

# NATURAL RESOURCES BOARD AGENDA ITEM

Item No. \_\_\_\_\_

**SUBJECT:** Chapter NR 25, Commercial fishing - outlying waters

**FOR:** FEBRUARY BOARD MEETING

**TO BE PRESENTED BY:** Bill Horns, Great Lakes Fisheries Specialist, Bureau of Fisheries Mgmt

**SUMMARY:**

In 1998 the Natural Resources Board asked for periodic reviews of harvest limits for all commercial fish species in Wisconsin waters of Lake Michigan and Lake Superior. These reviews also offer the opportunity to brief the NRB on other issues related to commercial fishing. Representatives of the Lake Michigan and Lake Superior Commercial Fishing Boards are invited to participate in these reviews. This year the review will include discussion of the following: 1) Trends in Great Lakes fish populations. 2) Expected changes in commercial quotas in the next year. 3) Review of assessment and analysis methods used in the development of commercial quotas. 4) Significant related developments and issues.

**RECOMMENDATION:** None, this is an information itme only.

**LIST OF ATTACHED MATERIALS:**

- |    |                                     |   |     |                                     |          |
|----|-------------------------------------|---|-----|-------------------------------------|----------|
| No | <input type="checkbox"/>            | Fiscal Estimate Required                              | Yes | <input checked="" type="checkbox"/> | Attached |
| No | <input type="checkbox"/>            | Environmental Assessment or Impact Statement Required | Yes | <input checked="" type="checkbox"/> | Attached |
| No | <input checked="" type="checkbox"/> | Background Memo                                       | Yes | <input type="checkbox"/>            | Attached |

**APPROVED:**

\_\_\_\_\_  
Bureau Director,

\_\_\_\_\_  
Date

\_\_\_\_\_  
Administrator,

\_\_\_\_\_  
Date

\_\_\_\_\_  
Secretary, Matt Frank

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Date

- |                           |                               |                        |
|---------------------------|-------------------------------|------------------------|
| cc: Laurie J. Ross - AD/5 | Bill Horns (15 copies) - FH/4 | Chuck Weier - WF/GLSFC |
| George Boronow - NER      | Lake Michigan CFB (7 copies)  | John Gozdialski - NOR  |
| Charles Verhoeven - NER   | Lake Superior CFB (5 copies)  | Randy Schumacher - SER |
| Michael Staggs - FH/4     | Steve Schram - NOR (Bayfield) | Steve Hewett - FH/4    |
| Todd Ambs - AD/5          | Dale Maas - GLSC              | Jim McNelly - SER      |

DATE: January 21, 2008

FILE REF: 3600

TO: Natural Resources Board

FROM: Matthew Frank

SUBJECT: Review of commercial fishing harvest limits.

In October of 1998 the Natural Resources Board asked for an annual review of harvest limits for all commercial fish species in the Wisconsin waters of Lake Michigan and Lake Superior. These reviews provide an opportunity for Department staff to describe methods used to determine harvest limits and to give the NRB some advance notice about possible changes or controversies.

Although the Department holds the authority to set harvest limits, the Commercial Fishing Boards for Lake Michigan and Lake Superior are now required by statute (1997 Wisconsin Act 189) to recommend species harvest limits, and the Department is required to give due consideration to those recommendations. In the spirit of that legislation, the Chairmen of the two Commercial Fishing Boards will be invited to comment separately to you, in writing or in person, when this information is presented.

Much of the material here is background information repeated from past briefing memos. Where appropriate, the information about individual species has been updated. The only harvest limits that have been changed since the last review are those for yellow perch from Green Bay. In December you approved the Department's recommendation to increase the total allowable harvest from 60,000 pounds to 100,000 pounds.

Two issues of concern to some commercial fishers are the minimum catch requirement for annual relicensing and the definition of the commercial fishing license year. These issues are not directly related to the setting of harvest limits, and therefore will not be reviewed here. However, because they may be raised by the Chairmen of the Commercial Fishing Boards, I want to update you very briefly on the status of those issues. Minimum catch requirement. Legislation has been introduced to eliminate the minimum catch requirement as a condition of annual relicensing. Department staff strongly advises that they be retained, but is exploring options for modifying them. License year. The commercial fishing license year corresponds to the state fiscal year, July 1 through June 30. Because this splits the annual spring harvest season for yellow perch into two license years, it complicates annual planning in that fishery, and some commercial fishers have asked that the license year be changed to April 1 through March 30. This suggestion was presented to the Lake Michigan Commercial Fishing Board, but was not endorsed or rejected. Department staff is reviewing the implications of such a change and will develop a recommendation.

