

**2006 Annual Report on Implementation of the 2000 Consent Decree
for 1836 Treaty-Ceded Waters of the Great Lakes**

Prepared for:

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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 2006.

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 called 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 counted 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 removal of large-mesh gill-net effort in lakes Huron and Michigan was successfully completed by 2003 when tribal fishers used approximately 25.5 million feet less than the 1993-1998 average. The 2006 tribal large-mesh gill-net effort in Lakes Michigan and Huron was approximately 23.8 million feet (Table 1) less than the 1993-1998 average. For all three lakes, approximately 29.5 million feet less effort was fished in 2006 compared to the 1993-1998 average.

Table 1. Amount of large-mesh gill-net effort (1,000 ft) in the 1836 Treaty-ceded waters of the Great Lakes during base years 1993 to 1998 and preliminary effort in 2006.

Lake	Management Unit	Effort		2006 reduction ^b
		1993-98 ^a	2006	
Michigan	MM-1, 2, 3	17,912	5,208	12,704
	MM-4	1,794	262	1,532
	MM-5	240	318	-78 ^c
Huron	MH-1	16,470	6,780	9,690
	MH-2	6	0	6
Superior	MI-6	780	3	777
	MI-7	2,028	989	1,039
	MI-8	6,578	2,750	3,828
Totals		45,808	16,310	29,498

^a Average annual effort during base years.

^b The reduction relative to 2006 (average effort in base years minus effort in current year).

^c 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) prepares an annual report entitled “Summary Status of Lake Trout and Lake Whitefish Populations in the 1836 Treaty-ceded waters of Lakes Superior, Huron, and Michigan in 2005, with recommended yield and effort levels for 2006” (referred to as the 2006 Status of the Stocks Report). This report will be provided as a separate document when it becomes available. It documents the status of lake trout and lake whitefish stocks at the time the 2006 harvest limits were developed and describes the parameters used in the 2006 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 that is beyond the initially high 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”. To date, investigations into various gaming scenarios have been limited. The need for determining how changing length limits in the recreational fishery affects the model projections of TAC’s has also been identified as a charge for the MSC. A more extensive description of the entire modeling process is contained in the *Stock Assessment Models* section of the 2006 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. In 2006, there was considerable delay in providing these figures to the parties due to the lack of consensus on harvest limits. Ultimately, three stipulations were entered in court, which resulted in three court orders that amended the Consent Decree, and therefore 2006 harvest limits. The 2006 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 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 2006, there were four fully-phased management units where the model recommendations represented a change of greater than 15% above the 2005 harvest limits; MI-6, MI-7, MM-6,7, and MH-2. In all units the model recommendation was lower than allowed by the 15% rule, and the TFC invoked the 15% rule to restrict the harvest limit to 15% less than the 2005 harvest limit.

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 2006 fishing season.

Lake	Unit	Model-output TACs		Final TACs		Tribal TAE
		State	Tribal	State	Tribal	
Michigan	MM-1,2,3 ^a	12,600	453,000	14,000	453,000	9,360,000
	MM-4 ^b	44,300	94,300	44,300	94,300	1,030,000
	MM-5 ^c	49,900	33,300	49,900	39,200	354,000
	MM-6,7 ^d	221,800	24,600	281,053	31,2120	NA
Huron	MH-1	23,200	267,000	23,200	267,000	11,550,000
	MH-2 ^d	92,000	4,800	112,795	5,950	NA
Superior	MI-5	181,000	8,000	181,000	8,000	NA
	MI-6 ^d	30,500	30,500	30,515	30,515	5,413,000
	MI-7 ^d	31,700	74,000	33,660	78,540	14,949,000

^a Final TAC resulted from an order to amend the Consent Decree (dated 4-4-07)

^b Final TAC resulted from an order to amend the Consent Decree (dated 1-9-06)

^c Final Tribal TAC resulted from an order to amend the Consent Decree (dated 6-19-06)

^d TFC invoked the 15% rule, limiting the TAC to -15% deviation from the 2005 harvest limit.

B. Lake Whitefish

As required by the Consent Decree, the Modeling Subcommittee of the TFC calculates annual lake 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. The TFC reached consensus on harvest limits for all shared whitefish management units, and these figures were sent to the parties on December 22, 2005. The 2006 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 three management units. In units WFH-03 and WFM-07 there were insufficient series of data, thus the models were not reliable for estimating harvest limits. The HRG for WFH-03 is consistent with the 2005 and 2004 HRGs, which were based on the 3-year average (2001-2003) commercial harvest. The HRG for WFM-07 is also consistent with the 2005 HRG, which represented the approximate average of the model-generated harvest limits from adjacent

units WFM-06 and WFM-08 in 2004. In unit WFS-06 a lack of commercial catch sampling resulted in poor model performance; thus, the 2006 HRG was set consistent with the 2005 HRG, which was based on the 2004 model output. Additionally, as a result of low model quality in units WFM-02 and WFM-03 the 2006 HRGs are consistent with the 2005 HRGs, which were based on the 2005 models. The tribes accepted model-generated recommendations for HRGs in all other units.

There was one significant change to the way a harvest limit was calculated in 2006. In Lake Superior management unit WFS-04, a harvest limit was calculated for the entire unit, which was then apportioned to the 1842 Treaty-ceded and 1836 Treaty-ceded areas based on surface area. This represents a change from 2001 to 2005 calculations, and was approved by the TFC at the October 4, 2005 meeting.

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 2006 fishing season.

Lake	Unit	Final State TAC	Model output Tribal TAC	Final Tribal TAC or HRG
Michigan	WFM-01	173,000	1,557,000	1,557,000
	WFM-02 ^a	0	732,000	577,000
	WFM-03 ^a	0	3,348,000	1,970,000
	WFM-04	0	757,000	757,000
	WFM-05	0	298,000	298,000
	WFM-06	65,000	355,000	355,000
	WFM-07 ^b	0	–	500,000
	WFM-08	500,000	1,088,000	1,088,000
Huron	WFH-01	0	395,000	395,000
	WFH-02	0	454,000	454,000
	WFH-03 ^c	0	–	306,000
	WFH-04	0	460,000	460,000
	WFH-05	0	1,087,000	1,087,000
Superior	WFS-04 ^d	15,000	133,000	133,000
	WFS-05	58,000	302,000	302,000
	WFS-06 ^c	0	–	210,000
	WFS-07	0	367,000	367,000
	WFS-08	0	148,000	148,000

^a Due to low model quality HRG was set equal to 2005 HRG, which was based on model output

^b No model output - HRG is consistent with the 2005 HRG, which represented the approximate average of the model-generated harvest limits from adjacent units WFM-06 and WFM-08 in 2004

^c No model output - HRG is consistent with the 2004 and 2005 HRGs, which were based on the 3-year average (2001-2003) commercial harvest.

