2008 Annual Report on Implementation of the 2000 Consent Decree for 1836 Treaty-Ceded Waters of the Great Lakes

Prepared for:

Michigan United Conservation Clubs, Inc.

Michigan Fisheries Resource Conservation Coalition

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By:
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May 2009

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Preface

This report provides detailed information regarding the implementation of the 2000 Consent Decree in the 1836 Treaty-ceded waters of the Great Lakes during 2008, as required by the September 27, 2001 Memorandum of Understanding between the State of Michigan, Department of Natural Resources (MDNR) and the Michigan United Conservation Clubs, Inc., Michigan Fisheries Resource Conservation Coalition, and Bay de Noc Great Lakes Sportfishermen, Inc.

FISHERIES

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 has been 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 2008 tribal large-mesh gill-net effort in Lakes Michigan and Huron was approximately 23.9 million feet less than the 1993-1998 average (Table 1). For all three lakes, approximately 29.1 million feet less effort was fished in 2008 compared to the 1993-1998 average.

Table 1. Amount of large-mesh gill-net effort (1,000s ft) in the 1836 Treaty-ceded waters of the Great Lakes during base years 1993 to 1998 and preliminary effort in 2008.

Lake	Management Unit	Effort		2008 reduction[b]
		1993-98[a]	2008	
Michigan	MM-123	17,912	5,911	12,001
	MM-4	1,794	451	1,343
	MM-5	240	0	240
Huron	MH-1	16,470	6,190	10,280
	MH-2	6	0	6
Superior	MI-6	780	555	225
	MI-7	2,028	1,041	987
	MI-8	6,578	2,569	4,009
Totals		45,808	16,717	29,091

[a] Average annual effort during base years.
[b] The relative reduction in 2008 (average effort in base years minus effort in current year).

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, with recommended yield and effort levels" (referred to as the Status of the Stocks Report). The publication of this report has been delayed due to workloads and staff transition at the United States Fish and Wildlife Service. The 2007 Status of the Stocks Report was published on April 21, 2009, the 2008 Status of the Stocks Report will be published in July 2009, and the 2009 Status of the Stocks Report will be published by the end of 2009. Copies of these reports are and will be available on the MDNR's Tribal Coordination Unit website: **http://www.michigan.gov/dnr/0,1607,7-153-10364_52259_44983---,00.html**. They document the status of lake trout and lake whitefish stocks at the time harvest limits were developed for each year and describe the parameters used in the modeling efforts.

Statistical catch-at-age analylsis (SCAA) is the modeling process used to describe populations of lake trout and lake whitefish and to set harvest limits. The modeling process begins by estimating parameters that describe each of the lake trout and lake whitefish stocks over time. Models are developed for the stocks in each defined Management Unit 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 stock biomass, set forth in the Consent Decree. Finally, for some units and when time permits, modelers run long-term projections under potential management scenarios to evaluate each stock.

All fish populations are regulated by three forces or dynamic rate functions, which are 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 the fact 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, and predation. Natural mortality is estimated from an equation that relates the growth parameters of lake trout and lake whitefish to water temperature. 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 initial period of 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 lake 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 next 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. To date, investigations into various projection scenarios have been limited due to time constraints of the modelers. Changing recreational length limits can also affect State TAC's and is the primary strategy for changing harvest levels to ensure both adequate spawning stock biomass of fish and that harvest is within the allocated amount. Modelers can project harvest and population effects under varying recreational size limits, as

necessary. A more extensive description of the entire modeling process is contained in the *Stock Assessment Models* section of the Status of the Stocks Reports.

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 MSC calculates annual harvest and effort limits for lake trout and provides these recommendations to the TFC. After reviewing the recommendations, the TFC approves the harvest and effort limits and submits them to the Parties for final approval by April 30 of each year. In recent years the Parties have not been able to approve harvest limits in MM-4 and MM-5. Stipulations for these units are still being negotiated and harvest limits were not set for these units in 2008. A map of the lake trout Management Units is provided (Figure 1), as are the 2008 lake trout harvest and effort limits for each Management Unit (Table 2).

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 2008, there were four fully-phased Management Units where the model recommendations represented a change of greater than 15% of the 2007 harvest limits; MI-5, MI-7, MM-67, and MH-2. The TFC invoked the 15% rule in each of these units keeping the 2008 TAC within 15% of the 2007 TAC. In MI-5, MI-7, and MH-2, the model recommendation

was lower than the 2007 levels, but in MM-67 the model recommendation was higher than the 2007 level.

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 2008 fishing season.

		Model-output TACs		Final TACs		
Lake	Unit	State	Tribal	State	Tribal TAC	Tribal TAE
Michigan	MM-123[a]	790	7,110	50,000	453,000	9,360,000
	MM-4[b]	32,140	48,210	32,140	48,210	490,380
	MM-5[b]	81,300	53,800	81,300	53,800	742,139
	MM-67[d]	510,866	56,762	274,729	30,510	NA
Huron	MH-1[c]	26,379	266,721	20,000	210,000	6,309,000
	MH-2[d]	44,000	2,000	81,495	4,299	NA
Superior	MI-5[d]	121,000	5,400	142,970	6,375	NA
	MI-6	52,000	52,000	52,000	52,000	4,340,000
	MI-7[d]	30,200	70,500	39,355	91,800	5,008,352

[a] Final TAC resulted from an order to amend the Consent Decree (dated 4-4-07)
[b] No consensus on harvest limit, stipulations under negotiation
[c] Per October 2007 Executive Council agreement
[d] TFC invoked the 15% rule, limiting the TAC to a 15% deviation from the 2007 harvest limit.

B. Lake Whitefish

As required by the Consent Decree, the MSC 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 MSC also generates recommendations for HRGs that are considered by each Tribe. After reviewing and discussing recommended harvest limits for lake whitefish, the TFC submits these harvest limits to the Parties for final approval 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 in December 2007. A map of lake whitefish Management Units is provided (Figure 2), as are the 2008 lake whitefish harvest limits for each Management Unit (Table 3).

The MSC 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 has historically been set at 306,000 lb., but due to concerns over potentially declining stocks, the 2008 HRG was set at 150,000 lb. The HRG in WFM-07 has not changed since 2004. In that year, the HRG was set at 500,000 lb., which represented the approximate average of the model-generated harvest limits from adjacent units WFM-06 and WFM-08, and no changes have been made since. In unit WFS-06 a lack of commercial catch sampling resulted in poor model performance; thus, the 2008 HRG was again set at 210,000 lbs, the same level it has been since 2004. Additionally, as a result of low model quality in WFM-02 the 2008 HRGs was set at peak historical harvest, which is lower than the model output. Despite a high model rating, the HRG in WFH-01 was set equal to a three year average harvest, which was higher than the model output. The Tribes accepted model-generated recommendations for HRGs in all other units.

