2011 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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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 2011, 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 fished by tribal fishers, the Consent Decree called for the Sault Ste. Marie 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 2011 tribal large-mesh gill-net effort in lakes Michigan and Huron was approximately 17.3 million feet less than the 1993-1998 average (Table 1). For all three lakes, approximately 22.4 million feet less effort was fished in 2011 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 projected effort in 2011.

Lake	Management Unit	Effort		2011 reduction[b]
		1993-98[a]	2011	
Michigan	MM-123	17,912	10,918	6,994
	MM-4	1,794	882	912
	MM-5	240	124	116
Huron	MH-1	16,470	7,144	9,326
	MH-2	6	0	6
Superior	MI-6	780	569	211
	MI-7	2,028	1,521	507
	MI-8	6,578	2,196	4,382
Totals		45,808	23,354	22,454

[a] Average annual effort during base years.
[b] The relative reduction in 2011 (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 "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 report detailing populations and harvest limits for fishing year 2011 was completed in December 2011. This and all previous versions are available on the 2000 Consent Decree page of the MDNR's Tribal Coordination Unit website: http://www.michigan.gov/greatlakesconsentdecree**.**

Statistical catch-at-age (SCAA) models are used to describe populations of lake trout and lake whitefish and to recommend the respective 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 that data are available. All models are tested for accuracy by comparing predictions to actual observations. The agreement between predictions and observations is measured by statistical likelihood. The set of 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.

All fish populations are regulated by three key rates: growth, mortality, and recruitment. These are each estimated in the first stage of the modeling process and 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 for lake trout derived from a 1980s study in Lake Superior. The value currently used is 15%, but research is ongoing in both Lake Huron and Lake Superior to update this value. 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 (e.g., lake trout in Lake Michigan), 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. Currently, 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. However, natural reproduction of lake trout in Lake Huron has increased in recent years, and that recruitment will need to be specifically accounted for in the coming years. For wild lake trout (Lake Superior) and lake whitefish (all management units), 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 that produced them.

After parameters have been estimated, the next step is the short-term projection of total allowable catches (TACs). 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. A more extensive and technical 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 in 1999, 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 must approve harvest and effort limits by April 30 of each year to be submitted to the Parties for final approval. In 2011, stipulations to the Consent Decree set harvest limits in MM-123, MM-4, MM-5, and MH-1. Stipulations in Lake Michigan have been in place for more than 5 years and are the result of high levels of lamprey-induced mortality on lake trout, which would otherwise severely restrict all lake trout fishing. In MH-1 a stipulation was set for 2010 and 2011 as a result of poor model performance. It allocated 220,000 lb for CORA and 25,000 lb for the State. However, the State overharvested lake trout in MH-1 in 2009, causing a penalty to be applied to the stipulated 2010 harvest limits. The situation repeated itself and overharvest occurred again in 2010, causing an adjustment to the stipulated harvest limits for 2011 as a result of the penalty. The MSC made improvements to the MH-1 model, and the output suggested a significantly higher harvest limit may be appropriate for this unit; however, the stipulation language did not allow such an increase. The harvest limit for MH-1 will be reevaluated in 2012.

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 all the Parties agree a greater change is appropriate. In 2011, there were two fully-phased management units where the model recommendations represented a change of greater than 15% from the 2010 harvest limits: MI-7 and MH-2. The TFC invoked the 15% rule in each of these units, keeping the 2011 TAC within 15% of the 2010 TAC. In MI-7 the model recommendation was lower than the 2010 level, and in MH-2 the model recommendation was higher than the 2010 level. A map of the lake trout management units is provided at the end of this document (Figure 1), and the 2011 lake trout harvest and effort limits for each management unit are below in Table 2.

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 2011 fishing season.

		Model-output TACs		Final TACs		
Lake	Unit	State	Tribal	State	Tribal	Tribal TAE
Michigan	MM-123[a]	0	0	50,000	453,000	15,675,000
	MM-4[a]	40,277	32,954	77,200	137,426	1,216,000
	MM-5[a]	47,658	71,511	47,658	71,511	470,000
	MM-67	36,255	326,315	36,255	326,315	NA
Huron	MH-1[b]	43,685	393,171	225,107	19,893	7,381,000
	MH-2 [c]	4,718	89,647	4,536	87,268	NA
Superior	MI-5	4,642	105,004	4,642	105,004	NA
	MI-6	59,186	59,186	59,186	59,186	3,182,000
	MI-7[c]	51,032	21,871	56,376	24,535	3,112,000

[a] Final TACs resulted from orders to amend the Consent Decree.
[b] Final TAC per June 2010 Executive Council agreement, after penalty applied due to State overharvest in 2010.
[c] TFC invoked the 15% rule, limiting the TAC to a 15% deviation from the 2010 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 2010. A map of lake whitefish management units is provided at the end of this document (Figure 2), and the 2011 lake whitefish harvest limits for each management unit are below in Table 3.

The MSC was able to generate model recommended harvest limits in all shared units, except for WFM-06. This unit (Leland/Frankfort area) has lacked fishery data in recent years, and the model has been unable to perform satisfactorily or provide realistic harvest limits. In 2010 the MSC recommended that the 2009 harvest limits be carried forward an additional year, hoping model performance could be improved for the 2011 assessment. That was not the case,

and the MSC recommended that the TFC adopt a constant harvest limit for WFM-06 that would remain in place until the model performance substantially improved or signs from the raw biological data collected from the fishery suggested a potential problem with the stock. The MSC's recommendation was accepted by the TFC and a constant catch policy is currently in place for WFM-06.

For non-shared units with HRGs, the process of modeling all of Northern Lake Huron as one unit, which began in 2010, continued in 2011. Individual HRGs were not set for the four individual units in Northern Lake Huron, but the model output was considered and a single HRG was set for the newly created management unit. In two other non-shared management units, the MSC could not calculate a recommended harvest limit using SCAA models. In WFM-07 there continues to be an insufficient time series of data. In 2004, the HRG for WFM-07 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 has resulted in poor model performance; thus, the 2011 HRG was again set at 210,000 lb, the same level it has been since 2004. In WFM-02 the 2011 HRG was set at peak historical harvest, which is lower than the model output. In WFS-07 low model performance resulted in a HRG that was set at 514,000 lb, which was lower than the model recommendation. Similarly in WFH-05 the HRG was set lower than the model recommendation due to concerns over the model's performance. The Tribes accepted model-generated recommendations for HRGs in other units.

Table 3. Model estimates for total allowable catch (TAC; pounds) or harvest regulation guidelines (HRG; pounds) for lake whitefish by management unit in 1836 Treaty-ceded waters of the Great Lakes for the 2010 fishing season.

Lake	Unit	Final State TAC	Model output Tribal TAC	Final Tribal TAC or HRG
Michigan	WFM-01	200,000	3,444,000	3,444,000
	WFM-02	-	1,580,500	558,000
	WFM-03	-	2,510,000	2,510,000
	WFM-04	-	702,000	702,000
	WFM-05	-	399,000	399,000
	WFM-06	65,000	539,300	145,000
	WFM-07[a]	-	-	500,000
	WFM-08	500,000	800,200	800,200
Huron	(H01-H04 Combined)		719,600	719,600
	WFH-05	-	1,142,000	758,300
Superior	WFS-04	9,500	85,500	85,500
	WFS-05	63,500	342,700	342,700
	WFS-06[a]	-	-	210,000
	WFS-07	-	871,500	514,000
	WFS-08	-	167,700	167,700

[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 entirely of harvest by sport anglers. The harvest limits 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 that are returned to the water and 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). Lake trout harvest by state-licensed recreational fishers in 2011 was below harvest limits in all management units. In both 2009 and 2010 the state harvest of lake trout exceeded the allowable catch limit in MH-1, regulation changes put into place for the 2011 fishing season restricted harvest enough to keep the total state harvest below the 2011 limit.