### **Background**

The use of harvest limits is one of three defining features of the management of commercial fishing in Wisconsin waters of the Great Lakes. The others are limited entry and individual transferable quotas. All the major commercial species in Lake Michigan (yellow perch, bloater chubs, lake whitefish, rainbow smelt, round whitefish) are subject to harvest limits, but in Lake Superior harvest limits have been established only for lake trout and have not been established for lake whitefish, bloater chubs, lake herring, or rainbow smelt. Under Wisconsin's limited entry system, the commercial harvest of fish is currently limited to 10 licensed fishers on Lake Superior and 68 licensed fishers on Lake Michigan. Limited entry protects fishers from unrestrained competition and simplifies the regulation of the fishery.

For those species for which harvest limits are established, the total annual allowable harvests are allocated among licensed fishers<sup>1</sup> through the specification of individual transferable quotas, which are expressed as percentages of the total. Individual transferable quotas allow each commercial fishing operation to be conducted at the time most convenient for the individual fisherman, free of pressure to race to catch the limited harvest before others. The following table summarizes harvest limits in effect since 1982.

Commercial harvest limits for Lake Michigan, Green Bay, and Lake Superior 1982-2003. All harvest limits are expressed in pounds, except that starting in 1986 harvest limits for Lake Superior lake trout are expressed in numbers of fish. Entries are made only when harvest limit changed.

		<b>Perch</b> (GB)	<b>Perch</b> (LM)	<b>Chubs</b> (LM & GB)	<b>Whitefish</b> (LM & GB)	<b>Menominee</b> (LM & GB)	<b>Forage</b> (LM & GB)	<b>Smelt</b> (LM and GB)	<b>Lake Trout</b> (LS)
1982	May	(no limit)	(no limit)	1,650,000	(no limit)	(no limit)	(no limit)	(no limit)	180,000
1983	Feb.	200,000		2,500,000					
1984	Feb	350,000		3,000,000					
1986	July	400,000		3,500,000			18,000,000		80,000 fish
1989	Feb.		320,000		1,150,000	75,000		1,000,000 (GB only, no LM limit)	
	Sept.	475,000							
1991	Feb.	400,000							81,200 fish
	Mar.						0	2,358,000 (830,000 from GB)	
	Dec.			3,600,000	1,300,000				
1994	Jun.	300,000							
1995	Apr.		112,000		1,450,000				
1996	Sept.		0						104,400 fish
	Dec.				1,770,000				
1997	Mar.	200,000							
1999	Feb.				2,470,000				
	June							1,000,000 (351,993 from GB)	
2001	Oct.	20,000							
2002	Oct.								126,600 fish
2004	Feb							1,000,000 (25,000 from GB)	
2005	Dec	60,000							150,500 fish
2007	Dec	100,000							
current limits		100,000	0 <sup>2</sup>	3,600,000	2,470,000	75,000	0 <sup>3</sup>	1,000,000 (25,000 from GB)	150,500 fish

All commercial and sport fishing rests on the premise that there is a harvestable surplus in the adult population. That is, that some adult fish can be harvested annually without diminishing the ability of the population to sustain itself. Fisheries scientists and managers throughout the world have struggled to develop objective criteria for setting harvest levels. Recently the National Research Council, noting that

<sup>1</sup> The chub harvest on Lake Michigan is not entirely allocated among fishers, a significant fraction is still subject to an unallocated or "racehorse" fishery.

<sup>2</sup> The harvest limit of 112,000 is still on the books, but the season is closed.

<sup>3</sup> By law, alewives and chubs caught during commercial trawling may be landed.

many populations of marine organisms have been severely over-fished, recommended a conservative approach<sup>4</sup>:

*Managing single-species fisheries with an explicitly conservative, risk-averse approach should be a first step toward achieving sustainable marine fisheries. The precautionary approach should apply. A moderate level of exploitation might be a better goal for fisheries than full exploitation, because fishing at levels believed to provide the maximum long-term yield tends to lead to over-exploitation.*

In setting commercial harvest limits on the Great Lakes, the Department has subscribed to that philosophy. The establishment of specific harvest limits in Wisconsin involves consideration of several things, including the abundance of harvestable fish, the number of young fish available for recruitment into the harvestable population, the incidental harvest of non-target species by the commercial fishery, and claims on the fish population by sport fishers, tribal fishers, or commercial fishers in adjoining states.

