Regulation Proposal Form

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Proposal Title
Great Lakes Muskellunge 54" Size Limit

Author	Date
Steve Hogler	June 6, 2011

Location Information:

Affected water(s)	
Lake Michigan waters north of Waldo Boulevard, Menominee River	
County	**WBIC(s)**
Brown, Kewaunee, Oconto, Marinette, Door, Man	20, numerous

Upstream/downstream boundaries, if applicable—Law Enforcement should be consulted
Upstream to Hattie Street Dam on the Menominee River

Will this regulation affect Ceded Territory water and are there any anticipated impacts to tribal fisheries?
Yes ☐ **No** ☒

Current Regulation
50" minimum size, 1 daily bag

Proposed Regulation
54" minimum size, 1 daily bag

Management Goal
Summary statement that characterizes the desired fishery (e.g. provide a naturally reproducing harvest-oriented walleye fishery; provide a bass fishery dominated by large adults that maximizes predation on smaller fishes)
Establishment of a self-reproducing population of Great Lakes Muskellunge in Green Bay

Description of the Water(s) and Fishery
Provide a brief description of the water(s), past regulations and other management actions. Summarize all applicable fisheries data, particularly from surveys meeting protocols (Table 1).
The Wisconsin Department of Natural Resources (WDNR) in cooperation with several local musky clubs and the Musky Clubs Alliance of Wisconsin initiated a Great Lakes strain muskellunge reintroduction program in 1989 in the Green Bay waters of Lake Michigan. Muskellunge in southern Green Bay were decimated during the early to mid 1900s by habitat destruction, pollution, and over-exploitation. The need to re-establish a native inshore predator fish species has been identified in several planning efforts including the Lake Michigan Integrated Fisheries Management Plan and the Lower Green Bay Remedial Action Plan.

A three-phase plan was drafted by WDNR biologists to re-establish a self-sustaining population of muskellunge in Green Bay: (1) identify and appropriate egg source, obtain eggs, and successfully hatch, rear and stock fish, (2) establish an inland lake broodstock population, and (3) develop a self sustaining population in Green Bay. Phase 1 included the collection of gametes from the Indian Spread Chain in the lower peninsula of Michigan, a tributary system to Lake Huron. In cooperation with the Michigan DNR, gametes were collected and brought to the Wild Rose Fish Hatchery from 1989-1993. In 1996, additional spawn was collected from Lake St. Clair to increase the genetic diversity of the population. Fish health issues and funding delayed further feral muskellunge collections from 1997-2004. In 2005, WDNR pursued an agreement with Ontario Ministry of Natural Resources (OMNR) to collect gametes from Georgian Bay of Lake Huron. In 2007, WDNR signed a five year agreement with OMNR to collect gametes and raise those fish at Fleming College for eventual transfer to Wisconsin. Those efforts led to transfer and stocking events in 2009-2010.

Phase 2 was initiated with the stocking of muskellunge fingerlings into Long Lake in Waushara County, Wisconsin from 1989-1992. From 1995-2001, Long Lake was the main brood source for the reintroduction effort. In 2002 the WDNR discontinued the use of Long Lake as a broodstock lake. In April of 2009, three new inland lakes were stocked with muskellunge from Georgian Bay, Lake Huron, in order to establish brood

populations.

Phase 3 began with the stocking of Great Lakes muskellunge in 1989 and subsequent stocking events through 2010. To date there has been no significant amount recruitment from natural reproduction of muskellunge documented in Green Bay or the Lower Fox River. However in 2008, two young of the year muskellunge were collected from the Lower Menominee River and in 2009 young of the year muskellunge were captured in both the Lower Menominee River and in Sawyer Harbor, Sturgeon Bay. Tissue samples have confirmed these individuals are genetically consistent with Great Lakes spotted muskellunge, confirming the first evidences of natural reproduction.

