial (Tribal)				Recreational (State)							Lake trout population	
Year	Effort limit (million feet)	Harvest limit (pounds)	CPUE (pounds per million feet)	Percent of allowable harvest	Potential effort (hours)	Minimum size limit	Harvest limit (pounds)	CPUE (fish per 100 hours)	CPUE (pounds per 100 hours)	Average size (pounds)	Percent of allowable harvest	Female spawning biomass	SSBR
Reference Period													
1996	0.000	-	-	0%	213,906	10	45,841	5.1	21.4	4.2	100%		
1997	0.000	-	-	0%	212,802	10	53,203	6.1	25.0	4.1	100%		
1998	0.000	-	-	0%	157,710	10	41,558	5.9	26.4	4.5	100%	106,461	
Phase-in Period (Size Limit-Based for Recreational Fishery)													
2001	Subsistence	442	na	1%	194,806	20	47,517	5.7	24.4	4.3	99%	160,291	0.40
2002	Subsistence	333	na	1%	194,806	20	51,329	6.1	26.3	4.3	99%	193,286	0.35
2003	Subsistence	473	na	1%	214,287	22	44,672	4.3	20.8	4.9	99%	221,535	0.42
2004	Subsistence	608	na	1%	214,287	22	41,897	3.9	19.6	5.0	99%	248,990	0.51
2005	Subsistence	686	na	2%	233,767	24	33,975	2.9	14.5	5.1	98%	267,891	0.58
Rehabilitation Period (TAM = 40%)													
2006	Subsistence	816	na	2%	233,767	24	34,419	3.0	14.7	4.9	98%	282,713	0.64
2007	Subsistence	943	na	2%	243,508	24	38,251	3.2	15.7	4.9	98%	301,388	0.69
2008	Subsistence	991	na	2%	243,508	24	41,065	3.4	16.9	5.0	98%	325,931	0.73
2009	Subsistence	1,033	na	2%	243,508	24	43,311	3.5	17.8	5.0	98%	353,119	0.75
2010	Subsistence	1,076	na	2%	243,508	24	44,837	3.6	18.4	5.1	98%	380,032	0.78
2011	Subsistence	1,091	na	2%	243,508	24	45,872	3.7	18.8	5.1	98%	404,769	0.80
2012	Subsistence	1,102	na	2%	243,508	24	46,592	3.7	19.1	5.1	98%	426,678	1
2013	Subsistence	1,110	na	2%	243,508	24	47,098	3.8	19.3	5.2	98%	445,792	1
2014	Subsistence	1,115	na	2%	243,508	24	47,432	3.8	19.5	5.2	98%	461,963	0.82
2015	Subsistence	1,118	na	2%	243,508	24	47,635	3.8	19.6	5.2	98%	475,258	0.82
2016	Subsistence	1,119	na	2%	243,508	24	47,746	3.8	19.6	5.2	98%	485,903	0.82
2017	Subsistence	1,120	na	2%	243,508	24	47,803	3.8	19.6	5.2	98%	494,300	0.82
2018	Subsistence	1,120	na	2%	243,508	24	47,830	3.8	19.6	5.2	98%	500,853	0.82
2019	Subsistence	1,121	na	2%	243,508	24	47,842	3.8	19.6	5.2	98%	505,928	0.82
2020	Subsistence	1,121	na	2%	243,508	24	47,847	3.8	19.6	5.2	98%	509,839	0.82

Appendix 1. Lake Trout, Lake Michigan, MM-1/2/3

Scenario =Assume commercial effort and sport effort increases by 25%.
Maintain 24-inch size limit on sport fishery.