^d This was the first year in which the harvest limit for WFS-04 was calculated solely for the 1836 Treaty-ceded portion.

^e No model output - HRG is consistent with 2004 and 2005 HRGs, which were based on the 2004 model recommendation.

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 2006 was below harvest limits in all but one management unit. In Lake Michigan management unit MM-4, the harvest limit was exceeded by 5,210 pounds (12%), which was not large enough of a deviation to incur a penalty under terms of the Consent Decree. The harvest limit and reported harvest in Lake Superior represent lean lake trout only. 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. These fish were added to the number and weight of lake trout harvested in the recreational fishery (Table 4).

There were four lake trout regulation changes for the State recreational fishery in 2006. In some areas, the State made regulations more restrictive in order to stay within harvest limits, and in other areas regulations were liberalized as a result of estimated harvest being well below harvest limits. In Lake Huron management unit MH-1, the size restrictions went from a harvest slot of 15 – 19 inches, with one fish allowed 34 inches or greater, to a more simplified minimum size limit of 22 inches. In Lake Michigan management unit MM-4, the size restrictions went from a 22-inch minimum length to a more complex harvest slot of 20 – 25 inches, with one fish allowed 34 inches or greater. In Lake Michigan management unit MM-5, the size restrictions went from a minimum size limit of 24 inches to a protected slot of 23 – 34 inches. In Lake Superior management unit MI-6, the size restrictions went from a harvest slot of 15 – 29 inches, with one fish allowed 34 inches or greater, to a more simplified 15-inch minimum size limit.

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.

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 2006 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	507,721	0	0	20,953	46,097	145,099	29,020	20,676	219,166	0	0
	MM-2	36,859	25	168	385	847	0	0	4,904	51,982	52	302
	MM-3	87,946	1,506	13,811	17	37	4,295	1,296	9,033	104,783	6	35
	MM-4	155,304	9,722	49,510	7	15	7,985	2,435	10,905	146,127	43	249
	MM-5	327,152	3,133	11,880	0	0	26	14	81,765	907,592	4,137	23,995
	MM-6	739,216	3,915	21,141	21	46	2,050	1,131	178,984	1,771,942	5,022	29,128
	MM-7	400,785	1,793	7,351	247	543	44,649	19,869	54,847	559,439	5,703	33,077
Totals		2,254,983	20,094	103,861	21,630	47,585	204,104	53,765	361,114	3,761,031	14,963	86,786
Huron	MH-1	345,539	1,378	7,025	6,474	14,891	83,529	33,412	10,048	86,411	101	484
	MH-2	66,626	3,931	21,229	635	1,460	3,222	1,289	4,565	34,697	260	1,041
	Totals	412,165	5,309	28,254	7,109	16,351	86,751	34,701	14,613	121,108	361	1,525
Superior	MI-5 ^c	36,995	7,845	26,831	0	0	0	0	150	1,013	1,613	3,354
	MI-6	39,676	3,281	13,748	0	0	321	385	213	1,651	2,289	5,721
	MI-7	19,751	892	3,024	0	0	0	0	1	8	449	1,295
Totals		96,422	12,018	43,603	0	0	321	385	364	2,672	4,351	10,370
Grand totals		2,763,570	37,421	175,718	28,739	63,936	291,176	88,851	376,091	3,884,721	19,675	98,681

^a Lake Superior lake trout number and weight do not include Siscowets; number of Siscowet harvested were estimated at 372, 452, and 2,033 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-ceded area was not removed.

2. Lake Whitefish

Whitefish harvest by State-licensed commercial fishers was below harvest limits in all but one whitefish management unit. In management unit WFM-01 the harvest limit was exceeded by 16,485 pounds; however, this represents a deviation of 9.5%, which does not incur a penalty. 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 pounds for 2006.

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 Grand Traverse Bay was an estimated 7,038 pounds in 2006. 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 240, 2,316, and 11,357 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 2006 fishing season.

Lake	Unit	Harvest	Effort
Michigan	WFM-01	189,485	83
	WFM-06	0	0
	WFM-08	316,666	198
Lake totals		506,151	281
Superior	WFS-04	6,075	27
	WFS-05	38,940	311
Lake totals		45,015	338
Grand totals		551,166	619

B. Tribal commercial and subsistence fishing

The Chippewa Ottawa Resource Authority had not finalized harvest data for 2006 by the time this report was compiled; thus, all reported numbers are considered preliminary. We are unaware of how substantial the differences between preliminary and final harvest will be, though we anticipate that differences will be small in most management units.

1. Lake trout

Lake trout harvest by tribal commercial fishers was below harvest limits in all management units in 2006. 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 preliminary tribal commercial lake trout harvest (pounds) by management unit in 1836 Treaty-ceded waters of the Great Lakes for the 2006 fishing season. Gill-net harvest includes that from small-mesh and large-mesh gill nets.

Lake	Unit	Trap-net harvest	Gill-net harvest	Total harvest
Michigan	MM-1,2,3	2,313	146,524	148,837
	MM-4	10,454	30,307	40,761
	MM-5	1,336	17,481	18,817
	MM-6,7	3,504	181	3,685
Lake total		17,607	194,493	212,100
Huron	MH-1	21,015	150,006	171,021
	MH-2	0	0	0
Lake total		21,015	150,006	171,021
Superior	MI-5	0	0	0
	MI-6	0	0	0
	MI-7	278	13,013	13,291
	MI-8	17,432	31,016	48,448
Lake total		17,710	44,029	61,739
Grand total		56,332	388,528	444,860

2. Lake Whitefish

Whitefish harvest by tribal commercial fishers was below harvest limits and HRGs in all, but two management unit. In Lake Huron management unit WFH-01, the model-based HRG was exceeded by 25,530 pounds (6.5%). In Lake Superior management unit WFS-08, the model-based HRG was exceeded by 10,057 pounds (6.8%). 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 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.