In addition to the changes in MH-1, regulations for recreational harvest of lake trout were also adjusted on Lake Michigan and took effect for the first time in 2011. These regulations expanded opportunity for recreational anglers, and harvest increased in all of the Lake Michigan

lake trout management units, as expected. In MM-123 the overall number of fish harvested increased even though yield (total lb caught) declined due to the regulation structure shifting harvest to smaller fish. Unless harvest continues to increase or the State's TAC decreases in a given unit, these regulations for Lake Michigan will remain in place until 2015.

Estimated State-licensed recreational harvest of walleye, yellow perch, and Chinook and Coho salmon are also listed in Table 4. Total effort is indicated 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 lake trout management unit in 1836 Treaty-ceded waters of the Great Lakes for the 2011 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-123	452,443	2,547	13,271	18,965	49,309	66,745	20,691	15,559	157,146	1,603	11,381
	MM-4	152,975	15,789	71,523	52	120	4,759	1,618	7,901	101,923	701	4,977
	MM-5	170,138	6,651	47,488	1	3	4	1	32,186	450,604	9,120	86,640
	MM-67	782,050	9,294	61,084	1,368	3,146	26,015	5,723	112,392	1,416,139	15,931	121,076
Totals		1,557,606	34,281	193,366	20,386	52,578	97,523	28,033	168,038	2,125,812	27,355	224,074
Huron	MH-1	312,723	3,343	13,974	4,763	18,576	146,966	36,742	5,878	51,139	152	958
	MH-2	64,249	4,024	30,019	3,070	9,517	723	181	1,043	9,178	56	190
Totals		376,972	7,367	43,993	7,833	28,093	147,689	36,923	6,921	60,317	208	1,148
Superior	MI-5[c]	32,537	6,920	26,572	24	74	0	0	174	887	1,595	2,074
	MI-6	30,382	3,778	15,641	0	0	1,318	356	639	3,003	2,526	4,042
	MI-7	22,285	5,442	19,265	0	0	0	0	29	168	938	1,313
Totals		85,204	16,140	61,478	24	74	1318	356	842	4058	5059	7429
Grand totals		2,019,782	57,788	298,837	28,243	80,745	246,530	65,312	175,801	2,190,187	32,622	232,651

[a] Lake Superior lake trout number and weight do not include Siscowets; number of Siscowet harvested was estimated at 126, 83, and 1,529 fish, for MI-5, MI-6, and MI-7, respectively.

[b] Lake trout harvest in management unit MH-1 does not include throwback mortality due to Executive Council agreement.

[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 2011.

The largest monitored recreational fishery for whitefish typically occurs in unit WFM-05 (Grand Traverse Bay area). Recreational harvest of whitefish in Grand Traverse Bay was estimated to be 7,126 pounds in 2011, down from more than 11,000 pounds in 2010. 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 21, 3,100, and 9,616 pounds, respectively. The recreational whitefish yield from the Grand Marais area surpassed that of Grand Traverse Bay for the first time since 2007. The State does not estimate targeted recreational effort for lake whitefish in these management 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 2011 fishing season.

Lake	Unit	Harvest	Effort
Michigan	WFM-01	96,964	291
	WFM-06	23,821	104
	WFM-08	250,586	571
Lake totals		371,371	966
Superior	WFS-04	505	5
	WFS-05	64,061	298
Lake totals		64,566	303
Grand totals		435,937	1,269

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 2011; thus, all reported numbers are considered preliminary. It is unknown how much these preliminary numbers will change when they are made final. Historically, whitefish numbers

have changed more often and by a greater margin than numbers for lake trout or other species; however, in most management units the differences for all species are usually minor.

1. Lake trout

According to preliminary harvest reports, in 2011 lake trout harvest by tribal commercial fishers was below established harvest limits in all management units. Lake trout are not usually targeted but 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 bag limit regulations apply. As a result of the June 2010 Executive Council agreement, it is stipulated that in 2010 and 2011, 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 2011 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-123	15,109	315,876	330,985
	MM-4	244	74,167	74,411
	MM-5	7,964	24,623	32,587
	MM-67	7,375	0	7,375
Lake total		30,692	414,666	445,358
Huron	MH-1[a]	0	222,924	222,924
	MH-2	0	0	0
Lake total		0	222,924	222,924
Superior	MI-5	0	0	0
	MI-6	0	7,553	7,553
	MI-7	0	32,119	32,119
	MI-8	4,414	17,551	21,965
Lake total		4,414	57,223	61,637
Grand total		35,106	694,813	729,919

[a] Does not include estimated throwback mortality of 7,133 lb.

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%.

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 2011 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	831,429	2,057	0	0	831,429
	WFM-02	34,750	50	211,120	2,491	245,870
	WFM-03	522,054	2,534	246,773	3,788	768,827
	WFM-04	176,343	1,159	144,444	2,566	320,787
	WFM-05	1,290	4	40,410	1,113	41,700
	WFM-06	77,026	255	8,380	66	85,406
	WFM-07	149,297	337	0	0	149,297
	WFM-08	0	0	0	0	0
Lake totals		1,792,189	6,396	651,127	10,024	2,443,316
Huron	Northern	205,176	1,236	311,776	7,923	516,952
	WFH-05	375,047	547	0	0	375,047
Lake totals		580,223	1,783	311,776	7,923	891,999
Superior	WFS-04	0	0	0	0	0
	WFS-05	0	0	23,925	524	23,925
	WFS-06	0	0	50,156	819	50,156
	WFS-07	219,383	1,006	184,662	2,611	404,045
	WFS-08	79,114	279	12,762	165	91,876
Lake totals		298,497	1,285	271,505	4,119	570,002
Grand totals		2,670,909	9,464	1,234,408	22,066	3,905,317

3. Walleye

Commercial fishing for walleye is permitted in and around Grand Traverse Bay and the Manitou Islands, in northeastern Lake Michigan (Naubinway to Gros Cap), and around St. Martin's Bay and 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 2011 occurred in Lake Huron unit MH-1 (32,289 pounds).

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 2011 fishing season.

		Trap nets		Gill nets		Total
Lake	Unit	Harvest	Effort	Harvest	Effort	harvest
Michigan	MM-123	499	0	5,953	5	6,452
	MM-4	0	0	1,425	20	1,425
	MM-5	125	0	573	0	698
	MM-6	14	0	0	0	14
Lake totals		638	0	7,951	25	8,589
Huron	MH-1	160	0	32,289	624	32,449
Superior	MI-7	0	0	11	0	11
	MI-8	0	0	341	0	341
Lake totals		0	0	352	0	352
Grand totals		798	0	40,592	649	41,390

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 2011 was in Grand Traverse Bay (MM-4), where 408 pounds were harvested (Table 9). Yellow perch are occasionally harvested as incidental catch, which is why often 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 2011 fishing season.