40% SSBR = 0.77
2006 SSBR = 0.98
2020 SSBR = 1.02

	Commercial (Tribal)				Recreational (State)							Lake trout population	
Year	Effort limit (million feet)	Harvest limit (pounds)	CPUE (pounds per million feet)	Percent of allowable harvest	Potential effort (hours)	Minimum size limit	Harvest limit (pounds)	CPUE (fish per 100 hours)	CPUE (pounds per 100 hours)	Average size (pounds)	Percent of allowable harvest	Female spawning biomass	SSBR
Reference Period													
1996	17.536	749,556	42,744	90%	103,045	24	80,837	13.1	78.4	6.0	10%		
1997	15.311	685,279	44,757	89%	124,056	24	87,450	11.0	70.5	6.4	11%		
1998	14.472	781,010	53,967	88%	135,878	24	110,251	12.1	81.1	6.7	12%		
Rehabilitation Period (TAM = 40%)													
2001	19.716	548,805	27,835	89%	151,241	24	67,589	6.4	44.7	7.0	11%		
2002	19.716	498,310	25,274	89%	151,241	24	60,877	5.9	40.3	6.8	11%		
2003	19.716	464,066	23,537	89%	151,241	24	56,730	5.6	37.5	6.7	11%		
2004	19.716	442,790	22,458	89%	151,241	24	54,102	5.4	35.8	6.6	11%		
2005	19.716	431,674	21,894	89%	151,241	24	52,243	5.3	34.5	6.5	11%		
2006	19.716	427,203	21,668	89%	151,241	24	51,318	5.3	33.9	6.4	11%		
2007	19.716	426,332	21,623	89%	151,241	24	51,056	5.3	33.8	6.4	11%		
2008	19.716	426,837	21,649	89%	151,241	24	51,030	5.3	33.7	6.4	11%		
2009	19.716	427,734	21,695	89%	151,241	24	51,101	5.3	33.8	6.4	11%		
2010	19.716	428,616	21,739	89%	151,241	24	51,244	5.3	33.9	6.4	11%		
2011	19.716	429,374	21,778	89%	151,241	24	51,374	5.3	34.0	6.4	11%		
2012	19.716	430,011	21,810	89%	151,241	24	51,460	5.3	34.0	6.4	11%		
2013	19.716	430,504	21,835	89%	151,241	24	51,530	5.3	34.1	6.4	11%		
2014	19.716	430,827	21,851	89%	151,241	24	51,582	5.3	34.1	6.4	11%		
2015	19.716	431,013	21,861	89%	151,241	24	51,613	5.3	34.1	6.4	11%		
2016	19.716	431,111	21,866	89%	151,241	24	51,630	5.3	34.1	6.4	11%		
2017	19.716	431,159	21,868	89%	151,241	24	51,639	5.3	34.1	6.4	11%		
2018	19.716	431,181	21,869	89%	151,241	24	51,644	5.3	34.1	6.4	11%		
2019	19.716	431,191	21,870	89%	151,241	24	51,646	5.3	34.1	6.4	11%		
2020	19.716	431,195	21,870	89%	151,241	24	51,647	5.3	34.1	6.4	11%		

Appendix 1. Lake Trout, Lake Michigan, MM-4

Scenario =Effort-based, phase-in on commercial fishery from 2001 through 2005. Phase in a 24-in minimum size limit on sport fishery by 2005. Forty-five percent TAM and 60/40 split from 2006 through 2009. Forty-five percent TAM and 55/45 split from 2010 through 2020.

45% SSBR = 0.40

	Commercial (Tribal)				Recreational (State)							Lake trout population	
Year	Effort limit (million feet)	Harvest limit (pounds)	CPUE (pounds per million feet)	Percent of allowable harvest	Potential effort (hours)	Minimum size limit	Harvest limit (pounds)	CPUE (fish per 100 hours)	CPUE (pounds per 100 hours)	Average size (pounds)	Percent of allowable harvest	Female spawning biomass	SSBR
Reference Period													
1996	2.260	112,637	49,840	78%	191,401	24	31,935	2.5	16.7	6.7	22%		
1997	1.776	109,354	61,573	59%	278,426	24	76,613	4.3	27.5	6.4	41%		
1998	1.556	160,063	102,868	52%	303,290	20	147,006	8.9	48.5	5.4	48%	149,532	
Effort-Based, Phase-in Period													
2001	1.864	129,753	69,610	64%	257,706	20	74,398	5.0	28.9	5.8	36%	124,666	
2002	1.268	93,833	74,029	54%	257,706	20	78,623	5.2	30.5	5.8	46%	135,249	
2003	1.268	100,951	79,645	59%	257,706	22	70,682	4.4	27.4	6.2	41%	149,413	
2004	1.268	105,272	83,054	58%	257,706	22	75,041	4.6	29.1	6.3	42%	159,232	
2005	1.268	108,645	85,714	64%	257,706	24	62,260	3.7	24.2	6.6	36%	167,267	
Rehabilitation Period (TAM = 45%, Tribal Share 60%, State Share 40%)													
2006	1.230	108,487	88,183	60%	288,630	24	72,421	3.8	25.1	6.6	40%	172,800	0.40
2007	1.230	110,259	89,624	60%	288,630	24	74,098	3.8	25.7	6.7	40%	176,541	0.40
2008	1.230	111,435	90,580	60%	288,630	24	75,202	3.9	26.1	6.7	40%	178,995	0.40
2009	1.230	112,146	91,158	60%	288,630	24	75,879	3.9	26.3	6.7	40%	180,579	0.40
Rehabilitation Period (TAM = 45%, Tribal Share 55%, State Share 45%)													
2010	1.156	105,649	91,417	55%	322,132	24	84,988	3.9	26.4	6.7	45%	180,988	0
2011	1.156	105,777	91,528	55%	322,132	24	85,063	3.9	26.4	6.8	45%	181,357	0
2012	1.156	105,888	91,624	55%	322,132	24	85,152	3.9	26.4	6.8	45%	181,706	0.40
2013	1.156	105,979	91,703	55%	322,132	24	85,237	3.9	26.5	6.8	45%	181,979	0.40
2014	1.156	106,046	91,760	55%	322,132	24	85,299	3.9	26.5	6.8	45%	182,169	0.40
2015	1.156	106,087	91,796	55%	322,132	24	85,339	3.9	26.5	6.8	45%	182,294	0.40
2016	1.156	106,111	91,817	55%	322,132	24	85,363	3.9	26.5	6.8	45%	182,370	0.40
2017	1.156	106,125	91,829	55%	322,132	24	85,377	3.9	26.5	6.8	45%	182,417	0.40
2018	1.156	106,133	91,836	55%	322,132	24	85,384	3.9	26.5	6.8	45%	182,444	0.40
2019	1.156	106,137	91,839	55%	322,132	24	85,387	3.9	26.5	6.8	45%	182,462	0.40
2020	1.156	106,139	91,841	55%	322,132	24	85,388	3.9	26.5	6.8	45%	182,473	0.40