On Lake Michigan we use a zone system in which Wisconsin waters are divided into three zones. Zone 1 is southern Green Bay, zone 2 is the waters surrounding the northern Door County peninsula and extending south to near Algoma on the Lake Michigan side, and zone 3 is our waters of Lake Michigan south of Algoma. Each zone has a characteristic mix of commercial species. Total allowable commercial harvests and individual quota allocations are specified for each zone separately.

In Wisconsin there is no single method for deriving harvest limits. The only general statement that can be made is that adult population size and annual reproduction are monitored to the best of our ability and efforts are made to increase or cut harvest limits in response to trends.

We are moving in the direction of developing statistical catch-at-age (SCAA) models for estimating abundance of commercial species. These models integrate data from assessments conducted by Department biologists with commercial catch reports and creel survey results to estimate fish populations. A rapid expansion of the use of these models in the Great Lakes was stimulated by negotiations between the State of Michigan and upper peninsula Indian tribes over the harvest of lake trout and lake whitefish from US waters of northern Lake Michigan, eastern Lake Superior, and northern Lake Huron. Today we have SCAA models in place for lake trout in Lake Superior and yellow perch in Green Bay and Lake Michigan. Our biologists, working with USFWS biologists, state and tribal biologists in Michigan, and academic scientists, hope in the next few years to develop working SCAA models for whitefish in Lake Michigan and lake trout in Lake Michigan.

Lake trout from Lake Superior. Lake trout restoration has been a marked success in Lake Superior, thanks to the efforts of the state, federal, and tribal partners. We have a healthy, naturally reproducing population in the Apostle Islands area, and we believe that further population growth is possible. The status of our Lake Superior lake trout population is assessed by a technical working group made up of state, tribal, and federal biologists. Harvest limits are guided by a statistical catch-at-age model that was developed by Dr. Michael Hansen and his students (UW Stevens Point). Lake trout is the only species subject to harvest limits in Wisconsin waters of Lake Superior. Because the Red Cliff and Bad River Bands of Lake Superior Chippewa retain harvest rights in Lake Superior, lake trout harvest limits are negotiated with the tribes and are specified in the State-Tribal Lake Superior Agreement. Re-negotiation of that agreement was completed in 2005, with new harvest limits implemented in December of that year.

Lake whitefish from Lake Michigan. The current harvest limit of 2,470,000 pounds was adopted by the NRB in February of 1999. So far, the commercial fishing industry has not been able to reach that limit. The commercial harvest peaked at 1,800,000 pounds in the 1998-99 commercial fishing year (July through June). The incidental harvest of lake trout in the lake whitefish fishery has declined in recent years, in large part because of increased use of trap nets.

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<sup>4</sup> Sustaining Marine Fisheries. National Academy Press. 1999

There has been some concern across the Great Lakes about declines in abundance of burrowing amphipods of the genus *Diporeia*, and how that might affect lake whitefish. The condition (weight per unit length) of individual lake whitefish was a concern in the recent past, but appears to have improved somewhat in the last few years. Over the same period the average size-at-age of whitefish has declined and the age at which whitefish become vulnerable to commercial harvest has increased. Over the past decade the seasonal movements of whitefish have changed, possibly a consequence of the *Diporeia* decline or changes in water clarity. Whitefish are now sought farther off shore than in the past and, very recently, fishing effort in Green Bay has increased. In 2001 the Department increased the maximum trap net depth from 90 to 150 feet (NRB Order FH-30-01) to accommodate the need to pursue whitefish into deeper water. Very recently, fishing effort has also increased markedly in Green Bay itself. Our biologists believe the lake whitefish population remains healthy, and we are not presently recommending a change in the harvest limit. Department staff hopes to develop a statistical catch-at-age model in the near future to use in making future quota adjustment decisions.