		Trap nets		Gill nets		Total
Lake		Harvest	Effort	Harvest	Effort	Harvest
Michigan	MM-123	0	0	277	22	277
	MM-4	0	0	408	59	408
	MM-5	21	0	27	3	48
Lake totals				712		
Huron	MH-1	0	0	180	0	180
Superior	MI-8	0	0	4	0	4
Grand totals		21	0	896	84	917

5. Chinook and Coho salmon

Tribal commercial fisheries for salmon exist in northeastern Lake Michigan near shore 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 near shore 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. As in most years, the largest Chinook salmon harvest in 2011 occurred in Lake Huron unit MH-1 (Table 10). The 297,749 lb harvested in MH-1 represents a 103% increase over the 2010 take of Chinook salmon. However, the 2010 harvest of Chinook salmon was lower than previous years. Coho salmon were mostly 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 2011 fishing season.

		Trap nets		Gill nets		Total
Lake	Unit	Harvest	Effort	Harvest	Effort	harvest
Michigan	MM-123	304	0	2,186	0	2,490
	MM-4	0	0	3,856	35	3,856
	MM-5	0	0	40	0	40
Lake totals		304	0	6,082	35	6,386
Huron	MH-1	145	0	297,749	1,291	297,894
Superior		0	0	0	0	0
Grand totals		449	0	303,831	1,326	304,280

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 2011 fishing season.

		Trap nets		Gill nets		Total
Lake	Unit	Harvest	Effort	Harvest	Effort	harvest
Michigan	MM-123	0	0	21	0	21
	MM-4	0	0	150	0	150
	MM-5	0	0	240	0	240
Lake totals		0	0	411	0	411
Huron	MH-1	0	0	45	0	45
Superior	MI-6	0	0	246	0	246
	MI-7	0	0	322	0	322
	MI-8	321	0	1,198	5	1,519
Lake totals		321	0	1,766	5	2,087
Grand Totals		321	0	2,222	5	2,543

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 certain 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 licenses and 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, as reported by the tribes, for 2011 is included below in Tables 12 and 13.

Table 12. Summary of preliminary tribal subsistence harvest (round pounds) with gill nets for each management unit by species for the 2011 fishing season.

Gear	Unit	Bass	Brook Trout	Brown Trout	Burbot	Carp	Catfish	Cisco	Freshwater Drum	Lake trout	Menominee
Gill Net	MH-1	0	0	3	0	20	2	4	45	752	17
	MH-2	0	0	0	0	0	2	0	0	0	0
	MI-5	0	0	0	0	0	0	0	0	28	0
	MI-6	2	0	7	24	0	0	4	0	115	5
	MI-7	0	0	0	0	0	0	0	0	0	0
	MI-8	0	0	0	3	0	0	1,867	0	174	26
	MM-123	47	0.3	8	81	50	22	0	6	423	2
	MM-7	0	0	39	0	0	0	0	0	304	0
	St. Marys River	49	0	0	9	0	0	5	0	44	70
	Totals	98	0.3	57	117	70	26	1,880	51	1,840	120

Gear	Unit	Northern Pike	Rainbow Trout	Salmon	Smelt	Splake	Sucker	Walleye	Whitefish	Yellow Perch	Total Gill-Net Effort
Gill Net	MH-1	10	133	71	0	0	142	354	627	0	21,500
	MH-2	0	0	12	0	0	0	15	0	0	300
	MI-5	3	0	0	0	0	0	0	202	0	2,700
	MI-6	37	387	541	0	60	353	19	785	6	13,350
	MI-7	0	125	115	0	0	0	0	0	0	700
	MI-8	119	43	2,207	713	0	222	298	606	2	42,875
	MM-123	524	1,442	121	0	0	552	2,762	472	1,564	57,420
	MM-7	11	477	43	0	0	2	0	0	0	3,600
	St. Marys River	28	278	1,023	0	8	176	254	440	2	14,750
	Totals	732	2,885	4,133	713	68	1,447	3,702	3,132	1,574	157,195

Table 13. Summary of preliminary Tribal subsistence harvest (round pounds) with hook and line, tip-ups, dip nets, and spears (combined) for each management unit by species for the 2011 fishing season.

Gear	Unit	Atlantic salmon	Bass	Brook trout	Brown trout	Burbot	Catfish	Cisco	Lake trout	Menominee	Muskellunge
Hook and Line, Tip-up, Dip Net, and Spear	MH-1	7	2	0	14	0	0	60	39	0	0
	MI-6	0	0	0	0	0	0	0	120	0	0
	MI-7	0	0	0	0	0	0	0	93	0	0
	MI-8	0	24	4	0	0	0	2	4	2	0
	MM-123	0	198	0	0	0	0	0	7	0	0
	St. Marys River	893	21	0	0	297	55	0	34	0	12
	Totals	900	245	4	14	297	55	62	297	2	12

Gear	Unit	Northern pike	Pink salmon	Rainbow trout	Salmon	Smelt	Splake	Sucker	Walleye	Whitefish	Yellow Perch
Hook and Line, Tip-up, Dip Net, and Spear	MH-1	104	7	22	877	0	11	0	0	0	860
	MI-6	0	0	47	49	0	0	0	0	0	0
	MI-7	0	0	155	69	0	0	0	0	214	0
	MI-8	64	0	89	99	15	0	0	163	252	325
	MM-123	6	0	26	186	0	0	0	340	0	116
	MM-6	0	0	0	236	0	0	0	0	0	0
	St. Marys River	971	0	156	271	0	0	29	1,614	565	4,594
	Totals	1,145	7	495	1,787	15	11	29	2,117	1,031	5,895

7. Fisheries Contacts

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LAW ENFORCEMENT

I. Introduction

The 2000 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.

The Consent Decree also requires that the state and the tribes maintain adequate staffing and equipment to allow for implementation of enforcement activities, and monitor commercial fishing activity on the Great Lakes. This report provides a summary of 1836 Treaty fishery enforcement activity for the MDNR Commercial Fish Enforcement Unit (CFEU) in 2011.

A. General Information

1. Staffing

Although all Conservation Officers respond to and enforce the 2000 Consent Decree, the Michigan Department of Natural Resources has a highly trained specialty Unit dedicated to Commercial Fish Enforcement, this group is known as the Commercial Fish Enforcement Unit (CFEU). At the present time, the CFEU is manned by (4) Commercial Fish Boat Captains and (1) Commercial Fish Investigator. In 2011, the MDNR Law Enforcement Division worked 6,937 hours in Commercial Fish Enforcement.

Table 14. 2010 officer hours worked for Consent Decree and state commercial fish issues.

Enforcement Effort	CFEU (hrs)	LED* (hrs)	Total (hrs)
Consent Decree	4,453	354	4,807
State Commercial	1,754	0	1,754
Wholesale Fish	376	0	376
Totals	6,583	354	6,937

*LED represents hours worked by other MDNR Law Enforcement Division personnel to address commercial fish issues.