Appendix 1. Lake Trout, Lake Michigan, MM-5

Scenario =Assume sport effort increases by 25% and commercial effort is controlled by harvest limit.
Phase in a 24-in minimum size limit on sport fishery by 2005.

45% SSBR = 0.29

	Commercial (Tribal)				Recreational (State)							Lake trout population	
Year	Effort limit (million feet)	Harvest limit (pounds)	CPUE (pounds per million feet)	Percent of allowable harvest	Potential effort (hours)	Minimum size limit	Harvest limit (pounds)	CPUE (fish per 100 hours)	CPUE (pounds per 100 hours)	Average size (pounds)	Percent of allowable harvest	Female spawning biomass	SSBR
Reference Period													
1996	0.215	40,965	190,533	32%	323,133	10	86,964	4.8	26.9	5.6	68%		
1997	0.332	75,478	227,344	53%	332,193	10	68,233	3.7	20.5	5.6	47%		
1998	0.487	47,996	98,555	35%	363,157	10	88,251	4.0	24.3	6.1	65%	131,889	
Rehabilitation Period (TAM = 45%)													
2001	0.312	45,876	147,075	42%	339,494	22	62,179	2.7	18.3	6.8	58%	134,820	
2002	0.312	46,579	149,329	43%	339,494	22	62,814	2.7	18.5	6.8	57%	136,008	
2003	0.314	47,028	149,939	42%	339,494	22	63,776	2.8	18.8	6.8	58%	138,536	
2004	0.324	48,156	148,635	43%	339,494	22	64,003	2.7	18.9	6.9	57%	139,226	
2005	0.362	53,498	147,825	46%	339,494	24	63,763	2.7	18.8	6.9	54%	139,419	
2006	0.334	49,753	148,817	49%	339,494	24	52,693	2.2	15.5	7.2	51%	141,429	0.33
2007	0.327	48,998	149,644	46%	373,444	24	58,473	2.2	15.7	7.2	54%	142,217	0.32
2008	0.321	47,909	149,463	43%	407,393	24	63,678	2.2	15.6	7.2	57%	141,596	0.32
2009	0.324	48,146	148,604	42%	424,368	24	65,757	2.2	15.5	7.2	58%	140,282	0.31
2010	0.326	48,145	147,815	42%	424,368	24	65,281	2.1	15.4	7.2	58%	139,378	0.31
2011	0.327	48,250	147,358	43%	424,368	24	64,969	2.1	15.3	7.2	57%	138,840	0.31
2012	0.327	48,176	147,133	43%	424,368	24	64,790	2.1	15.3	7.1	57%	138,578	0.31
2013	0.331	48,636	146,991	43%	424,368	24	64,678	2.1	15.2	7.1	57%	138,358	0.31
2014	0.331	48,594	146,864	43%	424,368	24	64,594	2.1	15.2	7.1	57%	138,195	0.31
2015	0.331	48,570	146,792	43%	424,368	24	64,538	2.1	15.2	7.1	57%	138,088	0.31
2016	0.331	48,557	146,752	43%	424,368	24	64,504	2.1	15.2	7.1	57%	138,021	0.31
2017	0.331	48,550	146,731	43%	424,368	24	64,485	2.1	15.2	7.1	57%	137,980	0.31
2018	0.331	48,547	146,719	43%	424,368	24	64,474	2.1	15.2	7.1	57%	137,956	0.31
2019	0.331	48,545	146,714	43%	424,368	24	64,468	2.1	15.2	7.1	57%	137,941	0.31
2020	0.331	48,544	146,711	43%	424,368	24	64,465	2.1	15.2	7.1	57%	137,932	0.31