Table 3. Model estimates for total allowable catch (TAC; pounds) or harvest regulation guideline (HRG; pounds) for lake whitefish by Management Unit in 1836 Treaty-ceded waters of the Great Lakes for the 2008 fishing season.

Lake	Unit	Final State TAC	Model output Tribal TAC	Final Tribal TAC or HRG
Michigan	WFM-01	200,000	2,061,000	2,061,000
	WFM-02	0	921,000	558,000
	WFM-03	0	2,551,000	2,551,000
	WFM-04	0	945,000	945,000
	WFM-05	0	342,000	342,000
	WFM-06	60,000	141,000	141,000
	WFM-07[a]	0	-	500,000
	WFM-08	500,000	835,000	835,000
Huron	WFH-01	0	235,000	384,000
	WFH-02	0	432,000	432,000
	WFH-03[a]	0	-	150,000
	WFH-04	0	546,000	546,000
	WFH-05	0	883,000	883,000
Superior	WFS-04	9,000	83,000	83,000
	WFS-05	73,000	386,000	386,000
	WFS-06[a]	0	-	210,000
	WFS-07	0	535,000	535,000
	WFS-08	0	195,000	195,000

[a] No model output

III. Harvest and Effort Reporting

A. State-licensed commercial and recreational fishing

1. Lake Trout

Lake trout harvest by the State of Michigan consists almost entirely of harvest by sport anglers. Lake trout harvest by State-licensed recreational fishers in 2008 was below harvest limits in all Management Units. 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 no lake trout regulation changes for the State recreational fishery between 2007 and 2008.

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. The Consent Decree does not require harvest limits to be set for these species.

Table 4. Total effort, number, and weight (pounds) of estimated State-licensed recreational harvest for both creel and charter anglers, by Management Unit in 1836 Treaty-ceded waters of the Great Lakes for the 2008 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	213,788	248	1302	11,621	23,126	26,185	9,950	43	472	1	5
	MM-2	36,947	14	72	385	765	0	0	4,910	53,913	52	253
	MM-3	66,737	1,674	14,712	0	0	27	10	6,597	72,440	25	125
	MM-4	120,297	4,697	19,241	1	2	9,645	3,665	6,112	67,604	5	25
	MM-5	155,548	3,155	13,704	0	0	0	0	45,988	453,901	2,690	13,182
	MM-6	431,774	4,507	22,355	27	147	23,967	9,107	70,201	735,704	2,922	16,366
	MM-7	396,995	3,702	20,066	6	34	120,836	45,918	54,684	573,090	3,536	20,648
Totals		1,422,086	17,997	91,452	12,040	24,074	180,660	68,650	188,535	1,957,124	9,231	50,604
Huron	MH-1	353,073	3,515	19,529	9,599	34,173	157,841	59,980	7,313	63,328	74	350
	MH-2	59,153	3,346	19,976	1,655	5,892	416	158	2,200	15,752	310	1,040
Totals		412,226	6,861	39,505	11,254	40,065	158,257	60,138	9,513	79,080	384	1,390
Superior	MI-5[c]	37,954	6,374	24,922	0	0	0	0	303	919	1,495	1,958
	MI-6	42,297	3,722	14,628	0	0	146	67	584	2,261	1,858	3,642
	MI-7	13,843	881	4,615	0	0	0	0	0	0	289	580
Totals		94,094	10,977	44,165	0	0	146	67	887	3,180	3,642	6,180
Grand totals		1,928,406	35,835	175,122	23,294	64,139	339,063	128,855	198,935	2,039,384	13,257	58,174

[a] Lake Superior lake trout number and weight do not include Siscowets; number of Siscowet harvested were estimated at 41, 349, and 1,030 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

Lake 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 pounds for 2008.

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 20,126 pounds in 2008. 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 732, 3,842, and 7,649 pounds, respectively. The State does not estimate targeted recreational effort for lake whitefish in these Units.

Table 5. Summary of State-licensed commercial lake whitefish harvest (pounds) and effort (trap-net lifts) by lake whitefish Management Unit in 1836 Treaty-ceded waters of the Great Lakes for the 2006 fishing season.

Lake	Unit	Harvest	Effort
Michigan	WFM-01	182,100	123
	WFM-06	0	0
	WFM-08	195,726	446
Lake totals		377,826	569
Superior	WFS-04	23,575	148
	WFS-05	29,886	168
Lake totals		53,461	316
Grand totals		431,287	885

B. Tribal commercial and subsistence fishing

Data in this section are as reported to the MDNR from the Chippewa Ottawa Resource Authority (CORA). At the time this report was completed, CORA had not finalized harvest data for 2008; thus, all reported numbers are considered preliminary. It is unclear how much these preliminary numbers will change when they are made final, though the differences should be minor in most Management Units.

1. Lake trout

Lake trout harvest by tribal commercial fishers was below established harvest limits in all Management Units in 2008. Harvest was above the model recommended limit in MM-4, but the Parties did not approve a harvest limit in this Unit, so a penalty will not apply. 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 throwback mortality from trap and gill nets in MH-1 where special interim regulations apply. As a result of the October 2007 Executive Council agreement, it is stipulated that in 2007, 2008 and 2009, the estimated pounds of trap and gill-net throwback lake trout killed do not count against the Tribal 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 2008 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	10,604	222,577	233,181
	MM-4	11,160	65,645	76,805
	MM-5	300	0	300
	MM-6,7	12,940	4,441	17,381
Lake total		35,004	292,663	327,667
Huron	MH-1	5,293	187,923	193,216
	MH-2	0	0	0
Lake total		5,293	187,923	193,216
Superior	MI-5	0	0	0
	MI-6	0	2,519	2,519
	MI-7	0	27,953	27,953
	MI-8	7,688	60,339	68,027
Lake total		7,688	90,811	98,499
Grand total		47,985	571,397	619,382

2. Lake Whitefish

Lake whitefish harvest by Tribal commercial fishers was below the approved harvest limits and HRGs in all Management Units. 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 lake 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.