2. Equipment

The Commercial Fish Enforcement Unit has four SeaArk Dauntless Class vessels strategically stationed around the State. They range in size from 28' – 41' in length and also included is a mobile vessel that can be pulled by trailer to anywhere in the State at a moments notice. The total 2011 Sea Service time was 565 hours. During the 2011 season, the CFEU conducted a total of 106 dedicated patrols for commercial fish enforcement. The CFEU boats consumed 4,148 gallons of fuel with a fuel expenditure of $16,916.92. The following is a list of repairs for the unit's vessels in 2011:

William Alden Smith

- Coolant leaks repaired in the heating system
- New bottom paint

Ransom Hill

- Drive belt and a bearing were replaced on the port engine.
- Fuel gauge replaced

MW Neal

- New bottom paint

Schaffer Boat

- Radar head replacement

Table 15. 2011 CFEU vessel service hours.

Vessel	1836 Treaty Fishery	State Fishery	1842 Treaty Fishery	Totals
William Alden Smith	64	40	0	104
Ransom Hill	100	25	0	125
Shaffer	0	15	0	15
M.W. Neal	0	203	0	203
Rick Asher	47	10	0	57
Other Vessels *	27	28	6	61
Totals	238	321	6	565

* The hours accumulated on non-unit vessels are from patrol logs.

Table 16. Patrols, fuel consumption & fuel costs.

Vessel	Patrols	Fuel (Gal)	Cost ($)
William Alden Smith	20	1,169	4,630.01
Ransom Hill	22	1,398	5,903.61
Shaffer	3	25	77.63
M.W. Neal	40	575	2,295.00
Rick Asher	13	981	3,971.79
Other Vessels*	8	48	218.88
Totals	106	4,196	$16,916.92

*Fuel for "Other Vessels" was paid for by the CFEU.

3. Training and Education

In addition to department required training in firearms, survival tactics, and first aid, unit officers completed training in the following areas:

- CFS Short and Milkowski completed nine days of Great Lakes Captains Masters license training in Traverse City. Both officers successfully completed the testing and have met the qualifications for USCG Great Lakes Masters Licenses.

- All CFEU personnel attended a three-day training session in the operation of the recently received side-scan sonar systems.

- CFS Milkowski and Huff participated in Great Lakes Hazards Coalition Regional table-top exercises in Sault St. Marie. Multiple law enforcement agencies and the United States Army participated in the exercises from six separate locations in the Great Lakes region. Topics of the exercise included:

    - Determine regional effects of a crisis event within the Great Lakes
    - Identify/determine adequacy of cross-border and Great Lakes regional information sharing efforts
    - Identify adequacy of cross-border and Great Lakes regional response authorities and capabilities
    - Identify adequacy of cross-border unified command structure.

- CFI Van Patten attended a 3 day Seafood Hazard Analysis Critical Control Point (HACCP) course.

- Unit Boat Captains attended a week long Waterborne Tactics training course. The course covered high risk/high profile stops on the water. Emphasis was placed on use of firearms and defensive tactics on board a vessel to gain control of a situation and subsequent custody of subjects.

With the shortage of officers in the unit, steps have been taken to educate other agencies we work closely with on what we do, and the types of violations we would be interested in knowing about if they encounter them during the course of doing their jobs.

- Numerous US Coast Guard boat stations have requested and received commercial fish enforcement training by the unit. The Coast Guard also indicated that they would like to participate in joint commercial fish patrols.

- CFS Desloover conducted training for a district of Michigan State Police Motor Carrier Officers regarding what they should be looking for regarding Asian carp issues. Motor Carrier Officers are seen as a very good asset in the detection of the illegal possession and transportation of the invasive species due to their continual contacts with trucks potentially hauling this and other invasive species.

B. Enforcement

1. Complaints and Violations

In 2011, the CFEU investigated a total of 81 complaints related to commercial fishing, with 52 related to 1836 Treaty Fishing.

Table 17. 2011 commercial fish complaints investigated by the CFEU.

Complaints	1836 Treaty Fishery	State Fishery*	1842 Treaty Fishery	Totals
Nets	36	13	1	50
Licensing	0	5	0	5
Access	3	0	0	3
Wholesale	0	3	1	4
Closed area / season	6	1	0	7
Other	7	5	1	13
Totals	52	27	2	82

* Includes netting complaints received on non-Tribal/non-State licensed individuals

Table 18. 2011 summary of commercial fisheries related violations

Violations	1836 Treaty Fishery	State Fishery*	1842 Treaty Fishery	Totals
Arrests	1	2	0	3
Referrals	11	0	1	12
Warnings	10	6	0	16
Totals	22	8	1	31

* Includes netting violations for non-Tribal/non-State licensed individuals

Complaints and Violations of note include the following:

- CFS Desloover investigated a lost trap net in Saginaw Bay that was reported to him by the owner in the fall of 2010. The net was found in 2011 and immediately removed by the fisher.

- CFS Milkowski dealt with two spills of oil and other fluids at the Hammond Bay Access from Tribal Commercial Fishers.

- CFS Huff worked with LRB law enforcement with 26 net marking violations by a LRB fisher.

- CFS Desloover received a complaint of a floating gill net off Grindstone City full of rotted fish. The net was towed to shore and inspected for identification. There was none, but it is suspected to have been a portion of a net that was reported as broke loose in the fall of 2010 from a Canadian Fisher that drifted into Michigan waters.

- CFS Desloover received a complaint from RAP of an illegal gill net set in Lake St. Clair and responded. Upon finding the net he determined that approximately 100 yards of the net was in Michigan waters. The net had no markings and is suspected of belonging to a first nation fisher from Canada. The portion of the net in Michigan was removed and disposed of.

- CFS Desloover and Milkowski participated in a CORA patrol in the Detour area of the St. Mary's River. They located and removed approximately 1,500 feet of abandon unmarked gill net containing 700-800 pounds decomposed fish, mostly lake trout. They were unable to identify the owner of the net.

- CFS Short located 2 improperly marked gangs of large-mesh gill nets in Northern Lake Michigan estimated each to be approximately 2 miles in length. They were filled with decayed fish. The nets were owned by two SSM fishers and the case was turned over to SSM Law Enforcement. The fishers were cited for an abandoned net and an improperly marked net. Officers monitored the removal of the nets over the course of two days. It is estimated that there was approximately 2,000 pounds of badly decomposed whitefish, lake trout, and burbot in each net. These same fishers did the exact same thing in the same location approximately 1 year prior. The fisher received a $300 fine.

- CFS Huff was at the dock on the 2nd day of the open whitefish season (after the spawning closure) when LRB commercial fishers came ashore with 1,300 lbs. of whitefish. LRB law enforcement had conducted surveillance upon the fishers in question and documented that their boat had not gone out since the opener and requested that the catch be seized. Court action is currently pending.

- The Bay De Noc Walleye Case involving six individuals selling subsistence caught fish into the commercial market drew to a close this fall after almost three years with the following actions:

- The appeal proceeding for the three Schwartz brothers (subsistence fishers) was held on January 20, 2011 in front of a five judge panel at the SSM Tribal Court. The following findings were released in April:

    - 79 of 105 violations they were found responsible for was reduced to 71 of 105
    - $30,000 fines, costs and restitution reduced by $16,500
    - Nets and four snowmobiles remained forfeited
    - Subsistence fishing privileges changed from life revocation to one year

- A hearing in Sault Band tribal court was held regarding one of the above individuals whose subsistence fishing rights were revoked. He was found "assisting" a juvenile family member subsistence fish with a gill net. The pair had taken 112 pounds over the limit of whitefish. The court determined that his activity was not a violation of that court's order. The revocation only prevented the tribe from issuing a license to him.