Appendix 1. Lake Trout, Lake Michigan, MM-6/7

Scenario =Assume minimal subsistence fishing. Assume sport effort increases by 25%.

40% SSBR = 0.63
2006 SSBR = 1.13
2020 SSBR = 1.13

	Commercial (Tribal)				Recreational (State)							Lake trout population	
Year	Effort limit (million feet)	Harvest limit (pounds)	CPUE (pounds per million feet)	Percent of allowable harvest	Potential effort (hours)	Minimum size limit	Harvest limit (pounds)	CPUE (fish per 100 hours)	CPUE (pounds per 100 hours)	Average size (pounds)	Percent of allowable harvest	Female spawning biomass	SSBR
Reference Period													
1996	0.000	-	-	0%	1,137,475	10	155,230	2.8	13.6	4.9	100%		
1997	0.000	-	-	0%	1,321,468	10	183,520	2.4	13.9	5.9	100%		
1998	0.000	-	-	0%	1,359,033	10	254,120	3.6	18.7	5.2	100%		
Rehabilitation Period (TAM = 40%)													
2001	Subsistence	4,265	na	1%	1,590,823	10	319,710	3.1	20.1	6.6	99%		
2002	Subsistence	4,172	na	1%	1,590,823	10	311,448	2.9	19.6	6.7	99%		
2003	Subsistence	4,000	na	1%	1,590,823	10	295,197	2.8	18.6	6.7	99%		
2004	Subsistence	3,842	na	1%	1,590,823	10	279,365	2.6	17.6	6.8	99%		
2005	Subsistence	3,657	na	1%	1,590,823	10	264,016	2.5	16.6	6.7	99%		
2006	Subsistence	3,548	na	1%	1,590,823	10	254,767	2.4	16.0	6.6	99%		
2007	Subsistence	3,426	na	1%	1,590,823	10	247,308	2.4	15.5	6.6	99%		
2008	Subsistence	3,358	na	1%	1,590,823	10	243,548	2.3	15.3	6.5	99%		
2009	Subsistence	3,314	na	1%	1,590,823	10	241,364	2.3	15.2	6.5	99%		
2010	Subsistence	3,290	na	1%	1,590,823	10	240,417	2.3	15.1	6.5	99%		
2011	Subsistence	3,276	na	1%	1,590,823	10	239,902	2.3	15.1	6.5	99%		
2012	Subsistence	3,271	na	1%	1,590,823	10	239,698	2.3	15.1	6.5	99%		
2013	Subsistence	3,270	na	1%	1,590,823	10	239,602	2.3	15.1	6.5	99%		
2014	Subsistence	3,270	na	1%	1,590,823	10	239,550	2.3	15.1	6.5	99%		
2015	Subsistence	3,269	na	1%	1,590,823	10	239,513	2.3	15.1	6.5	99%		
2016	Subsistence	3,269	na	1%	1,590,823	10	239,486	2.3	15.1	6.5	99%		
2017	Subsistence	3,269	na	1%	1,590,823	10	239,466	2.3	15.1	6.5	99%		
2018	Subsistence	3,269	na	1%	1,590,823	10	239,452	2.3	15.1	6.5	99%		
2019	Subsistence	3,269	na	1%	1,590,823	10	239,442	2.3	15.1	6.5	99%		
2020	Subsistence	3,269	na	1%	1,590,823	10	239,434	2.3	15.1	6.5	99%		

Appendix 1. Lake Trout, Lake Superior, MI-5

Scenario = Assume minimal subsistence fishing. Assume sport fishing effort increases by 20%.