Table 7. Summary of preliminary tribal commercial whitefish harvest (pounds) and targeted effort (trap net-lifts or 1,000 feet of large-mesh gill net) by management unit in 1836 Treaty-ceded waters of the Great Lakes for the 2006 fishing season. Minor harvest from small-mesh gill nets is also included in gill-net harvest, but not effort.

Lake	Unit	Trap nets		Gill nets		Total harvest
		Harvest	Effort	Harvest	Effort	
Michigan	WFM-01	345,861	965	0	0	345,861
	WFM-02	274,978	282	231,531	2,259	506,509
	WFM-03	275,679	542	68,899	593	344,578
	WFM-04	125,268	324	117,394	1,538	242,662
	WFM-05	59,730	191	47,068	757	106,798
	WFM-06	14,974	36	19,426	307	34,400
	WFM-07	297,594	268	0	0	297,594
	WFM-08	0	0	0	0	0
Lake totals		1,394,084	2,608	484,318	5,454	1,878,402
Huron	WFH-01	257,649	840	162,881	1,956	420,530
	WFH-02	247,288	702	55,434	990	302,722
	WFH-03	9,600	38	3,924	231	13,524
	WFH-04	62,400	223	167,455	2,310	229,855
	WFH-05	569,174	617	0	0	569,174
Lake totals		1,146,111	2,420	389,694	5,487	1,535,805
Superior	WFS-04	0	0	0	0	0
	WFS-05	0	0	304	3	304
	WFS-06	0	0	6,615	43	6,615
	WFS-07	153,802	570	211,589	3,455	365,391
	WFS-08	148,933	544	9,124	84	158,057
Lake totals		302,735	1,114	227,632	3,585	530,367
Grand totals		2,842,930	6,142	1,101,644	14,526	3,944,574

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 2006 occurred in Lake Huron management unit MH-1 (9,836 pounds). 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 2006 fishing season.

Lake	Unit	Trap nets		Gill nets		Total harvest
		Harvest	Effort	Harvest	Effort	
Michigan	MM-1,2,3	87	0	713	0	800
	MM-4	49	0	1,192	16	1,241
	MM-5	64	0	280	0	344
Lake totals		200	0	2,185	16	2,385
Huron	MH-1	279	0	9,836	100	10,115
Lake totals		279	0	9,836	100	10,115
Superior	MI-7	0	0	32	0	32
	MI-8	0	0	2,060	45	2,060
Lake totals		0	0	2,092	45	2,092
Grand totals		479	0	14,113	161	14,592

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. The largest yellow perch harvest in 2006 was in Lake Huron unit MH-1, where harvest was 1,066 pounds (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 2006 fishing season.

Lake		Trap nets		Gill nets		Total
		Harvest	Effort	Harvest	Effort	Harvest
Michigan	MM-1,2,3	0	0	123	0	123
	MM-4	6	0	16	0	22
	MM-5	0	0	45	0	45
Lake totals		6	0	184	0	190
Huron	MH-1	0	0	1,066	0	1,066
Lake totals		0	0	1,066	0	1,066
Superior	MI-7	0	0	10	0	10
	MI-8	0	0	414	30	414
Lake totals		0	0	424	0	424
Grand totals		6	0	1,674	30	1,680

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 in 2006 occurred in Lake Huron unit MH-1 (189,264 pounds; Table 10). Coho salmon were mainly harvested from Lake Superior (Table 11).

Table 10. Summary of tribal commercial Chinook salmon harvest (pounds) and targeted effort (trap-net or 1,000 feet of gill net) by management unit in 1836 Treaty-ceded waters of the Great Lakes for the 2006 fishing season.

Lake		Trap nets		Gill nets		Total
		Harvest	Effort	Harvest	Effort	harvest
Michigan	MM-1,2,3	575	0	3,146	0	3,721
	MM-4	0	0	53	0.6	53
Lake totals		575	0	3,199	0.6	3,774
Huron	MH-1	165	0	189,264	1,103	189,429
Lake totals		165	0	189,264	1,103	189,429
Superior	MI-7	0	0	166	0	166
	MI-8	501	0	471	0.8	972
Lake totals		501	0	637	0.8	1,138
Grand totals		1,241	0	193,100	1,104.4	194,341

Table 11. Summary of tribal commercial Coho salmon harvest (pounds) and targeted 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 2006 fishing season.

Lake		Trap nets		Gill nets		Total
		Harvest	Effort	Harvest	Effort	harvest
Michigan	MM-1,2,3	0	0	7	0	7
Lake totals		0	0	7	0	7
Superior	MI-7	32	0	370	0	402
	MI-8	480	0	880	0	1,360
Lake totals		512	0	1,250	0	1,762
Grand totals		512	0	1,257	0	1,769

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-ceded 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.

In 2006, walleye made up the majority of tribal subsistence harvest with 6,261 lbs from Treaty-ceded waters of the Great Lakes (Table 12). Total gill-net effort was 98,220 feet for the entire Treaty-ceded area of the Great Lakes.

Table 12. Summary of preliminary tribal subsistence harvest (round pounds) by species and gill-net effort (feet) in 1836 Treaty-ceded waters of the Great Lakes for the 2006 fishing season.

Lake	Management Unit	Gear	Lake trout	Whitefish	Walleye	Yellow perch	Salmon	Effort (feet)
Michigan	MM-1	Gill net	103	665	4,773	961	94	48,290
		Spear	0	0	381	0	0	NA
	MM-2	Gill net	224	0	419	0	6	10,900
	MM-3	Gill net	183	207	0	0	0	2,200
Lake total		510	872	5,573	961	100	61,390	
Huron	St.Marys River	Gill net	2	722	306	126	16	11,430
		Spear	0	38	0	0	7	NA
	MH-1	Gill net	129	755	376	45	0	12,950
Lake total		131	1,515	682	171	23	24,380	
Superior	MI-6	Gill net	18	10	6	0	165	4,200
		Spear	7	15	0	0	0	NA
	MI-7	Gill net	0	24	0	24	406	1,800
	MI-8	Gill net	16	133	0	0	110	6,450
Lake total		41	182	6	24	681	12,450	
Grand total		682	2,569	6,261	1,156	804	98,220	

IV. Enforcement

Introduction

The 2000 Consent Decree (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 Michigan Department of Natural Resources (MDNR). The LEC is required to meet four times a year with the first meeting taking place in January. The 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 2006. Information is also provided in the tables regarding other commercial fisheries enforcement activities.