- Wade and Troy Jensen, the tribally licensed commercial fishers involved in this case had been cited for 139 violations of the tribal code for violations uncovered through this investigation (false reporting, retention of species from closed grids, etc.). The tribal government advised the SSM Prosecutor to reduce this number from 139 to 10-12. These 10-12 charges were eventually dropped under a plea agreement reached with the fishers where a guilty plea was entered for the 4 miles of abandoned unmarked net located in Northern Lake Michigan by CFS Short (mentioned earlier in this document).

- A four-day state court trial against the Commercial Fishers Wade and Troy Jensen and non-native John Halvorson was held in May 2011 after several months of working out jurisdictional issues between the state and the tribe. All three individuals were charged with conspiring to sell fish that were not taken under a commercial license. All three were found guilty and assessed the following penalties:
    - $3,620 fines and costs each
    - $19,772.90 restitution to be paid to the state (to be split 3 ways)
    - 12 months in jail each

2. Inspections

Unit members completed a total of 486 inspections in 2011. These included 228 net inspections, 41 on water boarding's, 136 dockside inspections, and 81 state wholesale inspections.

Table 19. 2011 CFEU inspections (from vessel log books & inspection forms).

Inspections	1836 Treaty Fishery	State Fishery	1842 Treaty Fishery	Totals
Nets	127	101	0	228
Boardings	26	15	0	41
Docksides	78	56	2	136
State Wholesale	N/A	81	0	81
Totals	231	253	2	486

Aquatic Invasive Species and Aquatic Disease

Preventing the spread of Aquatic Invasive Species such as Asian Carp, and fish diseases such as Viral Hemorrhagic Septicemia (VHSv) continue to be a topic of importance to the state, tribal, and federal governmental units around the Great Lakes region. Both of these threaten Michigan's fishery populations and could have very detrimental effects on commercial and recreational fishing. Unit members are becoming increasingly involved in handling complaints concerning invasive species and disease.

- CFS Larry Desloover responded to a request for assistance in regards to a live fish hauler out of Ohio that was stopped on I-69 by a Michigan State Police Motor Carrier Officer. The Motor Carrier Officer made the stop after identifying violations of hauling regulations. The officer recalled information from an awareness bulletin on live fish trafficking that was put out by CFS Desloover. CFS Desloover interviewed the driver and identified the fish species as channel catfish, common carp and razor belly shad. No violations of Michigan regulations were identified but the intent to violate federal laws regarding the exportation of channel catfish was discovered. A United States Fish and Wildlife Agent (USFWS) was contacted, and the truck was eventually refused entry into Canada by customs at the Blue Water Bridge boarder crossing. The USFWS is pursuing charges against the company.

- CFS Huff was contacted by the Ontario Ministry of Natural Resources in regard to an interception of 4,000 pounds of live Grass and Big Head Carp at the Ambassador Bridge entering Canada from Michigan. The fish were purchased in Arkansas and there was no evidence of any stops made in Michigan. The fish were no longer in water but were very much alive. Ontario is pursuing the investigation.

- CFS Larry Desloover and Milkowski followed up on numerous complaints involving minnow dealers in regard to meeting VHSv testing and compliance requirements.

C. Patrols

1. Joint Patrols

Officers from the CFEU and Field Personnel conducted numerous joint on water patrols with officers from the five signatory tribes within the 1836 treaty area. Representatives from the CFEU also participated in all of the Law Enforcement Committee 2011 scheduled patrols (schedule included below).

- CFS Short and CFI VanPatten worked with GLIFWC officers and the USFWS off of the Keweenaw Peninsula. State and 1842 licensed tribal fishers were contacted.

- CFS Short and CFI Van Patten conducted a joint patrol with the USCG utilizing a USCG fixed wing aircraft in Northern Lake Michigan waters.

- CFS Short and CFI Van Patten worked a joint drug interdiction patrol with the coast guard and the Upper Peninsula Substance Enforcement Team (UPSET). Waters of northern Lake Michigan were patrolled during the time where marijuana is known to be planted on remote islands.

- CFS Milkowski assisted District 3 with sturgeon spawning patrols. There has been an apparent recent increase in activity regarding the attempted illegal take of spawning sturgeon. Sturgeon with relatively fresh spear marks have been observed, and a suspect vehicle has been spotted on more than one occasion.

2. LEC Sponsored Group Patrols

Table 20. LEC Group Patrol Schedule, 2011.

Date	Location	Lead Officer
Feb 25-27	Bays de Noc Subsistence - Recreational	Officer Roger Willis, LTB
Mar 5	St. Marys River (Munuscong Bay/Raber)	Officer Roger Willis, LTB
Apr 15-17	Bay de Noc	Officer Terry Short, MDNR
May 11-13	Sturgeon Bay, Northern Lake Michigan	Officer Roger Willis, LTB
Jun 23, 24	Northern Lake Huron	Officer Craig Milkowski, MDNR
Jul 7, 8	Whitefish Bay, Naubinway & Manistique	Capt. Ben Carrick, BMIC
Jul 20, 21	Whitefish Bay, St. Marys River	Capt. Ben Carrick, BMIC
Aug 17, 18	Northern Lake Huron	Officer Craig Milkowski, MDNR
Sep 7, 8	Bays de Noc	Officer Terry Short, MDNR
Oct 11, 12	Bays de Noc	Officer Terry Short, MDNR
Oct 31, Nov 1	Northern Shore (Straits Area to Cedarville, Detour, Drummond Island)	Officer Dan Grondin, SSM

2000 CONSENT DECREE
LAW ENFORCEMENT COMMITTEE
GROUP PATROL SUMMARY

Patrol Location: Northern Lake Huron

Dates of Patrol: June 23 and 24, 2011

Agencies Represented:
Michigan Department of Natural Resources
Little Traverse Band of Odawa Indians
Bay Mills Indian Community
Sault Ste. Marie Tribe of Chippewa Indians
Grand Traverse Band of Ottawa and Chippewa Indians
Little River Band of Ottawa Indians

Vessels Utilized:
MDNR utilized PB-5 out of Mackinaw City
LRB launched small boat out of Mackinaw City
SSM launched small boat out of St. Ignace
Bay Mills launched out of Detour

Thursday June 23, 2011

Comments:
On Thursday 6/23/2011 weather was a major factor on the patrol with heavy fog lingering in the area of the straits and continuing to build giving near zero visibility
We were able to check 3 gill nets and meet up with LRBOI Lt. Deforest on the water and discuss the poor weather conditions at which point it was decided that the patrol would conclude at mid day.

SSM / LTB along with GTB officers checked a couple of trap-net boats and checked a couple of nets prior to ending there patrol.

Bay Mills officers worked Detour area with no violations reported.

Friday June 24, 2011

Still very heavy fog in the area poor visibility

LRBOI had engine problems and had to pull their boat out and make their way back home and were unable to participate the second day of the patrol
SSM / LTB and Bay Mills waited for the fog to lift, by noon everyone cleared and headed home ending the patrol.

PB-5 was able to limp down to Cheboygan area and pull approx. 11' of old gill net in Duncan Bay, and board two gill-net boats in Hammond Bay before ending the patrol.