45% SSBR = 0.37
2006 SSBR = 1.06
2020 SSBR = 1.06

	Commercial (Tribal)				Recreational (State)							Lake trout population	
Year	Effort limit (million feet)	Harvest limit (pounds)	CPUE (pounds per million feet)	Percent of allowable harvest	Potential effort (hours)	Minimum size limit	Harvest limit (pounds)	CPUE (fish per 100 hours)	CPUE (pounds per 100 hours)	Average size (pounds)	Percent of allowable harvest	Female spawning biomass	SSBR
Reference Period													
1996	0.000	-	-	-	61,750	10	55,409	18.1	89.7	4.9	100%		
1997	0.000	-	-	-	72,922	10	72,385	20.7	99.3	4.8	100%		
1998	0.000	-	-	-	54,612	10	57,867	21.6	106.0	4.9	100%		
Sustainable Management Period (TAM = 45%)													
2001	Subsistence	2,041	na	4%	75,714	10	51,914	17.7	68.6	3.9	96%		
2002	Subsistence	1,949	na	4%	75,714	10	50,787	17.6	67.1	3.8	96%		
2003	Subsistence	1,902	na	4%	75,714	10	51,977	18.1	68.6	3.8	96%		
2004	Subsistence	1,913	na	4%	75,714	10	52,448	18.2	69.3	3.8	96%		
2005	Subsistence	1,908	na	4%	75,714	10	51,677	17.9	68.3	3.8	96%		
2006	Subsistence	1,908	na	4%	75,714	10	51,174	17.7	67.6	3.8	96%		
2007	Subsistence	1,893	na	4%	75,714	10	50,873	17.6	67.2	3.8	96%		
2008	Subsistence	1,883	na	4%	75,714	10	50,750	17.6	67.0	3.8	96%		
2009	Subsistence	1,882	na	4%	75,714	10	50,713	17.6	67.0	3.8	96%		
2010	Subsistence	1,878	na	4%	75,714	10	50,647	17.6	66.9	3.8	96%		
2011	Subsistence	1,875	na	4%	75,714	10	50,614	17.6	66.8	3.8	96%		
2012	Subsistence	1,875	na	4%	75,714	10	50,614	17.6	66.8	3.8	96%		
2013	Subsistence	1,875	na	4%	75,714	10	50,614	17.6	66.8	3.8	96%		
2014	Subsistence	1,875	na	4%	75,714	10	50,614	17.6	66.8	3.8	96%		
2015	Subsistence	1,875	na	4%	75,714	10	50,614	17.6	66.8	3.8	96%		
2016	Subsistence	1,875	na	4%	75,714	10	50,614	17.6	66.8	3.8	96%		
2017	Subsistence	1,875	na	4%	75,714	10	50,614	17.6	66.8	3.8	96%		
2018	Subsistence	1,875	na	4%	75,714	10	50,614	17.6	66.8	3.8	96%		
2019	Subsistence	1,875	na	4%	75,714	10	50,614	17.6	66.8	3.8	96%		
2020	Subsistence	1,875	na	4%	75,714	10	50,614	17.6	66.8	3.8	96%		

Appendix 1. Lake Trout, Lake Superior, MI-6

Scenario =Effort-based, phase-in on commercial fishery from 2001 through 2005. Phase in a 22-in minimum size limit on sport fishery by 2005.
Adjust commercial and sport effort to achieve a 50/50 split from 2006 through 2020.