The whitefish harvest is divided between zones 2 and 3, with the largest portion being allocated to and taken from zone 2. This has been a point of discussion recently, with zone 3 fishers asking the Department to consider allowing quota transfers between zones or increasing the zone 3 harvest limit. The best available data indicate that the whitefish from both zones belong to a single population that spawns predominantly along the east shore of Door County, and we are committed to managing that whitefish population as a single stock. Recently a study under the direction of Dr. Brian Sloss of UW-Stevens Point demonstrated that there are six genetically distinct whitefish stocks in Lake Michigan (including Michigan waters), and that it would be possible to assess the contribution of each of those to the exploited population in Wisconsin<sup>5</sup>. If data from such a study were to show that the harvests from Zones 2 and 3 are taken from different genetic stocks, we could justify setting separate harvest limits in the two zones, but there is not a strong reason to believe that is the case.

The allocation of northern Green Bay whitefish between Wisconsin and Michigan commercial fishers remains a point of contention. Department biologists believe that fishers from both states harvest adult lake whitefish from the single population that spawns in our waters, but Michigan biologists believe that the Michigan harvest is drawn predominantly from one or more distinct populations that spawn in Michigan waters of northern Green Bay. The genetic studies under the direction of Dr. Sloss may help resolve this issue.

Yellow perch from Lake Michigan. This fishery was closed in 1995 following several consecutive years of very poor natural reproduction. In 2005 the sport harvest was still sustained primarily by the 1998 year class, which made up 67% of the harvest. 2005 was a banner year for natural reproduction by yellow perch in Lake Michigan, giving hope for a significant recovery of the population. We are cautiously optimistic about recovery of the population. Our biologists would like to document good survival by the 2005 year class and to see one or more additional years of strong reproduction before recommending re-opening the commercial fishery.

Our biologists worked with the Yellow Perch Task Group<sup>6</sup> to attempt to understand the causes behind the decline in yellow perch recruitment, and to monitor its recovery. On behalf of the Yellow Perch Task Group and with financial support from the Great Lakes Fish and Wildlife Restoration Act, Drs. Mike Wilberg and James Bence of Michigan State University developed an SCAA model for yellow perch in

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<sup>5</sup> Sloss, B.L., J.A. VanDeHey, T.M. Sutton, P.J. Peeters, and P.J. Schneeberger. 2007. Genetic stock structure of lake whitefish in northern Lake Michigan and Green Bay. Great Lakes Fishery Commission Project Completion Report.

<sup>6</sup> The YPTG was established by the Lake Michigan Committee in 1994. It is made up of state, federal, and tribal fisheries managers and scientists.

Lake Michigan<sup>7</sup>. Department biologists are continuing to work with the YPTG and with modelers at the Quantitative Fisheries Center at Michigan State University to expand the existing SCAA model to explore various inter-jurisdictional management strategies.

Yellow perch from Green Bay. This population appears to be recovering strongly following a decade of poor natural reproduction. We are encouraged by strong natural reproduction by Green Bay yellow perch in recent years, especially in 2003, and are closely monitoring those recent year classes. The Department recently increased the annual harvest limit to 100,000 pounds (NRB Order FH-07-07).

Our understanding of the Green Bay yellow perch population is supported by an unusually long and deep database reaching back almost 30 years. That database includes an annual trawl survey at 78 trawl stations in Green Bay. The Department has worked closely with the USFWS Fisheries Resources Office in Green Bay to review assessment methods, digitize historical data, and upgrade our modeling tools. One product of that cooperation is the development, with the assistance of John Netto of the Green Bay FRO, of an SCAA model for yellow perch in Green Bay. In the next year, Department biologists will explore methods of explicitly linking harvest limits to indices of yellow perch abundance and thereby having the harvest limits move up and down automatically as total yellow perch abundance changes in the Bay.

For Green Bay, as for Lake Michigan, we have followed a policy of attempting, over the long term, to split the total harvest equally (by numbers) between sport and commercial fishers.