Inspections:
7 net inspections
1 violations
0 warnings

Summary Comments:
Due to the weather conditions limited patrol activity on the water, as well as limited tribal fish activity. No other concerns or problems encountered.

Patrol Location: Northern Lake Huron

Dates of Patrol: August 17-18, 2011

Agencies Represented:
Michigan Department of Natural Resources
Little Traverse Band of Odawa Indians
Bay Mills Indian Community
Sault Ste. Marie Tribe of Chippewa Indians
Grand Traverse Band of Ottawa and Chippewa Indians
Little River Band of Ottawa Indians

Vessels Utilized:
MDNR utilized the Schaffer boat out of Detour
LRB launched small boat out of Mackinaw City
SSM launched small boat out of St. Ignace
Bay Mills launched out of St. Ignace

Wednesday 8/17/2011

Comments:
We pulled the 24' Schaffer boat with its net lifter up to Detour to pull an abandoned net in the Saint Marys River. Upon arrival we met with LRBOI officers who patrolled from Mackinaw with their boat and they had located the net and were standing by. Once the net was pulled I received a call from a local fisherman who stated there was another net over by Drummond Island, after a short search LRB officers located net and it was pulled as well by our Schaffer boat. In all approximately 1,200 feet of rotten gill net was recovered. Three hundred feet on the first pull near Frying Pan Island and 900' near the shipping buoy on the Drummond island side. Neither net had any identifiers.

SSM / LTB and GTB worked the straits area with no activity reported.
Bay Mills worked an ongoing complaint in the Brimley area with no activity.

Thursday 8/18/2011

Patrolled Hammond Bay with 25-122 with PB-5 out of Rogers City checked multiple nets in Hammond Bay. Met up with LTB officers on the water, they boarded a gill-net boat near 9-mile point and checked a couple of nets as well.

SSM/GTB and LRB pulled an abandoned gill net near St. Martin Island (no identifiers).

Bay Mills worked the straits area with no activity reported.

Inspections:
8 net inspections
3 violations
0 warnings

Summary Comments:
Due to the weather conditions limited patrol activity on the water, as well as limited tribal fish activity. No other concerns or problems encountered.

Patrol Location: Bays de Noc

Dates of Patrol: September 7-8, 2011

Day One: September 7, 2011

Vessels and Crew:

GTB Patrol Vessel William H. Bailey launched from Escanaba
- GTB Officer Jim Chambers
- Sgt. Robert Robles Jr.

SSM Patrol Vessel 1 launched from Fayette Park
- SSM Officer Sam Gardener
- LTBB Officer Roger Willis

SSM Patrol Vessel 2 launched from Fayette Park
- SSM Officer Tom Champagne
- SSM Officer Aaron Quinlan

MIDNR Patrol Vessel William Alden Smith left from Cedar River
- Cpl. Terry Short
- 2nd Lt. Steve Huff
- Cpl. Shannon VanPatten

GTB Vessel Report:

6 net checks
Net 1:
Location N45 35.565 W086 43.774. Staff with SSM 106 on it. Depth 81'
Location N45 35.327 W086 44.045. Staff with SSM 106 on it. Depth 85'

Location N45 35.005 W086 44.415. Staff with SSM 106 on it. Depth 103'

Net 2:
Location N45 35.212 W086 45.099. Single jug. Depth 84'
Location N45 35.335 W086 45.308. Staff with SSM 106 on it. Depth 88'
Location N45 35.497 W086 45.583. Staff with SSM 106 on it. Depth 79'

Net 3:
Location N45 35.160 W086 46.180. Short staff. Depth 72'
Location N45 34.981 W086 45.942. Staff with SSM 549 on it. Depth 81'
Location N45 34.858 W086 45.637. White jug. Depth 86'

Net 4:
Location N45 35.566 W086 45.637. Yellow jug. Depth 80'
Location N45 34.544 W086 45.856. Staff with SSM 549 on it. Depth 82'
Location N45 34.563 W086 46.167. Short staff. Depth 77'

Net 5:
Location N45 30.249 W086 48.128. Staff with SSM 136 on it. Depth 70'
Location N45 30.479 W086 48.016. White jug. Depth 88'. There were only two markings located for this net.

Net 6:
Location N45 31.480 W086 48.885. Staff with SSM 106 on it. Depth 98'
Unable to locate any other markings for this net.

MDNR Vessel Report:

3 net checks
Location 45 30.223 86 48.133. Pot staff with SSM 136 on it. Depth 102'

Location 45 38.382 86 45.924. Pot staff with SSM 549 on it. Depth 62'. Approximately 600 feet of the lead was on the surface was not marked every 300'. A citation was issued to Larry Barbeau for the violation.

Location 45 36.046 86 45.145. Pot staff for SSM 106. Depth 85'

Two Boardings:
Proud Maid captained by Joel Peterson. Done fishing for the day and heading to port with their catch of whitefish.

Martha Jean captained by Ben Peterson. Had just set 2 nets near the Bay DeNoc Shoal. No fish on board.

Enforcement Actions:
LTBB Officer Roger Willis issued a citation to Larry Barbeau for excess surface line.

Day Two: September 8, 2011
The nets in the bay were inventoried and all fishing vessels were contacted on the previous day. Tribal officers launched from Manistique on the second day, and State officers stayed on shore to do state licensed wholesaler inspections at the two businesses in the Garden Peninsula. State Officers had court scheduled at the SSM Tribal Center at 1400 hours.

Vessel and Crew:
GTB Patrol Vessel William H. Bailey launched from Manistique Harbor
GTB Officer Jim Chambers
Sgt. Robert Robels Jr.
SSM Officer Sam Gardner
SSM Officer Aaron Quinlan
LTBB Officer Roger Willis

Shore Based Crew:
Cpl. Terry Short
2nd Lt. Steve Huff
Cpl. Shannon Van Patten

GTB Vessel Report:
One net check
Location N45 53.394 W085 49.038. Staff with a torn flag with SSM 385. All other markings were visible. Depth 102'

One Boarding
CFV "J R Jensen" CORA registration CV1041/2008, 18 boxes of fish onboard ¾ of which were lake trout and the rest was whitefish. SSM Officer Gardner issued Robert Jensen a verbal warning for having an expired CORA registration.

Patrol ended at 1230 hours.

MDNR Report:
Wholesale inspections completed at Fairport Fishery and Big Bay DeNoc Fisheries.

Patrol Location: Bays de Noc

Dates of Patrol: October 11-12, 2011

Day One: October 11, 2011
Vessels and Crew:
LTBB Patrol Vessel William launched from Fayette
LTBB Officer Roger Willis
GTB Officer Mike Bailey
Sgt. Robert Robles Jr.