A. General Information

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

1. Staffing

This has been just one of the areas of great change for the Unit in the past year. The MDNR began the 2006 calendar year with six full time Commercial Fish Specialist positions whose primary responsibilities are Great Lakes commercial fisheries enforcement, and all present Unit officers hold a United States Coast Guard Great Lakes Master Captains License. Six of the seven officers, commercial fish enforcement specialists (CFS), are assigned to locations within the 1836 Treaty-Ceded Area. Two specialists' positions are stationed in Grand Traverse County along with the Unit supervisor, a staff sergeant; this position was just recently transferred to Traverse City from Charlevoix. One specialist position is assigned to Charlevoix; two specialists' positions are also stationed in Presque Isle County, with one more specialists assigned to Delta County. The major change in the Unit in 2006 was the promotion of S/Sgt. Dan Hopkins to fill the position as District 7 Lieutenant. CFS Richard Bonner was promoted to the Staff Sergeant position to replace Dan. As it presently stands the Unit now has one vacant position in Grand Traverse County, along with the Delta County position, vacant with the retirement of CFS Ken Johnson in the summer of 2006, and one more vacant position 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. This officer's primary enforcement responsibilities are directed toward the state licensed commercial fishery on southern Lake Huron and Lake Erie. The Saginaw Bay officer also provides manpower and equipment assistance to officers working in 1836 Treaty-Ceded waters. A detective whose responsibility is commercial fish investigations was assigned to the Department's Special Investigation Unit in 2001. In 2005 the position was re-assigned to the Commercial Fish Enforcement Unit (CFEU) under the title of Commercial Fish Investigator; the Unit relies on this investigator a great deal for background information. The investigator provides assistance to local CFS Officers and monitors wholesale and commercial industries. Wholesale fish dealers are monitored to ensure compliance with both State and Decree reporting requirements. CFS Investigator Shannon VanPatten has put a lot of work hours in to improve the reporting system to assist both the MDNR Fish Division and CORA.

In the 2006 season the CFS Officers were required to spend a predetermined amount of hours on Marine safety patrols. For that requirement of marine safety the CFS officers worked net marking and net location as that has been our number one complaint and presents potentially hazardous conditions to boaters on the Great Lakes.

Table 1 represents the total manpower hours dedicated to Great Lakes Consent Decree enforcement for the calendar year 2006.

Table 1. 2006 officer hours worked to address Consent Decree and state commercial fish related issues. LED represents hours worked by other MDNR Law Enforcement Division personnel to address commercial fish issues. (Preliminary at the time of report).

Enforcement Effort	CFS (hrs)	Overtime(CFS)	LED (hrs)	Total (hrs)
Consent Decree	5,054.6	345.5	140	5,540.1
State Commercial	2,629.2	220	5	2,854.2
Totals	7,683.8	565.5	145	8,394.3

2. Equipment

The MDNR Commercial Fish Enforcement Unit's inventory in 2006 was another area of great change. At the beginning of 2006 the Unit started with five Great Lakes patrol boats; we ended the season with only three. The reason; Boston Whaler; both the 32' Whalers that the Unit used were put out of service this past year. The boat hulls have delaminated allowing large amounts of water to saturate the hull increasing the weight of the vessels by hundreds of pounds and compromising the integrity of the hull. The Whaler, PB25-3, formally ported in Escanaba was never placed into service for 2006. When the boat yard pulled PB25-3 for the end of the 2005 season they noticed the weight being considerably higher than it was when they had launched the boat. Exploratory holes were drilled into the bottom of the hull and those holes drained for thirty days. Whaler PB25-5, stationed in Rogers City was in use through the past year but suffers from the same problems as does PB25-3. In mid year the Unit had permission to replace PB25-5 with a new Sea Ark 37' Dauntless class and the order was placed with a spring 2007 delivery date. There may be a possibility that PB25-5 will have to be put into use one last season; with a port change from Rogers City to Escanaba if that position is to be filled in 2007.

The balance of the boats are assigned to ports in the counties where our commercial fish specialists are stationed (Leland, Charlevoix, and Bay City). In addition to the boats assigned to the CFS section, a number of smaller boats are assigned to officers at shoreline locations throughout the Treaty-Ceded waters. CFS will at times utilize these smaller boats to supplement enforcement efforts or to conduct patrols when their boats are down for repairs. While all boats assigned to Great Lakes ports engage in commercial fisheries enforcement to some degree, the vast majority of on water enforcement is accomplished by the boats assigned to the CFEU.

All Unit boats are 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 VHF Marine radios and cell phones. All unit 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.

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 420Hp Caterpillar diesel engines. Electronics on the vessel, as well as the remaining Unit boats, include Furuno radar, DGPS chart plotter, and color display fishfinder. 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 northern Lake Michigan, Lake Huron from Detour to Sault Ste.Marie, and to Whitefish Bay during two brief visits in the year. The "Smith" is utilized because of its ability to handle rougher seas and to accommodate larger crews while traveling longer distances.

The "Rick Asher" is a 37' Dauntless Class SeaArk powered by twin 440Hp Yanmar diesel engines. The "Asher", assigned to Leland, patrols the waters of North Central and Southern Lake Michigan. A unique feature of the "Asher" is the presence of dual system

inflatable collar around the entire perimeter of the boat. The collar provides a built in protection system for both the boat and personnel and helps to facilitate boardings and on water inspections. The “Asher” is equipped with Raymarine radar, DGPS chart plotter and color display fishfinder.