45% SSBR = 0.24
2006 SSBR = 0.24
2020 SSBR = 0.24

	Commercial (Tribal)				Recreational (State)							Lake trout population	
Year	Effort limit (million feet)	Harvest limit (pounds)	CPUE (pounds per million feet)	Percent of allowable harvest	Potential effort (hours)	Minimum size limit	Harvest limit (pounds)	CPUE (fish per 100 hours)	CPUE (pounds per 100 hours)	Average size (pounds)	Percent of allowable harvest	Female spawning biomass	SSBR
Reference Period													
1996	0.820	17,322	21,130	47%	35,370	10	19,256	12.0	54.4	4.5	53%		
1997	0.452	20,107	44,496	48%	42,493	10	21,819	11.6	51.3	4.4	52%		
1998	0.879	19,604	22,308	48%	38,157	10	21,439	12.6	56.2	4.4	52%		
Phase-in Period (Effort-Based for Commercial Fishery, Size Limit-Based for Recreational Fishery)													
2001	0.717	10,942	15,265	51%	46,408	20	10,458	5.8	22.5	3.9	49%		
2002	0.681	10,920	16,035	50%	46,408	20	10,752	6.1	23.2	3.8	50%		
2003	0.638	10,532	16,508	48%	46,408	20	11,203	6.3	24.1	3.8	52%		
2004	0.638	10,034	15,728	51%	46,408	22	9,705	5.4	20.9	3.9	49%		
2005	0.638	10,267	16,093	50%	46,408	22	10,142	5.6	21.9	3.9	50%		
Sustainable Management Period (TAM = 45%)													
2006	0.638	10,632	16,666	50%	46,408	22	10,442	5.8	22.5	3.9	50%		
2007	0.638	10,706	16,782	50%	46,408	22	10,644	5.9	22.9	3.9	50%		
2008	0.638	10,742	16,838	50%	46,408	22	10,758	5.9	23.2	3.9	50%		
2009	0.638	10,757	16,861	50%	46,408	22	10,805	5.9	23.3	3.9	50%		
2010	0.638	10,762	16,870	50%	46,408	22	10,826	6.0	23.3	3.9	50%		
2011	0.638	10,765	16,873	50%	46,408	22	10,835	6.0	23.3	3.9	50%		
2012	0.638	10,765	16,874	50%	46,408	22	10,838	6.0	23.4	3.9	50%		
2013	0.638	10,765	16,875	50%	46,408	22	10,839	6.0	23.4	3.9	50%		
2014	0.638	10,765	16,875	50%	46,408	22	10,839	6.0	23.4	3.9	50%		
2015	0.638	10,765	16,875	50%	46,408	22	10,839	6.0	23.4	3.9	50%		
2016	0.638	10,765	16,875	50%	46,408	22	10,839	6.0	23.4	3.9	50%		
2017	0.638	10,765	16,875	50%	46,408	22	10,839	6.0	23.4	3.9	50%		
2018	0.638	10,765	16,875	50%	46,408	22	10,839	6.0	23.4	3.9	50%		
2019	0.638	10,765	16,875	50%	46,408	22	10,839	6.0	23.4	3.9	50%		
2020	0.638	10,765	16,875	50%	46,408	22	10,839	6.0	23.4	3.9	50%		

Appendix 1. Lake Trout, Lake Superior, MI-7

Scenario =Assume commercia effort and sport effort increases by 20%.

45% SSBR = 0.20
2006 SSBR = 0.53
2020 SSBR = 0.53

	Commercial (Tribal)				Recreational (State)							Lake trout population	
Year	Effort limit (million feet)	Harvest limit (pounds)	CPUE (pounds per million feet)	Percent of allowable harvest	Potential effort (hours)	Minimum size limit	Harvest limit (pounds)	CPUE (fish per 100 hours)	CPUE (pounds per 100 hours)	Average size (pounds)	Percent of allowable harvest	Female spawning biomass	SSBR
Reference Period													
1996	1.047	23,450	22,403	69%	14,872	10	10,712	13.9	72.0	5.2	31%		
1997	3.400	41,499	12,207	78%	17,563	10	11,802	14.4	67.2	4.7	22%		
1998	3.010	27,299	9,069	74%	13,153	10	9,665	16.0	73.5	4.6	26%		
Sustainable Management Period (TAM = 45%)													
2001	2.983	48,045	16,108	69%	18,235	10	21,153	32.2	116.0	3.6	31%		
2002	2.983	51,486	17,262	73%	18,235	10	19,451	27.9	106.7	3.8	27%		
2003	2.983	54,064	18,126	72%	18,235	10	20,745	29.6	113.8	3.8	28%		
2004	2.983	55,313	18,545	72%	18,235	10	21,470	30.5	117.7	3.9	28%		
2005	2.983	55,700	18,674	72%	18,235	10	21,684	30.7	118.9	3.9	28%		
2006	2.983	55,934	18,753	72%	18,235	10	21,722	30.7	119.1	3.9	28%		
2007	2.983	55,986	18,770	72%	18,235	10	21,686	30.6	118.9	3.9	28%		
2008	2.983	55,935	18,753	72%	18,235	10	21,636	30.6	118.7	3.9	28%		
2009	2.983	55,931	18,752	72%	18,235	10	21,610	30.5	118.5	3.9	28%		
2010	2.983	55,827	18,717	72%	18,235	10	21,577	30.5	118.3	3.9	28%		
2011	2.983	55,773	18,699	72%	18,235	10	21,564	30.5	118.3	3.9	28%		
2012	2.983	55,773	18,699	72%	18,235	10	21,564	30.5	118.3	3.9	28%		
2013	2.983	55,773	18,699	72%	18,235	10	21,564	30.5	118.3	3.9	28%		
2014	2.983	55,773	18,699	72%	18,235	10	21,564	30.5	118.3	3.9	28%		
2015	2.983	55,773	18,699	72%	18,235	10	21,564	30.5	118.3	3.9	28%		
2016	2.983	55,773	18,699	72%	18,235	10	21,564	30.5	118.3	3.9	28%		
2017	2.983	55,773	18,699	72%	18,235	10	21,564	30.5	118.3	3.9	28%		
2018	2.983	55,773	18,699	72%	18,235	10	21,564	30.5	118.3	3.9	28%		
2019	2.983	55,773	18,699	72%	18,235	10	21,564	30.5	118.3	3.9	28%		
2020	2.983	55,773	18,699	72%	18,235	10	21,564	30.5	118.3	3.9	28%		