Current assessment of the Green Bay muskellunge population includes spring fyke netting and fall electrofishing. Incidental muskellunge were captured from 1990 through 2003 while WDNR survey crews sampled walleye populations. However in 2004 a targeted spring effort to sample muskellunge began. Large diameter fyke nets are fished to target spawning and pre-spawn muskellunge in April and May. Fish are measured and total length, weight, sex, and fin clips are recorded. Fish are also given an individual alpha-numeric tag. In the past external Floy tags were used, but currently the WDNR uses passive integrated transponder (PIT) tags to improve tag retention. Sampling effort varies from year to year and in some years the Menominee River, Peshtigo River, and the Sturgeon Bay areas have also been sampled.

The mean, median, and maximum length of muskellunge continues to increase as observed in Figure 3 of the Green Bay Great Lakes Spotted Musky Management Plan (attached). As the population continues to mature the fish continue to increase in size. This same pattern is visible when only the female musky lengths are observed. However, there is more variability in the series because of the small sample size in some of the years. The missing three year classes from discontinued stocking from 2007-2009 should increase the average size as an artifact, because recruitment to the population of smaller fish will not likely occur again until 2015.

The fall electrofishing assessments are conducted in September through November and target all game fish. The Lower Bay of Green Bay, Menominee River, Peshtigo River, Oconto River and Fox River are sampled. The catch rate on the Lower Fox has continued to increase as the relative abundance of the musky population continues to increase. This increase in abundance is consistent with the increased stocking rate that began in 2002 and will likely continue until the 2006 year class is fully recruited.

Management Objective(s)

a) Goals are general, objectives are specific. Objectives are used to evaluate the effectiveness of your action and determine if you have achieved your goal. Provide a management objective that is specific, measurable, able to be achieved, related to the goal, and has a temporal component (e.g. increase walleye harvest rate to 0.1 fish/hour while maintaining recruitment at or above 10 YOY/mile within 5 years; increase largemouth bass RSD14 to 35 and bluegill RSD8 to 15 within 5 years

Muskellunge fishing in Green Bay is continuing to grow in popularity and the fishery is managed for trophy potential because of the excellent size structure and growth potential of the fish.

Goal 1: Sustain the sport fishery and trophy potential of fishery
Objective 1.1 Angler catch rate of 0.04 fish per angler hour of directed effort as estimated by the Lake Michigan Creel Survey (30 hours of directed fishing/catch)
Objective 1.2 Maintain a high size structure with RSD-50 of 5 and RSD-46 of 20 during spring fyke netting
Strategies: maintain stocking until sufficient natural reproduction is occurring to sustain the abundance of the population. Maintain restrictive harvest regulations to maintain/achieve size structure.

Goal 2: Re-establish a naturally reproducing population(s)
Objective 2.1 PE 0.2 adult muskellunge per acre in the Lower Bay/Fox River management area, south of a line from little tail point to Brown County line)
Objective 2.2 PE of 0.1 adult muskellunge per acre in the West Shore management area Pensuakee River to Menominee River)
Objective 2.3 PE of 0.1 adult muskellunge per acre in Door county management area Little Sturgeon to Sister Bay)
Objective 2.5 Fall electrofishing catch rates of 1 YOY muskellunge per mile.
Strategies: Maintain population abundance through stocking and restrictive harvest regulations until

population is self sustaining. Move stocking locations to areas that are more likely to support natural reproduction. Use conclusions and recommendations from GLFWRA study to select future stocking locations. Use closed season to prevent fishing during pre- and active spawning.

Goal 3: Establish a viable population with sufficient genetic diversity.
Objective 3.1 Increase the number of founding individuals to >50
Objective 3.2 Establish an allelic richness and diversity equal to or greater than the source populations.
Strategies: Import additional fish from other Great Lakes populations, use best hatchery practices to ensure genetic diversity of hatchery products.

Goal 4: Reduce hooking and handling mortalities and increase compliance with regulations.
Objective 4.1 Achieve 100% compliance with fishing regulations.
Objective 4.2 Reduce handling mortalities to less than 5%.
Strategies: Perform outreach activities to teach handling and improve compliance with regulations. Maintain and improve signage at access points.