A 32-foot Boston Whaler (PB-5) was assigned to Rogers City and possibly moving to Escanaba, is equipped as detailed above with the exception of being the only boat in the Unit equipped with a gill net lifter. The new SeaArk replacing the Whaler will have a primary responsibility of patrolling the waters of Northern Lake Huron from the State/Tribal “Disputed Zone” to the Detour/Drummond Island area. The vessel and its captain were instrumental in responding to and addressing a variety of complaints and issues on Northern Lake Huron. 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 was never placed into service for 2006 as stated above. The replacement boat will have the primary responsibility of patrolling the waters of the Bays De Noc, Green Bay, and northern Lake Michigan to Naubinway; as well as the responsibility of monitoring the various fisheries on Lake Superior. Prior to CFS Ken Johnson’s retirement this past year, Ken had to make use of various District boats to cover his assigned area.

The “M.W. Neal” is a 28’ Dauntless Class SeaArk assigned to Bay City in Bay County. The “Neal” is equipped in a fashion similar to the four vessels above but is powered by twin 240 Hp Yanmar diesels with Bravo outdrives. The “Neal’s” primary patrol area extends from Alpena to Saginaw Bay on Lake Huron and has the additional responsibility of monitoring the state licensed commercial fishery on Lake Erie. The “Neal” and her captain also participated in MDNR group patrols in the 1836 Treaty Ceded waters of Northern Lake Huron during the month of June. Sea service hours for CFEU vessels are shown in Table 2 below.

Table 2. 2006 MDNR CFEU vessel service hours. Hours accumulated on non-unit boats are also shown (other vessels).

<i>VESSEL</i>	1836 TREATY-WATERS	STATE FISHERY	1842 TREATY-WATERS	TOTALS
<i>WILLIAM ALDEN SMITH</i>	207	26	N/A	233
<i>PATROL BOAT PB25-5</i>	121.2	N/A	N/A	121.2
<i>PATROL BOAT PB25-3</i>	N/A	N/A	N/A	N/A
<i>M.W. NEAL</i>	N/A	425.4	N/A	425.4
<i>RICK ASHER</i>	277.4	28.4	N/A	305.8
<i>OTHER VESSELS</i>	66	11	10	87
TOTALS	671.6	490.8	10	1172.4

During the 2006 season, the MDNR Commercial Fish Enforcement Unit conducted a total of 220 patrols on board the Unit's assigned vessels. Many planned patrols for this past season had to be cancelled, or the boats sat tied to the docks for days at a time due to the weather. In 2006 we witnessed more "blow" days than any other year that the Unit members could recall. Despite the weather CFEU boats consumed a total of 9,411.5 gallons of fuel. In 2005 we were concerned with the high cost of fuel; in the summer season of 2006 we saw and paid almost \$4.00 a gallon at the marinas for fuel. Even with one boat out of service for the year and fewer patrols, our total fuel cost came within \$1,500 of the total fuel cost for 2005: 2006 fuel costs totaled \$ 30,184.79 (Table 3.).

Table 3. Commercial fish enforcement patrols, fuel consumption and fuel costs.

VESSEL	PATROLS	FUEL (GALS.)	COST (\$)
<i>WILLIAM ALDEN SMITH</i>	40	2,753	\$8,740.73
<i>PATROL BOAT PB25- 5</i>	27	2,243.5	\$7,473.03
<i>PATROL BOAT PB25-3</i>	N/A	N/A	N/A
<i>M.W. NEAL</i>	79	741 ^a	\$1,635.62 ^a
<i>RICK ASHER</i>	58	3,674	\$12,335.41
<i>OTHER VESSELS (est.)</i>	16	40.00	N/A
TOTALS	220	9,451.5 ^a	\$30,184.79 ^a

^a Totals do not include some fuel fills from USCG Stations that did not charge for the fuel or note amount of fuel delivered.

B. Enforcement

1. Complaints

For the past four years Ludington has been the source of most of the Units Net complaints. In June of 2006, GTB fisherman Bill Fowler was contracted by the LRB to pull the remaining nets in the waters off of Ludington, which resulted in a decline from almost 50 complaints to 2 unfounded complaints in 2006.

MDNR commercial fish specialists received approximately 60 complaints (Table 4) related to commercial fisheries activity during the year. The complaints were submitted from a variety of sources. Twenty-one (21) complaints were assigned to CFS through the State's "Report All Poaching" system. Thirty-nine (39) additional complaints were submitted by the public, tribal fishers, tribal law enforcement and other law enforcement personnel and agencies as well as other MDNR personnel.

All complaints were investigated, many proved to be unfounded, and others resulted in a verbal warning, a citation from a CFS, a request for warrants from the appropriate tribal court, the United States Coast Guard, or were referred to the proper tribal law enforcement agency. Again in 2006 an overwhelming majority of complaints, (28) were related to tribal nets in 1836

Treaty-ceded waters. Additional complaints were related to unattended or abandoned nets, (3) were related to Tribal fish tugs that had sunk at the docks or in the marinas and (4) related to license violations onboard tribal boats. No complaints were generated or discovered in the 1842 Treaty waters as our northern patrol boat was out of service and the CFS Officer for the Zone retired in 2006; as mentioned above I hope we can fill that position when staffing levels permit. A breakdown of additional complaints is available in Table 4.

Table 4. 2006 Commercial fish related complaints investigated by MDNR Commercial Fish Specialists.

COMPLAINTS	1836 TREATY FISHERY	STATE LICENSED	1842 TREAT FISHERY	TOTALS
<i>NETS</i>	28	14	N/A	42
<i>LICENSING</i>	4	2	N/A	6
<i>ACCESS</i>	N/A	N/A	N/A	0
<i>WHOLESALE</i>	N/A	5	N/A	5
<i>CLOSED / AREA SEASON</i>	1	N/A	N/A	1
<i>OTHER</i>	3	3	N/A	6
TOTALS	36	24	0	60

The 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.

2. Inspections

A total of 571 inspections were conducted by MDNR Commercial Fish Specialists statewide (Table 5). The number of inspection done for 2006 is down from 2005 as the Unit made a concentrated effort on Michigan’s Bait Industry in the past year. This inspection being

vast in nature and done for the first time took inventory on all of Michigan’s bait dealers, both wholesale and retail along with all licensed catchers of bait. A total of 836 inspections were conducted with the CFEU being responsible for 277 inspections, the Unit asks for assistance from the other 10 Districts Conservation Officers; they conducted 519 additional inspections. As a result 19 arrests were made and 88 warnings were issued for a variety of violations. In addition to the Bait Industry inspections the CFEU conducted 11 inspections of business in the greater Detroit area and Ann Arbor for business suspected of marketing live species of “Asian carp”, specifically bighead, grass carp, silver carp and snakeheads. Two markets were found possessing and selling grass carp. During the inspections 84 live grass carp were seized and both businesses were prosecuted for the offense.