		Trap nets		Gill nets		Total
Lake	Unit	Harvest	Effort	Harvest	Effort	harvest
Michigan	WFM-01	825,871	1,699	0	0	825,871
	WFM-02	77,519	102	312,406	2,863	389,925
	WFM-03	438,440	1,268	80,767	962	519,207
	WFM-04	103,130	266	52,644	837	155,774
	WFM-05	74,981	320	67,026	1,417	142,007
	WFM-06	90	3	0	0	90
	WFM-07	293,540	547	236	0	293,776
	WFM-08	22,525	38	0	0	22,525
Lake totals		1,836,096	4,243	513,079	6,079	2,349,175
Huron	WFH-01	176,943	967	157,429	1,820	334,372
	WFH-02	171,655	675	13,031	523	184,686
	WFH-03	5,950	21	667	50	6,617
	WFH-04	194,727	439	136,031	2,078	330,758
	WFH-05	432,736	718	0	0	432,736
Lake totals		982,011	2,820	307,158	4,471	1,289,169
Superior	WFS-04	0	0	0	0	0
	WFS-05	0	0	18,792	554	18,792
	WFS-06	0	0	17,068	478	17,068
	WFS-07	68,237	179	157,539	2,638	225,776
	WFS-08	38,136	175	18,997	388	57,133
Lake totals		106,373	354	212,396	4,058	318,769
Grand totals		2,924,480	7,417	1,032,633	14,608	3,957,113

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. 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. The largest reported walleye harvest in 2008 occurred in Lake Michigan Management Unit MM-3 (19,396 pounds); however, we are unaware of the accuracy of that report. MDNR Law Enforcement personnel discovered tribal subsistence fishers harvesting walleye from Bay de Noc (MM-1) and selling these fish to a wholesaler (prohibited by section XV.C. of the Consent Decree). Some of these fish were being reported as harvested by a commercial fisher in MM-3. The amount of illegal subsistence harvest in 2008 was 21,447 pounds. The case is still pending.

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 2008 fishing season.

		Trap nets		Gill nets		Total
Lake	Unit	Harvest	Effort	Harvest	Effort	harvest
Michigan	MM-1,2,3	847	0	19,631[a]	57	20,478
	MM-4	614	0	2,046	12	2,660
Lake totals		1,461	0	21,677	69	23,138
Huron	MH-1	665	2	30,191	436	30,856
Superior	MI-8	86	0	1,600	13	1,686
Grand totals		2,212	2	53,468	518	55,680

[a]The accuracy of this number is not known, see text above.

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 2008 was in Grand Traverse Bay, Unit MM-4, where harvest was 3,242 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 2008 fishing season.

		Trap nets		Gill nets		Total
Lake		Harvest	Effort	Harvest	Effort	Harvest
Michigan	MM-1,2,3	14	0	2	0	16
	MM-4	0	0	3,242	95	3,242
	MM-5	0	0	0	0	0
Lake totals		14	0	3,244	95	3,258
Huron	MH-1	0	0	426	0	426
Superior	MI-6	0	0	27	6	27
	MI-8	0	0	6	0	6
Lake totals		0	0	33	6	33
Grand totals		14	0	3,703	95	3,717

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. There is no target fishery for salmon in Lake Superior, but fishers are allowed to harvest these species as incidental catch. Fishing is restricted by season, gear, depth, and area, though no harvest limits are set. The largest Chinook salmon harvest in 2008 occurred in Lake Huron unit MH-1 (132,101 pounds; Table 10). Coho salmon were only 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 2008 fishing season.

		Trap nets		Gill nets		Total
Lake		Harvest	Effort	Harvest	Effort	harvest
Michigan	MM-1,2,3	829	0	1,289	0	2,118
	MM-4	0	0	2,335	0	2,335
Lake totals		829	0	3,624	0	4,453
Huron	MH-1	68	0	132,033	1,203	132,101
Superior	MI-8	49	0	0	0	49
Grand totals		946	0	135,657	1,203	136,603

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 2008 fishing season.

		Trap nets		Gill nets		Total
Lake		Harvest	Effort	Harvest	Effort	harvest
Superior	MI-7	0	0	108	0	108
	MI-8	109	0	1,925	0	2,034
Lake totals		109	0	2,033	0	2,142

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 from their respective Tribe, and must abide by provisions of the Tribal Code. Additionally, subsistence fishing with gill or trap net requires a Tribal permit that may be limited in duration and by area. The MDNR is to be provided with copies of all subsistence permits. The Consent Decree states that data from the subsistence harvest reports of Tribal fishers shall be compiled by CORA and provided to the Parties within six (6) months. Preliminary subsistence harvest and effort for 2008 is included below (Table 12). These values are as reported by subsistence fishers.

Table 12. Summary of preliminary Tribal subsistence harvest (round pounds) for each Management Unit by species and gear, including gill-net effort (feet of net lifted) for the 2008 fishing season.

Gear	Statistical District	Atlantic Salmon	Bass	Burbot	Bullhead	Bluegill	Brown trout	Catfish	Carp	Freshwater drum	Gizzard shad	Lake herring	Lake trout
Gill Net	MH-1	-	8	-	-	-	-	75	30	-	-	-	102
	MI-6	-	-	-	-	-	25	-	-	-	-	4	34
	MI-7	-	-	-	-	-	-	-	-	-	-	-	-
	MI-8	-	2	39	-	-	7	-	-	-	-	243	287
	MM-1	-	87	310	2	-	3	-	215	-	1	1	4
	MM-2	-	-	-	-	-	-	-	50	-	36	-	422
	MM-3	-	8	-	-	-	-	-	140	9	-	-	4
	MM-5	-	-	-	-	-	2	-	-	-	-	1	15
	MM-6	-	-	-	-	-	-	-	-	-	-	-	20
	MM-7	-	-	-	-	-	6	-	-	-	-	-	49
	St. Marys River	-	1	21	-	-	-	-	-	-	-	335	-
	Gill net total	-	106	370	2	-	43	75	435	9	37	584	935
Dip Net	MH-1	-	-	-	-	-	-	-	-	-	-	-	-
Snag	St. Marys River	193	-	-	-	-	-	-	-	-	-	-	-
Spear	MI-6	-	-	-	-	-	-	-	-	-	-	4	-
	MI-8	-	-	-	-	-	-	-	-	-	-	-	-
	St. Marys River	-	2	-	-	-	-	-	-	-	-	-	-
	Spear total	-	2	-	-	-	-	-	-	-	-	4	-
Tip-up	MH-1	-	-	-	-	-	-	-	-	-	-	-	-
	MI-7	-	-	-	-	-	-	-	-	-	-	-	-
	MM-1	-	-	-	-	-	-	-	-	-	-	-	-
	St. Marys River	-	-	-	-	-	-	-	-	-	-	-	-
	Tip-up total	-	-	-	-	-	-	-	-	-	-	-	-

Table 12 continued.