Appendix 2. Model estimates of harvest quota for lake whitefish by whitefish management unit in 1836 Treaty-ceded waters of the Great Lakes as used during the final stages of negotiations.

Total harvest (lb) for whitefish in Lake Michigan whitefish management units (WFMU) for 1999-2020 with target mortality rate used in the unit.

	Whitefish management unit								State share		
Year and TAM used[1]	WFM-00 65%	WFM-01 59%	WFM-02 65%	WFM-03 85%	WFM-04 65%	WFM-05 60%	WFM-06 65%	WFM-08 65%	WFM-01 200K or 10%	WFM-06 65 K or 30%	WFM-08 500 K or 22.5%
1999	1,420,742	477,853	211,960	1,223,717	332,021	170,017	140,976	416,853	47,785	42,293	93,792
2000	1,216,222	847,198	173,320	1,203,052	306,771	158,806	322,036	415,147	84,720	96,611	93,408
2001	1,323,355	659,310	143,700	2,397,616	577,825	258,313	551,763	2,551,846	65,931	165,529	574,165
2002	1,272,192	854,887	188,129	1,686,142	565,289	241,118	349,487	1,676,415	85,489	104,846	377,193
2003	1,250,747	960,488	225,231	1,524,416	558,347	233,733	249,959	1,312,155	96,049	74,988	295,235
2004	1,242,439	1,013,997	244,311	1,493,578	557,877	228,845	212,595	1,168,241	101,400	63,778	262,854
2005	1,239,875	1,040,501	251,961	1,488,065	558,631	226,743	185,382	1,113,252	104,050	55,615	250,482
2006	1,238,931	1,052,527	254,740	1,487,144	558,703	226,041	176,252	1,092,576	105,253	52,876	245,830
2007	1,238,597	1,057,639	255,718	1,486,992	558,715	225,646	173,390	1,085,045	105,764	52,017	244,135
2008	1,238,481	1,059,745	256,060	1,486,967	558,720	225,517	172,086	1,082,351	105,974	51,626	243,529
2009	1,238,440	1,060,612	256,180	1,486,963	558,721	225,454	171,622	1,081,402	106,061	51,487	243,316
2010	1,238,426	1,060,969	256,221	1,486,963	558,722	225,425	171,457	1,081,070	106,097	51,437	243,241
2011	1,238,421	1,061,116	256,236	1,486,963	558,722	225,413	171,399	1,080,954	106,112	51,420	243,215
2012	1,238,419	1,061,177	256,241	1,486,963	558,722	225,408	171,378	1,080,913	106,118	51,413	243,205
2013	1,238,418	1,061,202	256,243	1,486,963	558,722	225,406	171,371	1,080,899	106,120	51,411	243,202
2014	1,238,418	1,061,212	256,244	1,486,963	558,722	225,405	171,368	1,080,894	106,121	51,410	243,201
2015	1,238,418	1,061,216	256,244	1,486,963	558,722	225,405	171,367	1,080,892	106,122	51,410	243,201
2016	1,238,418	1,061,218	256,244	1,486,963	558,722	225,405	171,367	1,080,891	106,122	51,410	243,201
2017	1,238,418	1,061,219	256,244	1,486,963	558,722	225,405	171,367	1,080,891	106,122	51,410	243,201
2018	1,238,418	1,061,219	256,244	1,486,963	558,722	225,405	171,367	1,080,891	106,122	51,410	243,201
2019	1,238,418	1,061,219	256,244	1,486,963	558,722	225,405	171,367	1,080,891	106,122	51,410	243,201
2020	1,238,418	1,061,219	256,244	1,486,963	558,722	225,405	171,367	1,080,891	106,122	51,410	243,201

[1] Rule 4 is to increase total mortality on fully vulnerable age class to 65% (Z=1.05) by increasing fishing mortality unless resulting SPR_T (Spawning potential reduction target) is less than 0.20. If SPR_T is less than 0.20, find fishing multiplier that produces SPR = 0.20

Total harvest (lb) for whitefish in Lake Superior whitefish management units (WFMU) for 1999-2020 with target mortality rate used in the unit.