SSM Patrol Vessel 1 launched from Fayette Park
SSM Officer George Parish
SSM Officer Aaron Quinlan
LRB Officer Mike Brown
MIDNR Patrol Vessel William Alden Smith left from Cedar River
Cpl. Terry Short
Cpl. Shannon VanPatten
USCG Special Agent Bishop
2 boarding officers from USCG Sturgeon Bay
USCG Vessel Sturgeon Bay
4 crew members (two jumped on MDNR Vessel for ease of boarding)

Sault Tribe Vessel Report:

Eight Net Checks

Location: 45' 40.344 86' 43.497. SSM 136.
Location: 45' 39.475 86' 43.479. SSM 106.
Location: 45' 39.616 86' 43.310. SSM 136.
Location: 45' 39.395 86' 43.199. SSM 136.
Location: 45' 39.160 86' 43.106. SSM 136.
Location: 45' 38.768 86' 42.680. SSM 810. Improper net markings.
Citation #1163 issued.
Location N45 38.528 W086 42.490. SSM 810. Depth 38'
Location N45 39.404 W086 44.448. SSM 136. Depth 50'

LTBB Vessel Report:

Three net checks

Location N45 44.503 W86 41.469. SSM 136. Depth 37'
Location N45 44.503 W86 41.469. SSM 106. Depth 32'
Location N45 44.542 W86 41.125. SSM 136. Depth 37'

Contact was made with Todd Presseau at the Fairport Dock as he was loading nets.

MDNR Vessel Report:

Four Boardings

Martha Jean captained by Ben Peterson, 38 boxes of whitefish.

Magisi-Nij captained by Kaleb Barbeaux, 4 boxes of fish. USCG did an on the water vessel inspection and gave a warning for a throw ring that was not serviceable.

The Viking captained by Larry Barbeau, 10 boxes of fish. The USCG did an on the water vessel inspection and gave two written warnings for a horn that was not working and a fire extinguisher that was not serviceable.

Something Fishy captained by Greg Ruleau. No fish, they were getting ready to set a net near Snake Island. USCG gave a verbal warning for not having a navigational book on board the vessel.

Day Two: October 12, 2011

Vessels and Crew:

DNR Patrol Vessel William Alden Smith departed from Escanaba

Cpl. Terry Short
Cpl. Shannon Van Patten
SSM Officer Quinlan
USCG Special Agent Bishop

USCG Vessel from Sturgeon Bay

4 crew members

Shore Based Crew

Sgt. Robert Robels Jr.
LTBB Officer Roger Willis
LRB officer Mike Brown

MDNR Vessel Report:

4 net inspections

Location: 45' 44.551, 86' 41.113. White floats on lead and wings with no king float. SSM 136

Location: 45' 45.124, 86' 41.399. White floats on the lead and wings with no king float. SSM 106.

Location: 45' 45.509, 86' 41.479. White floats on lead and was missing one wing float. SSM 136

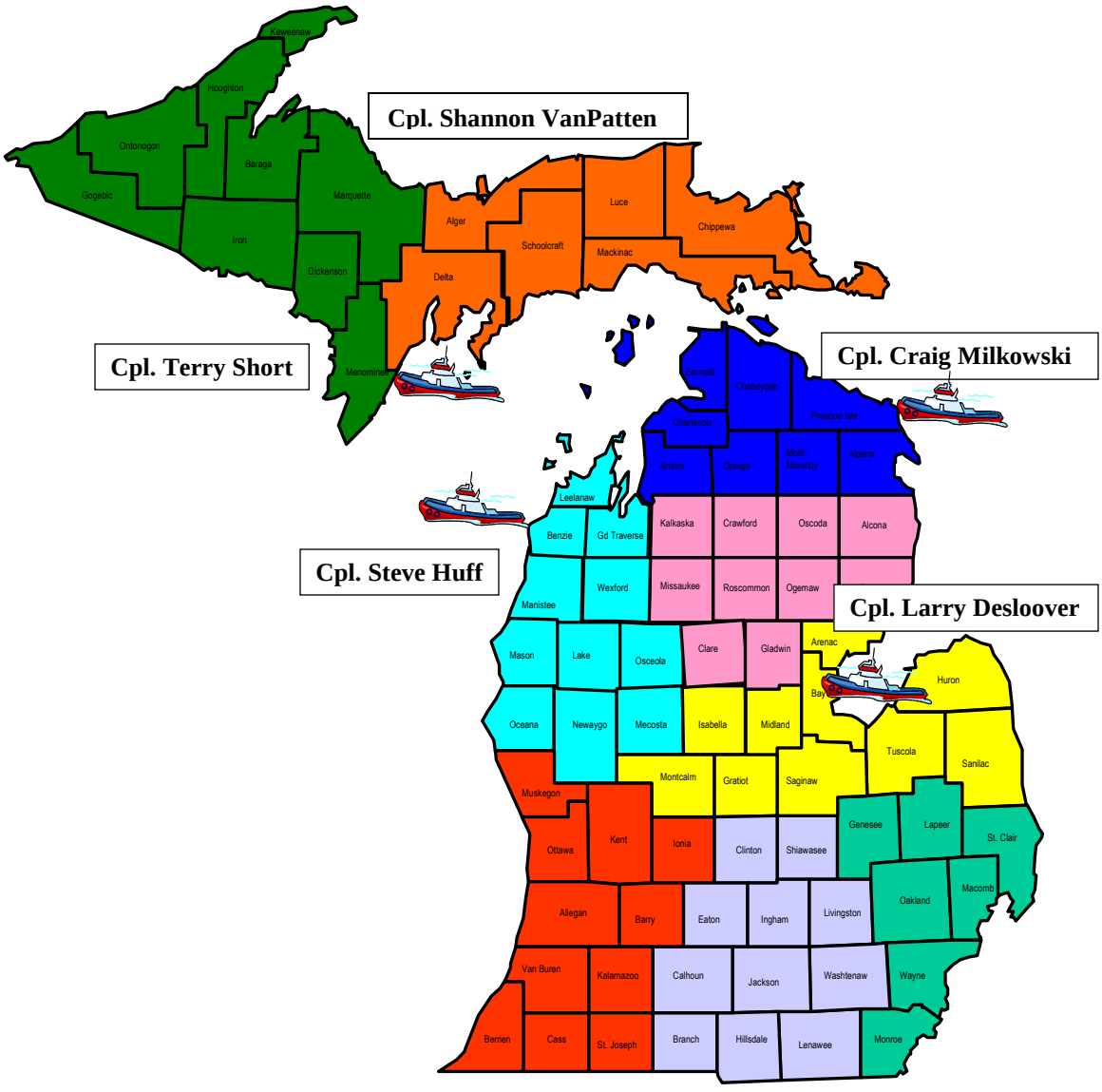
Location: 45' 45.723, 86' 41.547. No wing floats, white floats on lead, black king float, and two numbers on flag. SSM 106 or 136

Wholesale Inspection Conducted at Big Bay de Noc Fisheries.

Shore Based Crew Report:

Dockside inspections of The Proud Maid and Martha Jean were conducted in Fairport as they returned to shore. A citation was issued to Joel Peterson for having a non-native individual on the vessel.