Gear	Statistical District	Menominee	Northern pike	Pink salmon	Rainbow trout	Rock bass	Salmon	Smelt	Splake	Steelhead	Suckers	Walleye	Yellow perch	Whitefish	Total Gill-Net Effort
Gill Net	MH-1	5	-	-	-	-	-	-	-	-	49	62	-	623	8,700
	MI-6	1	12	-	90	-	140	-	13	36	92	16	-	91	3,660
	MI-7	16	-	-	-	-	323	-	-	47	-	-	-	50	1,200
	MI-8	187	15	23	44	-	710	585	-	34	308	108	-	1,379	40,601
	MM-1	-	408	-	50	19	12	-	-	10	589	3,597	306	1,028	26,470
	MM-2	-	15	-	239	-	-	4	-	125	246	255	-	22	5,600
	MM-3	72	6	-	85	-	47	-	-	47	-	10	-	810	7,178
	MM-5	-	3	-	-	-	-	-	-	-	-	-	-	-	275
	MM-6	11	-	-	-	-	-	-	-	-	-	-	-	3	510
	MM-7	-	6	-	-	-	20	-	-	118	-	2	-	-	900
	St. Marys River	45	30	-	-	-	120	-	-	35	38	143	7	187	18,050
	Gill net total	337	494	23	508	19	1,372	589	13	453	1,321	4,192	313	4,193	113,144
Dip Net	MH-1	-	-	-	-	-	-	20	-	-	-	-	-	-	
Snag	St. Marys River	-	-	156	-	-	59	-	-	-	-	-	-	-	
Spear	MI-6	-	-	-	-	-	6	-	-	-	-	-	-	-	
	MI-8	8	-	-	-	-	-	-	-	-	-	84	-	-	
	St. Marys River	-	-	-	-	-	-	-	-	-	-	53	-	-	
	Spear total	8	-	-	-	-	6	-	-	-	-	137	-	-	
Tip-up	MH-1	-	-	-	-	-	-	-	-	-	-	-	24	-	
	MI-7	-	-	-	-	-	-	-	-	-	-	2	-	-	
	MM-1	-	-	-	-	-	-	-	-	-	-	19	-	-	
	St. Marys River	-	-	-	-	-	-	-	-	-	-	2	68	-	
	Tip-up total	-	-	-	-	-	-	-	-	-	-	23	92	-	

Table 12 continued.

Gear	Statistical District	Atlantic Salmon	Bass	Bullhead	Bluegill	Brown trout	Catfish	Freshwater drum	Lake herring	Lake trout	Menominee	Northern pike
Hook & Line	MH-1	-	6	-	1	-	-	-	188	52	13	69
	MI-6	-	-	-	-	-	-	-	-	-	-	-
	MI-7	-	-	-	-	-	-	-	-	-	-	-
	MI-8	-	-	-	-	-	-	-	17	-	5	9
	MM-1	-	39	-	-	-	-	3	-	-	-	-
	MM-2	-	-	-	-	-	-	-	-	-	-	-
	MM-3	-	117	-	-	-	-	-	-	10	68	16
	MM-4	-	-	-	-	-	-	-	-	120	-	-
	MM-7	-	-	-	-	38	-	-	-	168	-	-
	St. Marys River	30	24	12	-	-	14	-	-	5	-	245
	Hook & line total	30	186	12	1	38	14	3	205	354	86	339

Gear	Statistical District	Pink salmon	Rainbow trout	Rock bass	Salmon	Smelt	Splake	Steelhead	Suckers	Walleye	Whitefish	Yellow perch
Hook & Line	MH-1	-	-	2	29	6	146	-	-	4	-	955
	MI-6	-	-	-	22	-	-	-	-	-	-	-
	MI-7	-	-	-	-	-	-	-	-	-	211	-
	MI-8	-	4	-	60	-	-	-	-	74	63	420
	MM-1	-	6	-	161	-	-	-	-	35	-	5
	MM-2	-	-	-	82	-	-	7	-	-	-	-
	MM-3	-	-	-	228	-	-	8	-	-	-	25
	MM-4	-	-	-	60	-	-	8	-	-	-	-
	MM-7	-	-	-	1,283	-	-	513	-	-	-	22
	St. Marys River	38	15	-	78	-	-	-	162	782	201	619
	Hook & line total	38	25	2	2,002	6	146	536	162	895	475	2,045

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LAW ENFORCEMENT

I. Introduction

The Consent Decree established 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 2008. Information is also provided in the tables regarding other commercial fisheries enforcement activities that the MDNR has performed in the year 2008.

A. General Information

1. Staffing

The Consent Decree requires that the State maintain adequate staffing and equipment to allow for implementation of enforcement activities, and monitor commercial fishing activity on the Great Lakes. In July 2008 the Commercial Fish Enforcement Unit (Unit) was able to promote two Conservation Officers (CO) to Commercial Fish Specialists (CFS) and these individuals were placed at needed ports. CO Terry Short was promoted from his position as Conservation Officer serving in Menominee County to CFS assigned to Northern Lake Michigan and Lake Superior. He has taken over the controls of the William Alden Smith, the Unit's forty foot SeaArk patrol vessel and he has ported the Smith in the State Harbor dock at Cedar River. CO Craig Milkowski was promoted from his position as Conservation Officer serving in Presque Isle County to CFS and assigned to assist CFS John Morey out of the Port of Rogers City on board the Unit's newest vessel the H. Ransom Hill.

At present time the Unit is manned by (5) Commercial Fish Boat Captains, (1) Commercial Fish Investigator (CFI) and one Supervisor, leaving only two vacant positions, one in Leland and the other in Charlevoix. CFI Shannon Van Patten assisted onboard the vessels again in 2008; she has been an assisting crew member on board the W.A. Smith with CFS Terry Short. In keeping with past boat crew manning procedures, the Unit once again for 2008 had

CFS Larry Desloover come up from his responsibilities with the State-licensed commercial fishermen in Saginaw Bay to board patrol vessels for the eight CORA Group Patrols that were conducted in the 1836 Treaty of Washington waters. He also assisted his northern CFS partners on several Unit and Joint patrols and marine events.