	Whitefish management unit					State share	
Year and TAM used[1]	WFS-04 55%	WFS-05 45%	WFS-06 37%	WFS-07 50%	WFS-08 65%	WFS-04 25K or 10%	WFS-05 130K or16%
1999	88,491	292,112	43,385	537,861	84,866	8,849	46,738
2000	91,340	371,008	47,114	500,323	71,839	9,134	59,361
2001	377,091	933,264	51,617	494,649	91,306	37,709	149,322
2002	274,538	759,312	59,577	512,639	90,299	27,454	121,490
2003	218,928	649,591	63,922	524,201	88,975	21,893	103,935
2004	187,843	572,498	66,031	527,126	87,994	18,784	91,600
2005	170,289	520,142	65,871	528,551	87,782	17,029	83,223
2006	159,891	482,461	66,672	530,220	87,766	15,989	77,194
2007	153,869	455,046	67,823	531,271	87,749	15,387	72,807
2008	150,655	438,522	69,009	531,932	87,741	15,065	70,164
2009	148,957	428,585	70,084	532,349	87,739	14,896	68,574
2010	148,061	422,612	70,994	532,611	87,738	14,806	67,618
2011	147,589	419,021	71,731	532,776	87,737	14,759	67,043
2012	147,339	416,863	72,311	532,880	87,737	14,734	66,698
2013	147,208	415,565	72,759	532,945	87,737	14,721	66,490
2014	147,138	414,785	73,098	532,986	87,737	14,714	66,366
2015	147,102	414,316	73,352	533,012	87,737	14,710	66,291
2016	147,082	414,034	73,540	533,028	87,737	14,708	66,246
2017	147,072	413,865	73,678	533,038	87,737	14,707	66,218
2018	147,067	413,763	73,779	533,045	87,737	14,707	66,202
2019	147,064	413,702	73,852	533,049	87,737	14,706	66,192
2020	147,062	413,665	73,905	533,052	87,737	14,706	66,186

[1] Rule 4 is to increase total mortality on fully vulnerable age class to 65% (Z=1.05) by increasing fishing mortality unless resulting SPR_T (Spawning potential reduction target) is less than 0.20. If SPR_T us less than 0.20, find fishing multiplier that produces SPR = 0.20

Total harvest (lb) for whitefish in Lake Huron whitefish management units (WFMU) for 1999-2020 with target mortality rate used in the unit.

	Whitefish management unit					
Year and TAM used[1]	WFH-01 65%	WFH-02 70%	WFH-03 No calc. done	WFH-04 65%	WFH-05 69%	WFH-06 No calc. done
1999	237,307	315,624		340,484	250,148	
2000	195,682	214,094		228,570	182,076	
2001	285,004	158,729		411,601	617,497	
2002	378,113	248,742		619,347	509,433	
2003	437,870	350,847		761,713	659,455	
2004	463,261	399,800		814,900	760,598	
2005	473,617	417,069		839,083	804,087	
2006	480,374	425,623		849,366	821,098	
2007	484,221	429,558		854,654	829,495	
2008	486,605	431,799		857,813	834,510	
2009	488,126	433,219		859,812	837,768	
2010	489,158	434,199		861,181	840,039	
2011	489,908	434,930		862,198	841,732	
2012	490,444	435,461		862,930	842,962	
2013	490,810	435,829		863,429	843,820	
2014	491,033	436,053		863,727	844,350	
2015	491,153	436,170		863,878	844,634	
2016	491,210	436,223		863,944	844,767	
2017	491,236	436,244		863,971	844,822	
2018	491,247	436,252		863,981	844,843	
2019	491,253	436,254		863,985	844,850	
2020	491,255	436,255		863,986	844,852	

[1] Rule 4 is to increase total mortality on fully vulnerable age class to 65% (Z=1.05) by increasing fishing mortality unless resulting SPR_T (Spawning potential reduction target) is less than 0.20. If SPR_T is less than 0.20, find fishing multiplier that produces SPR = 0.20