There were 243 inspections of 1836 tribal fishers or their gear in the treaty-ceded waters. This is down from 471 in 2005, being down one boat and a couple officers over the year and a season of “blow days” had a lot of influence on that reduction. Of the 243 inspections, 174 involved inspections of nets, 69 involved inspections of tribal fishing vessels either at the dock or on the water.

Inspections of state licensed wholesale fish dealers decreased from 248 in 2004 to 106 in 2005 and in 2006 at 86; the time involved in the bait industry inspections had a direct impact on these yearly reductions. Wholesale fish dealer record reviews indicated that 54 wholesale fish dealers had failed to report purchases as prescribed by law during the 2005 calendar year. Delinquent wholesalers were sent notices providing them with 30 days to comply with reporting requirements or face potential prosecution.

Table 5. 2006 MDNR CFS commercial fish enforcement inspections.

INSPECTIONS	1836 TREATY FISHERY	STATE LICENSED	1842 TREATY FISHERY	TOTALS
<i>NETS</i>	174	179	7	360
<i>BOARDINGS</i>	23	21	N/A	44
<i>DOCKSIDES</i>	46	35	N/A	81
<i>STATE WHOLESALE</i>	N/A	86	N/A	86
TOTALS	243	321	7	571

3. Violations

Of the (60) complaints investigated in 2006; (57) resulted in some kind of action taken by the Unit Officers. Only (8) citations or warrants requested were submitted to the tribal courts for prosecution. Most of the CORA violations noted by MDNR were handled either by referrals (23), or verbal warnings (18), issued directly to the tribal fisher.

Again as in 2004 and in 2005, most violations of 2006 were related to net marking infractions as regulated in the CORA Code. This tracking history of improper net marking violations gave the Unit the justification to use the marine safety hours toward the protection of Great Lakes boaters.

Along with the net marking violations citations one (1) citation was issued for a license violation onboard a tribal fishing vessel and one (1) citation was issued for fishing a closed grid. It should be noted that in 2006 no citations were issued by MDNR for trap net violations, although many violations were noted by the Unit members. It was discovered that most of the violations were not the direct fault of the fisherman.

The Tribal fishers permitted to fish in the “Disputed Zone” do so under regulations set forth by the State. This past summer a temporary agreement was drawn up in the later part of the summer to allow the tribal fishers some latitude in fishing the zone and wouldn’t be in direct conflict with the sport fisherman in the annual Brown Trout Festival. A more permanent agreement is to be hopefully drawn up in the near future. A standing sound resolution in the Disputed Zone would greatly relieve frustrations for the Wardens and Officers charged with patrolling and regulating the zone.

Table 6. MDNR CFS 2006 summary of commercial fisheries related violations.

VIOLATIONS	1836 TREATY FISHERY	STATE LICENSE	1842 TREATY FISHERY	TOTALS
<i>ARRESTS</i>	8	4	N/A	12
<i>REFERRALS</i>	23	N/A	N/A	23
<i>WARNINGS</i>	18	4	N/A	22
TOTALS	49	8	0	57

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 1 or more tribal law enforcement officers but do not include Law Enforcement Committee (LEC) sponsored group patrols which are summarized below. MDNR CFS conducted numerous joint patrols with tribal law enforcement officers. MDNR CFS, Detectives from our Special Investigations Unit, along with Conservation Officers from District 3 joined Wardens from the Little Traverse Band to work a case of suspected commercial sales from subsistence fishermen in the Rapid River, Escanaba area. At patrol end the main suspect of the investigation had left for California, one subject was issued a citation into State courts as he was non-native American fishing with tribal fisherman. This patrol gave the CFS Officers the opportunity to spend many hours behind the steering wheel of undercover vehicles and not the wheels of the patrol boats.

In 2006 there were nine entries in the log book of the William A. Smith showing it was crewed with CFS Casto and Wardens from LTB. GTB Warden Chambers crewed the Asher with CFS Steve Huff. With the nets finally removed from the Ludington area we had little opportunity to patrol those waters with Wardens from LRB.

5. Group Patrols

The Decree requires the LEC to schedule a minimum of eight group patrols during the year [Section XVII (B) (f) (1)]. This past year eleven (11) separate group patrols were set up, the dates were selected at three (3) different LEC meetings. As with every year weather is always a major factor with hopes that it will be favorable for those patrols to take place. The MDNR Commercial Fish Enforcement Unit participated in (8) of the (11) pre-set group patrols; of those eleven only ten (10) actually took place as planned.

Of the group patrols, the patrol set for Rockport (Hammond Bay to Rockport) scheduled for late April did not go as a result of weather. The patrol set for Lake Superior (Whitefish Bay) was the first patrol of the schedule that the Unit did not take part in, our Northern boat was out of service and it was too short of a schedule to send one of our other vessels. The only other patrol the MDNR did not participate in was the October patrol set for Big Bay de Noc; the weather predictions for the week was not favorable for taking the boat from Leland to Big Bay and return

safely. I am going to repeat Lt. Dan Hopkins desire that all participating members must observe the established protocol to ensure that group efforts are effectively and efficiently conducted and to ensure that an adequate record of accomplishments is kept, we the MDNR are not without blame. The LEC must re-commit itself to ensure the following:

- 1) Adequate notification of group patrol details by lead agency.
- 2) Participating agencies must provide the lead agency with copies of inspection forms that are to be utilized during the joint effort.
- 3) The lead agency/officer must complete and submit a group patrol summary report to the LEC for review.
- 4) The LEC must place more significance on the review of these reports to ensure that objectives are being met.

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.