As in past years the Unit often relies on Conservation Officers from the Districts to assist on Unit patrol vessels during net inventories, boarding of commercial fish tugs and conducting patrols. The Unit also relies on the Districts smaller boats to assist with some patrols. As a "pay-back" the Unit's larger patrol vessels assist District Conservation Officers with busy on the water special events and festivals.

The State of Michigan and the Department of Natural Resources have been going through a budget reduction, as indicated by the amount of overtime hours allocated to the CFS Officers. In 2006, 565.5 overtime hours were used. In 2007, total overtime was reduced to 112 hours, a reduction of 453.5 hours. Again in 2008 the total overtime hours were reduced to a total of only 18 hours; this is a reduction of 547.5 hours of overtime from just two years ago.

Table 13. 2008 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 (Complete at the time of report).

Enforcement Effort	CFS (hrs)	Overtime(CFS)	LED (hrs)	Total (hrs)
Consent Decree	4,123.4[a]	14	232.6[b]	4,370.
State Commercial	1,733.5[a]	4	43.7	1,781.2
Totals	5,856.9[a]	18	276.3[b]	6,151.2

[a]Hours also reflect 50% of the CFS assigned marine time as they used the time for net inspections and safety checks

[b]Hours reflect the Unit getting more help from the District Conservation Officers.

2. Equipment:

For the 2008 season all of the SeaArk Dauntless Class vessels were put to use. Also for this past season the William Alden Smith was pulled from "dry dock" and placed back into service out of the port at Cedar River with CFS Terry Short assigned to the vessel. The boat needed some maintainance, and required costly repairs when it first came out on a patrol of the Beaver Island Chain. Problems with the fuel system kept the boat at the dock on Beaver Island and the cost of repair was inflated due to the fact that all of the parts had to be flown into the Island.

This year more than any other in the Units past history has the saying "Boats are holes in the water that you throw money into" been such a true statement. The above mentioned repairs on the Smith were only the start on that vessel for the season; additional repairs were required on both of the boats propeller shafts, the restarts on the fire systems, and the port side rudder along with numerous other upkeep items. During the last CORA Group patrol the Rick Asher just after its 1000 hour refit blew the starboard engine, repairs that would of cost the State over $50,000, but Yanmar, the engine manufacturer, stepped up to cover the job under a factory warranty even though the warranty expired two years ago. Additionally, they sent a new head for replacement on the port engine. The H. Ransom Hill, despite being the newest boat in the fleet, required all the ball valves on the heating and defrosting system to be replaced, and the M.W. Neal was sent in for its 2500 hour refit. For the 2009 season all boats should be up and running and hopefully we have filled that hole in the water for a few years to come.

For the 2009 season it will be the focus and goal of the Commercial Fish Enforcement Unit to replace some of the aging electronic equipment on the William Alden Smith, and to add upgrades and nighttime marine detection equipment to the other Unit patrol vessels through Homeland Security Grants thus increasing the effectiveness of the vessels to perform more efficiently and to conduct some Homeland Security Patrols.

Table 14. 2008 MDNR Commercial Fish Enforcement Unit vessel service hours; hours accumulated on non-unit boats are also shown (other vessels).

VESSEL	1836 TREATY-WATERS	STATE FISHERY	1842 TREATY-WATERS	TOTALS
WILLIAM ALDEN SMITH	116.1	8.0	N/A	124.1
RANSOM HILL	131.0	6.0	N/A	137.0
SHAFFER	18.0	N/A	N/A	18.0
M.W. NEAL	N/A	324.4	N/A	324.4
RICK ASHER	161.8	9.0	N/A	170.8
*OTHER VESSELS**	162	10	13	185
TOTALS	588.9	357.4	13	959.3

* The hours accumulated on non-unit vessels (185) are estimates from patrol logs.

During the 2008 season, the MDNR Commercial Fish Enforcement Unit conducted a total of 155 patrols on board the Unit's assigned vessels and also utilized local District patrol boats when it was more productive instead of moving one of the Units vessels a great distance for an inspection. The Unit's boats consumed a total of 7,310.4 gallons of fuel that was up 2,728.2 gallons from 2007. In 2008 total fuel expenditures were $32,355.49, that cost was $2,370.00 more than what was spent on fuel for both 2006 and 2007 combined. This is also reflective of the high fuel prices that we had to pay at the marina pumps (just over $4.00 a gallon) for 2008.

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

VESSEL	PATROLS	FUEL (GALS.)	COST ($)
WILLIAM ALDEN SMITH	31	2,194.7	$9,926.92
RANSOM HILL	21	2,019.9	$9,431.77
SHAFFER	4	36	$144.00
M.W. NEAL	53	558.5	$2,016.64[a]
RICK ASHER	27	2,443.6	$10,587.20
OTHER VESSELS (est.)	19	57.7[b]	$248.96[b]
TOTALS	155	7,310.4	$32,355.49[a]

[a]Totals cannot be calculated as some fuel fills were from USCG Stations that did not charge for the fuel nor note amount of fuel delivered.
[b]Fuel for "OTHER VESSELS" was paid by the CFEU when using other Districts vessels; however, their fuel use or cost was not totaled.

B. ENFORCEMENT

1. Complaints

As with the years 2002, 2003, 2004, 2005, and again in 2007, 2008 was no different; just after ice out in the spring the season started with floating net complaints from Whitehall to Manistee. The Stone Fishery was once again the Unit's source of the greatest number of complaints, problems, and citations. As a result of their poor fishing practices, they created hazardous marine navigational conditions for boaters on the waters of Lake Michigan. As in

2007 the Stone family members that ran the commercial fishing operation met with members from the Manistee area sport fishing and charter boating interest groups. Those meetings did not last long as the group pressured the Stones to correct the numerous problems with their net sets on the Lake Michigan waters off of Manistee. The request for the correction of the situation went on week after week and the only result was that the Stone Fishery refused to attend any further meetings. From that point Officers from our Unit and the Wardens from the Little River Band made repeated patrols of the area and issued numerous citations. The Tribe contracted GTB Fisherman Bill Fowler to pull the unmarked nets and those nets not being fished from Whitehall to Manistee. It was only through those patrols and the sanctions set fourth by the Little River Court Judges did the Stones finally clean up the remaining nets that they were fishing at the time; it wasn't until late in September that this happened. The reason that this specific fishery is addressed is due to the number of times that they have created hazardous conditions (based on the USCG need to broadcast "hazard to navigation" transmitted on marine VHF radio to all boaters in 2004, 2005 and again in 2008) for all boaters that navigate those waters of Lake Michigan. Additionally, that fishery generated a total of 51 citizen complaints in 2008, with CFS Officer Steve Huff issuing 20 citations along with 56 verbal warnings; a tremendous effort to correct the simple problem and responsibility of properly marking fishing nets. In contrast, in 2008 the Unit received no complaints from Lake Huron's "Disputed Zone", this is the first time in eight years that this has happened. I attribute that to the "gentlemen's agreement" that was drawn up two years ago by both the sport fishery and the Tribal fishermen from the BMIC and SSM that fish that zone.