Bloater chubs from Lake Michigan. The Current harvest limit of 3,600,000 pounds was adopted by the NRB in 1991, but has not been approached by commercial fishers for many years. We do not have as much detailed data on the bloater chub population as we do for some other species. The lake-wide bloater chub population is shared by all four states, but the only significant commercial harvest occurs in Wisconsin waters, making the rest of the lake a virtual refuge. Bloater chubs have declined markedly. Their failure to produce a strong year class in recent years has resulted in a marked decline in the biomass as measured by the Great Lakes Science Center (a facility of the US Geological Survey) in its annual surveys of forage species. The chub population decline has resulted in sharply reduced fishing efficiency, and the livelihoods of some of our commercial fishers have been significantly affected. Chuck Madenjian, the Great Lakes Sciences Center biologist who coordinates and analyzes the annual forage surveys has hypothesized that we are at the low point of a long-term cycle in bloater chub abundance in Lake Michigan. Our assessment data show that the ratio of females to males in the adult population has declined a little in recent years, but females continue to outnumber males by a large margin. This is probably because males tend to be shorter-lived than females and relatively few young bloater chubs of either sex have been added to the population. We do not believe that the commercial harvest in Wisconsin is the driving force behind the population decline, or a threat to recovery at this time. We will continue to monitor the population and respond to new information as it becomes available. In recent years the market for bloater chub roe has increased. With a diminished bloater chub population made up mostly of females, the harvest of bloater chub roe is of interest to Department biologists but not presently considered an obstacle to recovery of the population.

Rainbow smelt from Lake Michigan and Green Bay. Rainbow smelt abundance has declined dramatically throughout Lake Michigan over the last decade. Assessment trawling conducted annually by the Great Lakes Science Center shows a long term lake-wide decline in smelt abundance from a peak in 1980, with a modest and apparently temporary increase in 2005, but lower numbers in 2006 and 2007. The commercial trawl fishery for this species has been highly controversial for many years. In response

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<sup>7</sup> Wilberg, M.J., J.R. Bence, B.T.Eggold, D. Makauskas, and D. Clapp. 2005. Yellow perch dynamics in southwestern Lake Michigan during 1986-2002. North American Journal of Fisheries Management. 25:1130-1152.

to a petition, the harvest limit was reduced from 2,358,000 pounds to 1,000,000 pounds in June of 2000. At that time the following policy statement was developed by the Department:

*The Department recognizes that the rainbow smelt, a naturalized non-native member of the Lake Michigan fish community, plays several roles in the Lake Michigan ecosystem. It provides food for human consumption, and is therefore a source of income for the commercial fishery and source of recreational opportunities for sport fishers. The rainbow smelt provides forage for native and stocked game fish but also, as a predator, may adversely affect some native species, such as lake whitefish and lake herring. The Department will provide opportunities for both sport and commercial harvests of rainbow smelt to the extent that is possible while still meeting other management goals. Commercial harvest limits may be adjusted as the population of smelt changes, but the Department will not, for the purpose of enhancing the smelt population, limit salmon or trout stocking. The Department may, however, adjust stocking levels as changes occur in the general forage population of which the rainbow smelt is a part, in order to promote the health of stocked fish, or to achieve other management objectives.*

Participants in the 2002 Conservation Congress spring hearings voted overwhelmingly in support of a complete closure of rainbow smelt trawling in Green Bay. In 2004 the NRB adopted Order FH-12-03, which reduced the commercial harvest limit from Green Bay to 25,000 pounds.

Commercial trawlers have been critical of our regulations because of the requirement that trawling in Green Bay be conducted at night during the summer in order minimize the harvest of alewives and because trawling in Lake Michigan is limited to winter months. That policy has been reviewed and re-affirmed by the NRB and others a number of times, and any change would be highly controversial.

Menominee (round whitefish). The current harvest limit of 75,000 pounds has been in effect since 1989. The annual reported harvest is small (1667 pounds reported in the 2004-05 fishing year), so we do not invest time and effort in modeling this population, or in adjusting the harvest limit.

Rough and detrimental fish. In addition to the quota species listed above, commercial fishers are offered a contract/permit to harvest incidentally caught rough and detrimental fish, defined specifically as bullheads, burbot, catfish, gizzard shad, suckers, white bass, and white perch. Under that contract/permit, an individual's harvest of those species (in aggregate) may not exceed his/her combined individual harvest limit for all quota fish species.

White perch. Within the last decade white perch proliferated in Green Bay, to the point where they are a nuisance to yellow perch fishers, and then declined sharply in 2003. Because of high PCB levels, the Department had not previously considered facilitating the development of a commercial harvest of white perch, but in 2002 studies showed that PCB levels were below FDA action levels, and therefore could be sold in commercial markets. Department biologists took steps to explore opening a commercial fishery for white perch, but because of the population decline in 2003 that possibility is not currently being pursued.