Goal 5: Restore/rehabilitate habitat in Green Bay to support ecosystem functions.
Objective 5.1 Improve and enhance aquatic habitat in order to achieve Goal 2.
Strategies: Identify habitat limitations on musky life history strategies and design and implement habitat improvement/restoration projects to overcome deficiencies. Further research may be warranted on spawning and rearing habitat, and interactions with fish/aquatic community (exotics). Cooperate with internal (WDNR Wildlife and Watershed Bureaus) and external partnerships (USEPA, UWGB, USFWS), to improve and restore water quality and ecosystem functions of Greater Green Bay ecosystem.

b) Describe how the management objective and associated target levels for metrics were developed (e.g. lake management plan, stakeholder meeting, comparison to other water(s)).
Stakeholder meetings with angling public.

Current Problem

Use survey data or provide context for a similar water or group of waters (e.g. lake type, watershed) to demonstrate how the fishery is not meeting the desired management objective. Identify hypothesized problem(s) you hope to address.
Lack of natural reporoduction despite 22 years of stocking. Increasing the size limit may increase the number of spawning fish.
The fishery emerged in 2005 and fishing pressure tripled from 2005 to 2007, as estimated by the Lake Michigan Creel Survey (Figure 8 of the attached Green Bay Musky Plan). In 2007 the directed fishing effort for muskellunge during the open water season was just under 40,000 hours. This number is an underestimation because the creel survey is not conducted in November when a significant portion of the effort for muskellunge is fished. In 2010, the Lake Michigan creel survey estimated a total of 35,342 hours of directed effort for muskellunge on Green Bay and the lower Fox River from March 15 through October 31st (Figure 8). Although the 2010 total effort estimate increased over the 2009 total, catch per effort continued to decline. The creel estimated catch rate has decreased since 2006 reaching its lowest level of 0.015 fish/hour in 2010 (Figure 8). In comparison, statewide directed muskellunge catch rates average 0.039 fish/hour (25.6 hours/fish) for naturally reproduced populations, and 0.020 fish/hour (50 hours/fish) for populations maintained by stocking. In 2010, the creel survey estimated that anglers caught 541 musky but harvest was estimated at zero.

Proposed Regulation Justification

How is the regulation change expected to meet your objective(s)? Demonstrate expected results of the regulation using tools such as modeling, comparisons to other waters, peer-reviewed literature, etc...
Survey and creel data show that the current regulation of 50" is likely effective in protecting the vast majority of muskellunge in Green Bay. The proposal for 54" is driven by musky sport anglers who believe substantial harvest is occurring that is not recorded by the creel survey. They believe this harvest is the cause for the lack of reproduction noted in Green Bay. This regulation (54") is used by Ontario to manage muskellunge.
The proposed 54" minimum length limit will support the management goal of a trophy muskellunge fishery. Recent data such as declining CPE and some questions regarding the accuracy of harvest estimates since the creel survey ends in October, before the end of the muskellunge fishing season, indicate that a minimum size limit larger than 50" may be needed to adequately protect these fish.

Evaluation Plan

Provide a suggested plan and timeline for evaluating whether the objectives are met in response to the regulation change. Indicate potential courses of action if objectives are not being met. If proposed regulation is not part of the "toolbox" (Table 2) the evaluation plan needs to be additionally detailed with an explanation of how the costs of evaluation will be covered.

The effectiveness of this regulation will be assessed by the continuation of current surveys including the creel survey.

Previous Action

Include details on previous regulation proposals that were intended to address the current problem, if applicable.