The Unit in 2008 investigated a total of 148 complaints, with 84 related to Tribal commercial fishing; 10 complaints were received on State-licensed commercial fishermen and this year the Unit generated 54 complaints related to the wholesale fish business, (most for failure to report). Some of these complaints were unfounded and the others resulted in a total of 36 citation being issued, (32 to Tribal commercial fishermen and 4 being issued to State commercial fishermen). Lastly, a total of 82 verbal warnings were issued by the Unit's Commercial Fish Specialists.

Table 16. 2008 Commercial fish related complaints investigated by MDNR Commercial Fish Specialists.

COMPLAINTS	1836 TREATY FISHERY	STATE LICENSED	1842 TREATY FISHERY	TOTALS
NETS	75	10	2	87
LICENSING	4	N/A	N/A	4
ACCESS	N/A	N/A	N/A	0
WHOLESALE	N/A	54	N/A	54
CLOSED / AREA SEASON	N/A	N/A	2	2
OTHER	1	N/A	N/A	1
TOTALS	80	64	4	148

2. Inspections

A total of 1,055 inspections were conducted by MDNR Commercial Fish Specialists statewide (see Table 5 for the break down of the inspections completed). There were 796 inspections of 1836 tribal fishers or their gear in the treaty-ceded waters.

Table 17. 2008 MDNR CFS Commercial Fish Enforcement Unit inspections, this information is from Unit vessel log books and the Commercial Fish Inspection Form.

INSPECTIONS	1836 TREATY FISHERY	STATE LICENSED	1842 TREATY FISHERY	TOTALS
NETS	613	157	7	777
BOARDINGS	17	8	N/A	25
DOCKSIDES	158	39	N/A	197
STATE WHOLESALE	8	48	N/A	56
TOTALS	796	252	7	1,055

3. Violations

In 2008 the Unit investigated a total of 148 complaints, almost double what was investigated by the Unit in 2007. The increase in the number of complaints was largely due to the aforementioned Stone Fishery in Central Lake Michigan.

Consistent with previous years, net marking violations continue to be the Unit's number one complaint, source of infraction, and time devoted to inspections. Although several of the Tribes in the 1836 Treaty Waters have their own tribal regulations pertaining to net marking requirements, the Unit only enforces and issues citations as per the CORA Code on net marking

which is usually less restrictive than the individual regulations. When the Unit's vessels are on the waters of the Great Lakes they are usually conducting net inspections for marine safety issues. Therefore, in figuring the enforcement effort hours of the Unit, a portion of the Officers individual dedicated marine time is used.

For the second year in a row the Unit Officers have again found that the number of non-native Americans on board Tribal fishing tugs is increasing. These accounted for most of the 11 State citations that were issued. Several times on patrols we have been told by the Tribal boat captains that they cannot get Tribal help. The inability to find Tribal members to work on boats and pull nets was also used as a defense by a GTB fisherman in his court trial when he could not remove his net. This issue should be addressed at the CORA level as this is an employment problem and not a resources problem. The State seems to be the only law enforcement agency that is currently enforcing this Code violation when encountered. The warnings issued by the Unit this year jumped from six in 2007 to 81 in 2008. A vast majority of those (66) were issued by CFS Huff during his working patrols in the Lake Michigan waters from Whitehall to Manistee.

CFI Shannon Van Patten in 2008 drafted a list of suspected fishermen that after the November Fish Closure turned fish into wholesale fish markets, in some of those cases it was well after the closure dates. In addition from the wholesale fish market reports she had noted that fishermen were also bringing walleye and perch to markets well after seasons had closed on those species. This list of wholesale markets and dates was presented at the spring CORA LEC meeting held at the RAM Center with the intention of it being a useful tool for law enforcement in the form of a "BOL" list for Officers and Wardens. That gave law enforcement a general location by markets and lake area to give extra attention for possible violations in the future.

Table 18. MDNR CFS 2008 summary of commercial fisheries related violations.

VIOLATIONS	1836 TREATY FISHERY	STATE LICENSE	1842 TREATY FISHERY	TOTALS
ARRESTS	26	11	N/A	37
REFERRALS	9	N/A	4	13
WARNINGS	81	4	N/A	85
TOTALS	116	15	4	135

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 but do not include Law Enforcement Committee (LEC) sponsored group patrols which are summarized below.

This past year CFS Steve Huff and LRB Warden Mark Szynski along with Lt. Dave Deforest (until his promotion) were almost partners, as they would work together on a weekly basis either on the vessel Rick Asher or the Little River Band "go fast" patrol vessel. The sport/charter fishing organization members often gave words of praise due to the positive work completed as a result of this partnership. For many months those groups expressed their frustration with the lack of results with the Manistee area tribal commercial fishery but they always felt that law enforcement on the part of the State and Little River Band had performed to the best of their abilities to the Law and Code.

On the Lake Huron side, CFS John Morey and CFS Craig Milkowski worked several patrols with the Tribal Wardens from the Little Traverse Band. This cooperation started early in the year with the sinking of BMIC fishing tug in Rockport and continued with patrolling the Disputed Zone, which went a long way to not having one complaint from the sport fishery this past year in the Disputed Zone.

CFI Shannon Van Patten along with local District Conservation Officers worked two joint "subsistence" shore patrols with Little Traverse Band Wardens just prior to ice out in the Bay de Noc area.

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 eight separate group patrols were scheduled with the dates selected at LEC meetings conducted earlier in the year. Weather is always a major factor as to whether or not those group patrols can take place, and this year was no exception. The first Group Patrol set up by the LEC committee conducted in the first week of April was only attended by the State patrol vessel Asher and State CFS crew due to "ice in" in most northern ports. This patrol resulted in one floating trap net pot being removed from the waters of Lake Michigan off of the port of Whitehall. In the area from Ludington to Manistee many violations (11) were found and our patrol vessel became entangled in floating line as did the USCG vessel just two days before. From the hazards that we had witnessed, a joint agreement between all Officers of the Unit and personnel from the Manistee Coast Guard Station it was decided that a "Notice To All Mariners" be issued by the Coast Guard to caution all boaters navigating in that area. It was decided that another Group Patrol be set up for that area soon after the ice was out of all the northern ports.