On June 25th members of the Commercial Fish Enforcement Unit along with detectives from our Special Investigations Unit, District 5 Conservation Officers and Officers from District 3 participated in a MDNR patrol organized and instituted by Sgt. James Gorno from District 5. All together (13) Officers were part of the patrol charged with inventory and plotting all nets in Northern Lake Michigan, patrolling the North Lake Michigan Lake Trout Preserve, and contact with local sport fisherman from around the islands Archipelago. From that patrol a number of nets were inventoried, several fish tugs were boarded and inspected from both Beaver Islands' port of St. James Bay, and from the port in Naubinway. One gill net stretching two miles long was located just outside the northwest boundary of the Lake Trout Preserve.

The second MDNR patrol was unique in natural, the Unit was ask to assist District 6 Officers and Officers from District 5 in the protection of a zone for the United States Navy Blue Angels Air Show. Four CFS Officers shared various days and duties onboard the Rick Asher to protect the zone; without a clear zone the Navy Blue Angels won't fly; we all enjoyed a front row seat

for four days to a great air show. The Northwestern Michigan College Maritime Academy was our host for docking and for the staging of the Asher for the duration of the air show.

Just after the air show the Asher traveled south to the Port of Saugatuck to assist District 12 Officers with a questionable underwater buoy five miles out into Lake Michigan. The local District 12 Officers suspected a net, but once on scene with the Asher and the equipment onboard along with underwater cameras we discovered an uncharted ship wreck, it was marked by divers.

PB25-5 with CFD Morey at the wheel took numerous patrols into the Disputed Zone with Officers from District 5 and MDNR Fisheries Biologists; each patrol located and inventoried many nets both inside and outside of the zone.

In 2006 the Unit placed its focus on the State opener and the State licensed fisherman which was set for December 1st: the entire Unit met in Escanaba to work ports from the Garden to Menominee. Several interviews were conducted of the license holders based on information that we had received earlier in the closure. This information gained from previous investigations proved to be only partly factual; and after inspections of the fishing gear, ports and the interviews two verbal warnings were issued.

7. Law Enforcement, Looking To 2007

A presentation that has been in the planning and discussion for the last two years, “The history and background of the Tribes of the Treaty of Washington”, I would like to see that presentation take place in 2007. We are again in the State of Michigan at the doorstep of making history, a history that will take us and our natural resources into a future of our generations. Understanding can be a step into that doorway. Subsistence fishing is one area of resource harvest that I would like the Unit CFS Officers and hopefully joined by Tribal Wardens to concentrate some future enforcement effort. After the case worked this past spring in Escanaba (mentioned above) by the MDNR along with Wardens from the LTB, it presented an area that we have over looked. As we learned some subsistence fishers work as hard at fishing as their commercial counterparts. A greater effort to work Lake Superior will be a goal of the Unit for 2007. In preparing this report I noticed how little effort could be expended on our largest lake. It will require extra planning for as it stands we have neither a boat nor a CFS Enforcement Officer to cover that Lake.

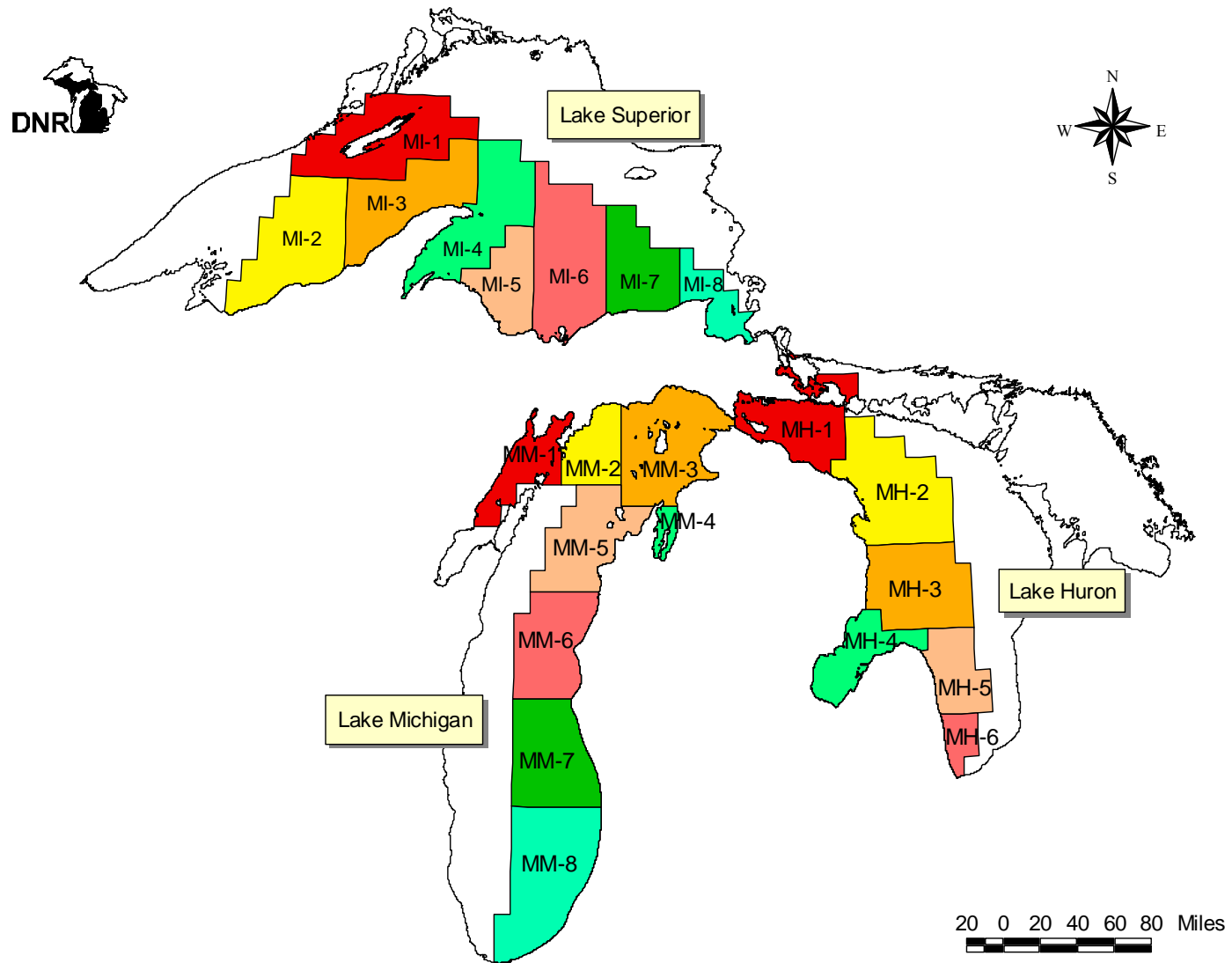


Figure 1. Lake trout management units for Lakes Superior, Michigan and Huron.