In 2007, a citizen resolution asking for an increase in the minimum length limit to 54 inches for muskellunge in Green Bay was introduced at the annual Conservation Congress spring meeting. The resolution was passed at the county level but did not get forwarded by the Great Lakes Study committee. In 2008 a similar resolution was coordinated by multiple authors and submitted in multiple counties. The resolution passed in several of the counties and was then advanced by the Great Lakes Study committee and the Warm Water study committee. The committees and WCC Executive Council supported the resolution and included it at the 2009 WCC as an advisory question. The proposed 54" minimum length limit was supported Statewide with 2480 YES (52%) and 2260 NO (48%) votes. The proposal was supported in 38 counties and not supported in 32 counties with 2 counties with a tie vote. In the counties adjacent to Green Bay 3 supported: Brown (116Yes-60 No), Door (63 Yes – 62 No), and Oconto (41 Yes- 33 No), while 2 were opposed Kewaunee (17 Yes – 38 No), and Marinette (29 Yes – 56 No). At their annual meeting the WCC decided to support the public opinion vote and forwarded the proposed 54" minimum length limit advisory question to the Department.

In response to the narrow vote on the WCC advisory question, it was suggested that instead of including the 54" minimum length limit as a rule change proposal at the 2010 Spring Hearings, a more detailed management plan that included stakeholder input be prepared. If through that planning process a change in the regulations for muskellunge on Green Bay was identified, it would then be proposed as a rule change by the department at that time. This strategy was supported by the Lake Michigan Fisheries Team and the Muskellunge Team.

Public Participation in Developing Proposed Regulation

Was input solicited from stakeholders when developing the proposed regulation change? Include documented comments from affected user groups (positive and negative), contacts made with local Conservation Congress Representatives, lake associations, angler groups, etc…

Several public meetings were held in 2010 with stakeholders to develop common visions and goals for the plan. In December 2010 the draft plan was reviewed by the public with a 30 day comment period. Thirty-seven comments were received with two (5.4%) for the plan as written, three (8.1%) did not indicate their position and thirty-two (86.5%) were opposed to the plan. Although many anglers supported most of the document, they strongly opposed the continuation of the 50" size limit. Of those that opposed the 50" size limit, most suggested either a 54" minimum size (43.9%) or catch and release only with a ten year sunset (51.2%). Although more anglers supported the catch and release restriction in public comments, it is likely many of the anglers only supported this option because they believed that the 54" size limit was off the table.

Small Business and Fiscal Effect

Explain who is likely to be economically impacted and in what way. If possible, provide estimates.

Likely none. For the most part the current regulation of 50" is catch and release so changing the limit to 54" will not cause anglers not to fish musky in Green Bay.

Draft Question: **for inclusion in Spring Hearing questionnaire**

This proposal would (insert proposed regulation): Increase the minimum size for Muskellunge to 54" for waters of Lake Michigan and Green Bay north of Waldo Boulevard, tributary streams north of Highway 10 and for the Menominee River below the Hattie Street dam.

The Management Goal is:

This regulation proposal is one tool to help meet the management goal because: It is believed that additional fish will be protected resulting in increased numbers of spawning size fish which will increase the likelihood of natural reproduction.

Do you favor : yes

Regional Fish Supervisor Regulation Proposal Review Checklist

Proposal Title		
54" musky		
Author	**Reviewer**	**Date**
Steve Hogler	Mike Donofrio	7/18/11

Regional Fish Supervisor Reviewer Notes:
This proposal was submitted and approved by all required NER staff - author, supervisor, LE - by 7/15.

Recommended Action by Regional Fish Supervisor Approve ☒ Reject ☐

Species Team Regulation Proposal Review Checklist

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Species Team Reviewer Notes:
Musky Team: The background for the question should be written-up and provided within the form

from Bill Horns:
LMFT notes from 3/30/11:

- Musky management plan

Background. Following a public consultation process, the Department is faced with a decision about the musky size limit on Green Bay. The alternatives are 1) keep the current 50” limit, 2) establish a new 54” limit, and 3) establish catch-and-release only for ten years period.
Action. The LMFT discussed the options and rejected keeping the 50” limit, but was split regarding the other options, with five favoring 54” and four favoring catch-and-release. The issue will be settled by the FM Board. The LMFT has no objection to sending the rule to spring hearings

Recommended Action by Species Team Approve x☐ Reject ☐