For the balance of the season the rest of the Group Patrols were fairly routine with little or no activity discovered until our last patrol of the season to be conducted in the Bay de Noc area of northern Lake Michigan. From information that the Unit was receiving along with observations over the summer it was discovered that the information of our Group Patrols was leaking out; it seemed the fishermen were aware of our patrols prior to us arriving. For this reason we decided to go one day prior to the preset date of the patrol to the Bay de Noc. The result was quite the opposite of what we had found on all of the previous patrols. Many fishing tugs were found to be fishing the waters of the bays and were boarded and inspected by Unit Officers, LRB Warden Mark Szynski (whom we included in the patrol plan aboard our vessel) and local District Conservation Officers from District 1; also along on the patrol was a Michigan State Police K-9 trooper with his dog. K-9 was included in the patrol as we had for the second year in a row received credible information that one fish tug in particular (the Viking) had been transporting and using marijuana. Adding to the credibility of that report was the fact that when our marked patrol vessels entered the bay several warnings to the "Viking" were broadcast on the marine VHF radio. Officers had to only sit and wait to see which vessel would try and flee, it was the Viking. With every vessel that was boarded that day the question was brought up as to

why we were there a day early, this confirmed our suspicions of a leak of information. Numerous citations were issued and two subjects were taken into physical custody for active outstanding warrants and being non-tribal aboard tribal commercial fishing tugs. This "leak" of law enforcement information was brought up at the last CORA LEC meeting held at the RAM Center and we can only hope that this issue will be addressed and corrected prior to the 2009 Group Patrols.

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 patrols often with local District Conservation Officers to address complaints that were received in specific areas during the year. During the last week of April Unit Officers for the second year were moved south to assist District 7 Conservation Officers and Conservation Officers from the State of Indiana in working the State line on Lake Michigan between Michigan and Indiana. Michigan City, Indiana is the home port to the Great Lakes first big organized fishing tournament, a tournament that has in the past resulted in many violations of fishing laws between both states. For 2008 few violations were found as not many fishing boats left port on the days that we were working the detail. With such a show of law enforcement presence (and not so present), it is hoped that it will show our concerns with these organized tournaments abiding by the resource laws of each of the states as they continue up the Great Lakes for the summer months.

The Unit received a lot of assistance from District 7 Conservation Officer Greg Patton working the Whitehall area and monitoring the Stone Fishery on its southern end. He often provided up to date net locations and on one occasion boarded the tribal tug operated by Matt Stone and through follow-up investigations working jointly with LRB Wardens discovered that members of his crew had provided him with factious information resulting in violations into both State court and Tribal Court. Officer Patton often provided both his patrol vessel and knowledge of the waters to assist Unit Officers when we would travel down south; it saved the Unit a great deal of fuel expense for us to jump on board with him instead of operating our vessels that far to the south.

In July the Unit provided three of its patrol vessels and the entire crew to assist District 3 Conservation Officers (or they assisted us) in conducting an extensive patrol of the waters of northern Lake Michigan. The patrol used Beaver Island once again as an operating base and this patrol provided then newly promoted CFS Terry Short the opportunity to get some sea time with the patrol vessel William Alden Smith fresh out of dry dock. Unfortunately most of his sea time was spent tied to the dock with fuel system problems as a result from its time in lay-up. A great deal of surface waters were covered, nets inventoried, two fishing vessels were boarded and inspected and the Lake Michigan Lake Trout refuge was patrolled by both vessels and Air 5 that assisted the patrol for one day and also provided air flight for parts needed on the Smith.

The first week of September the H. Ransom Hill and several Officers from the Unit were part of "Operation Dire Straight" conducted by the USCG and included some 44 other agencies from Federal, State, local and Tribal organizations, both public and private. It was a mock drill to simulate a collision disaster between a passenger ferry and fuel barge in the Straits of Mackinac. The one glaring problem of such a large drill is communication between so many different agencies.

Another Homeland Security task completed by the Unit this past summer included CFS Terry Short, at the request of the USCG, providing port security for the launch of a new US Navy ship out of the joint port of Marinette/Menominee. Shortly after the Navy ships launch, CFS Short reported that he could not complete his assigned task as the Navy ship was running the sea trial at just over 55 knots, much faster than CFS Short's patrol vessel could travel. He could only provide security for the vessels large wake.