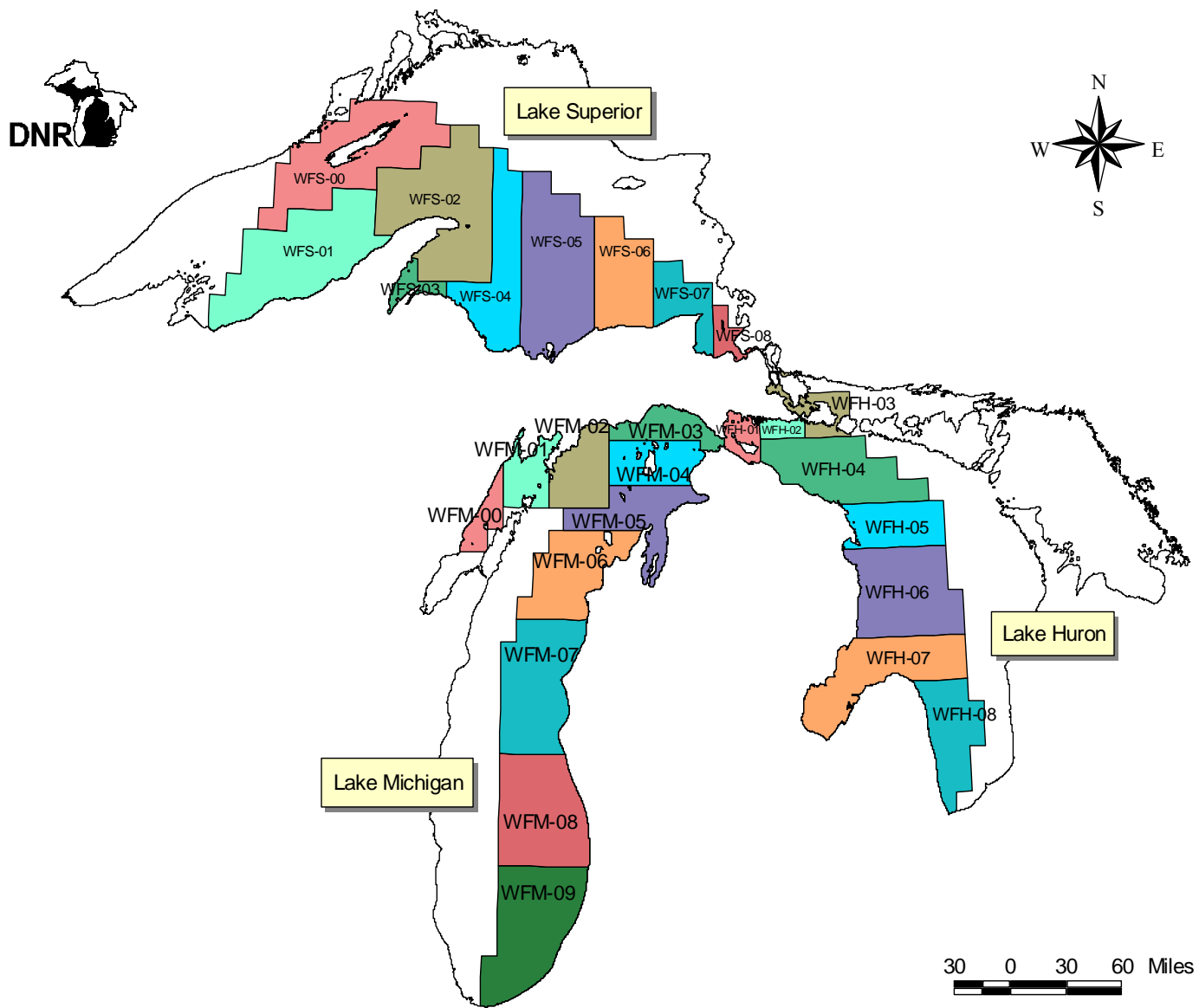


Figure 2. Lake whitefish management units for Lakes Superior, Michigan and Huron.

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.

Appendix 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.

47% SSBR = 0.11

Extended phase-in of allocation percentages at 47% TAM from 2006 through 2011. Rehabilitation period at 45% TAM from 2012 through 2020.

45% SSBR = 0.13

Starting in 2002, stock 0.6 per acre of federal yearlings plus 100,000 MDNR yearlings. No change in Canadian commercial effort.

Year	Commercial (Tribal)				Recreational (State)							Lake trout population	
	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

Year	Commercial (Tribal)				Recreational (State)							Lake trout population	
	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

Year	Commercial (Tribal)				Recreational (State)							Lake trout population	
	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

Year	Commercial (Tribal)				Recreational (State)							Lake trout population	
	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

Year	Commercial (Tribal)				Recreational (State)							Lake trout population	
	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

Year	Commercial (Tribal)				Recreational (State)							Lake trout population	
	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

Year	Commercial (Tribal)				Recreational (State)							Lake trout population	
	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

Year	Commercial (Tribal)				Recreational (State)							Lake trout population	
	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 commercial effort and sport effort increases by 20%.

45% SSBR = 0.20

2006 SSBR = 0.53

2020 SSBR = 0.53

Year	Commercial (Tribal)				Recreational (State)							Lake trout population	
	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.

Year and TAM used ¹	Whitefish management unit								State share		
	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 10%	WFM-06 or 65 K 30%	WFM-08 or 500 K 22.5% or
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.

Year and TAM used ¹	Whitefish management unit					State share	
	WFS-04	WFS-05	WFS-06	WFS-07	WFS-08	WFS-04	WFS-05
	55%	45%	37%	50%	65%	25K or 10%	130K or 16%
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 is 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.

Year and TAM used ¹	Whitefish management unit					
	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