Michigan Department of Natural Resources
Commercial Fish Enforcement Section



3. Law Enforcement Contacts

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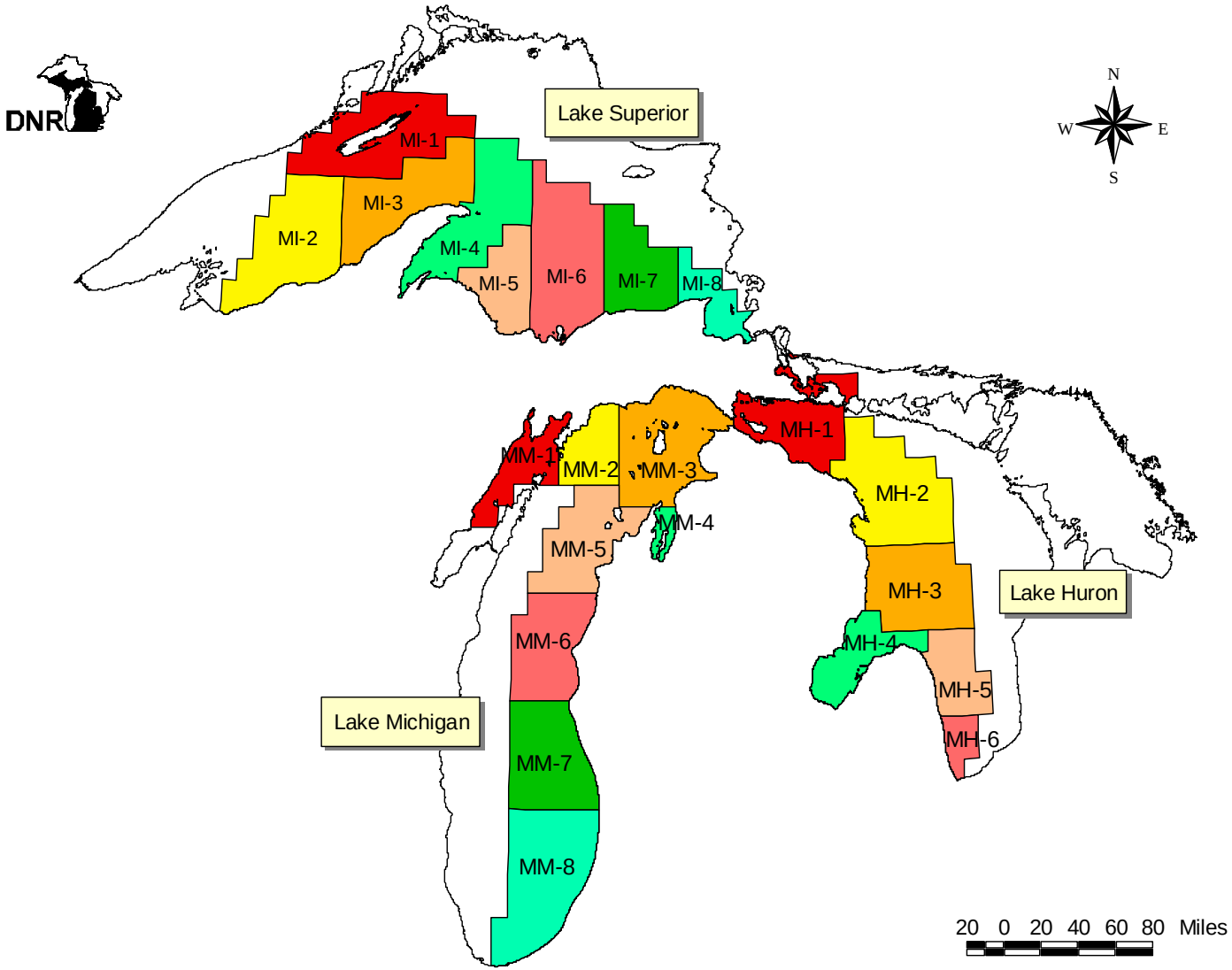

Figure 1. Lake Trout Management Units for Lakes Superior, Michigan and Huron.

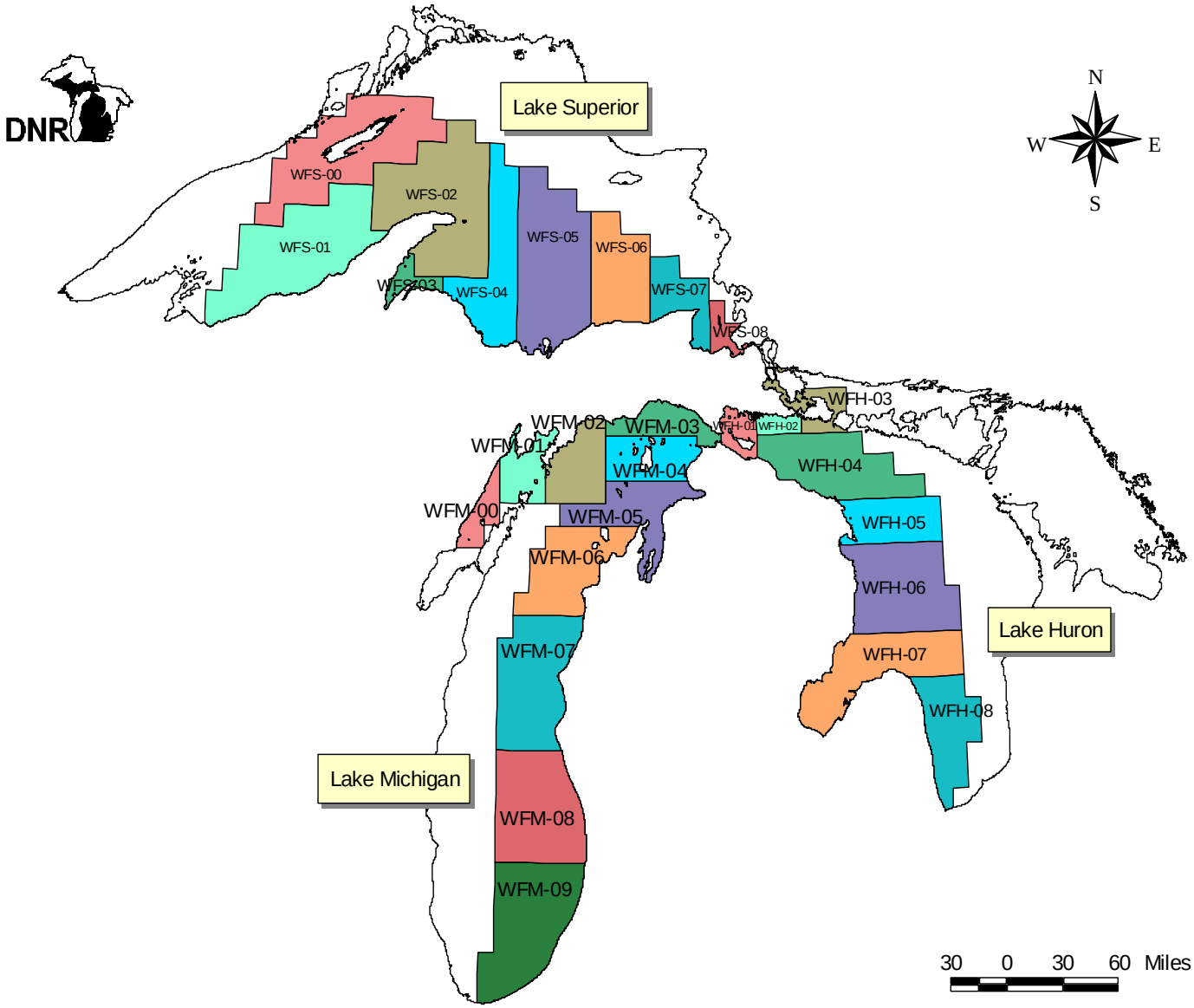

Figure 2. Lake Whitefish Management Units for Lakes Superior, Michigan and Huron.

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