7. Law Enforcement Contacts:

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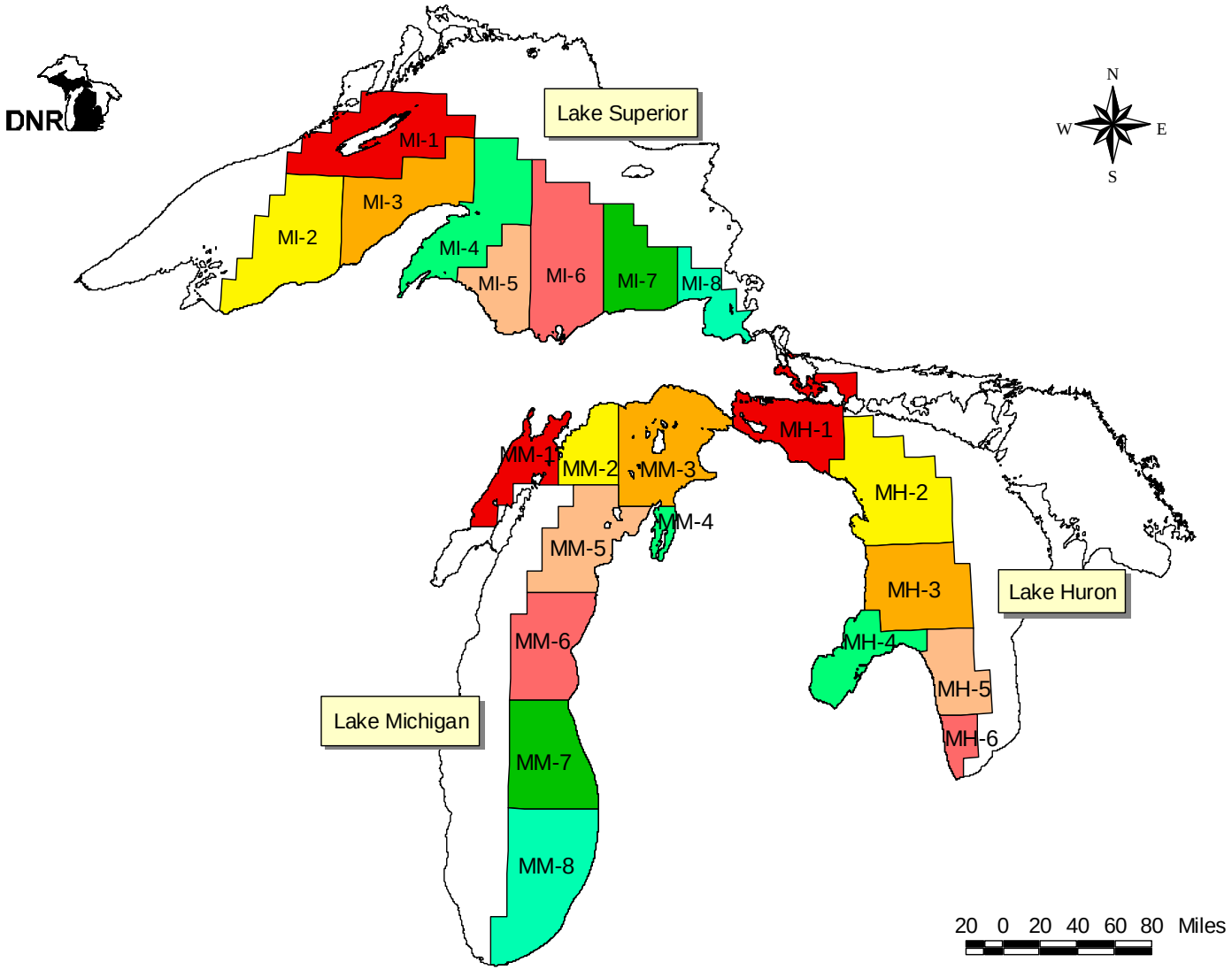

Figure 1. Lake Trout Management Units for Lakes Superior, Michigan and Huron.

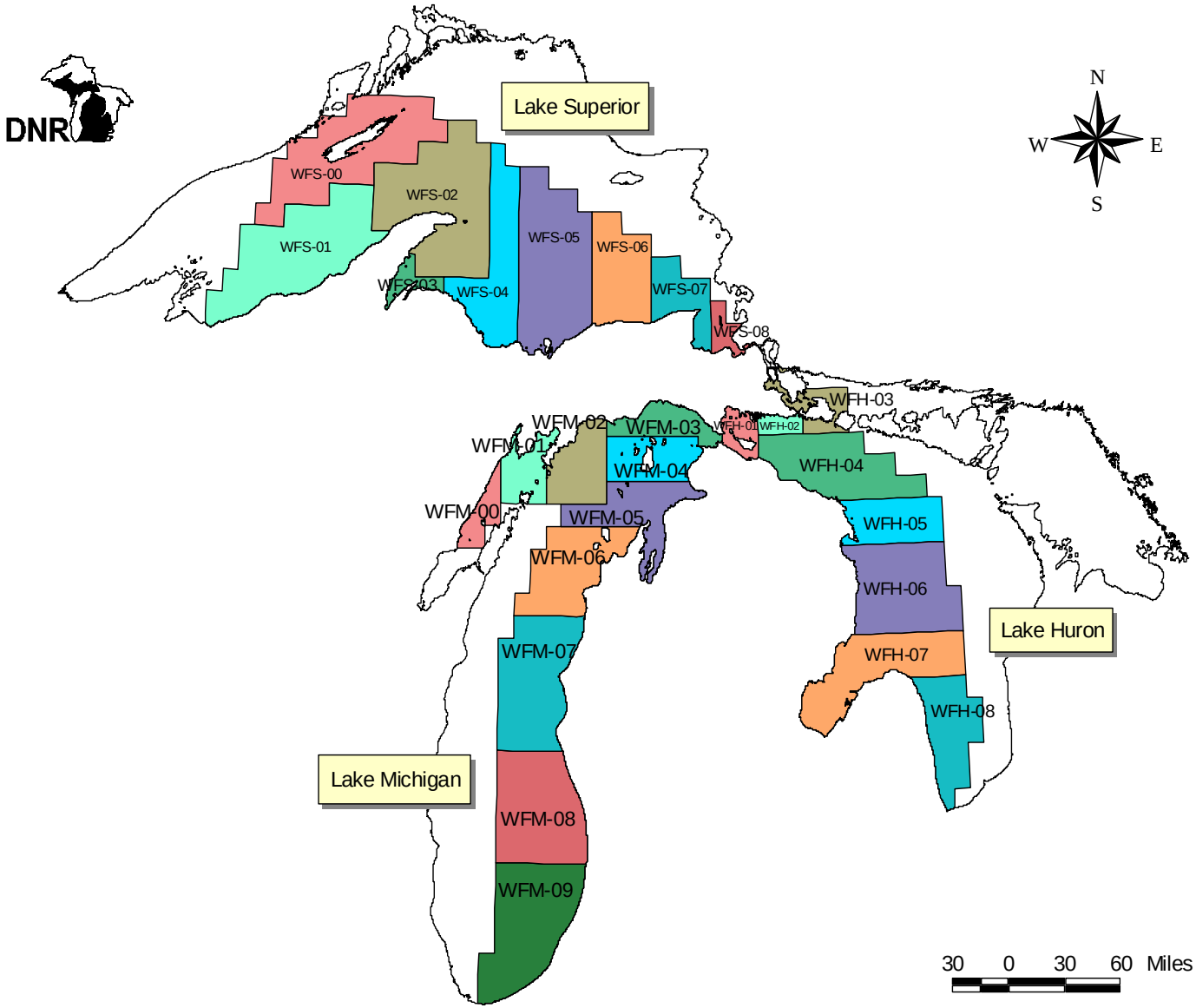

Figure 2. Lake Whitefish Management Units for Lakes Superior, Michigan and Huron.

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. 47% SSBR = 0.11
Extended phase-in of allocation percentages at 47% TAM from 2006 through 2011. Rehabiltation 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.

	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	WFS-04	WFS-05	WFS-06	WFS-07	WFS-08	WFS-04	WFS-05
TAM used[1]	55%	45%	37%	50%	65%	25K or 10%	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	WFH-01	WFH-02	WFH-03	WFH-04	WFH-05	WFH-06
TAM used[1]	65%	70%	No calc. done	65%	69%	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