

**Muskellunge Standing Team Notes  
Kemp Biological Station, Minocqua, WI  
August 20 -21, 2008**

Members in attendance: Scot Stewart (Sponsor), Tim Simonson (CO), David Rowe (NER), Steve Gilbert (NOR), Doug Welch (SER), Jordan Weeks (WCR), Gary Lindenberger (NOR), John Aschenbrenner (Conservation Congress), Joe Weiss (Conservation Congress), Brian Sloss (UWSP), Bob Haase (Musky Clubs Alliance of Wisconsin). Others in attendance: Steve Avelallemant (NOR), Dennis Scholl (NOR), Dan Isermann (UWSP), Lawrence Eslinger (UWGB).

1. Rule Proposals Update – The following rules were adopted by the NRB in June 2008: Extended southern zone season; 50” minimum on Chippewa Flowage; Consistent 40” minimum on the Black River; 50” minimum on Bone Lake; 40” minimum on Sparkling Lake through 2014. The following were not advanced to the NRB: Catch and Release only, artificial lures only, north of U.S. 10; 50” minimum on Enterprise Lake (local opposition); quick-set rigs only (advisory – not advanced – never included on questionnaire). There was very little interest expressed in reviving this proposal.
2. New Rule Proposals – 2009 Spring Hearings – We reviewed 3 rule proposals for the 2009 Spring Hearings: Increase the minimum length limit 50” on Kentucky, Big Sand, and Long Lakes, Vilas County. All three proposals were approved by the Muskellunge Standing Team.
3. Rule Development Guidance for 2009 – Rule Development guidance were reviewed. The Standing team recommends reducing the standard categories to 3 available options: No minimum length limit (to replace the 28” minimum length limit); 40” statewide; and 50” (to include phasing out the 45” option). The change from a 28” minimum to “No minimum” was already recommended last year and just needs to be incorporated into the guidance next year (after approval from FM Board). This year, the guidance went out at the last minute and there was no opportunity for review. The Standing Team recommended a spring hearing question to eliminate the 34” minimum and replace it with a statewide 40” minimum length limit, which would eliminate a category. The standing team discussed the concept of a protected slot length limit for muskellunge and the group could not conceive of a situation where a slot limit would be more biologically effective solution than a minimum length limit. There were instances where, sociologically, a slot limit might be appealing, however. **UPDATE:** Subsequent to our meeting, Simonson discussed the statewide 40” minimum length limit with FM administration and it was well received. However, it was felt that we should not try to scramble to put something together for spring 2009, so our goal will be to put together a solid package for the 2010 spring hearings.
4. “RSD”/“PSD” Standard calculations. We recommend that Fisheries Biologists use a “modified RSD” for muskellunge in Wisconsin. Namely, the stock size used in the denominator of the formula should be the number of fish  $\geq 30$  inches (rather than the published value of  $\geq 20$  inches). This denominator has been used in Wisconsin since the late 1970s, and is well justified. When using the recommended ratio, it should be referred to as a “modified RSD”, along with providing the cut offs used for the numerator (e.g., if the numerator is 40”, then the ratio should be referred to as “modified RSD<sub>40</sub>”) and denominator, in this case,  $\geq 30$  inches. Additionally, there is some “unrest” in the literature with this topic, particularly related to nomenclature. Currently, “PSD” (proportional size distribution) is being used, with the subscript indicating the size cut-off of the numerator, e.g., PSD<sub>40</sub>, in place of RSD.
  - a. As part of this discussion, renewed interest was expressed in standardizing the size cut off used for muskellunge population estimates. We continue to recommend that population estimates be based on fish 30” and larger. There is strong evidence that tribal harvest is very limited on fish less than 30”, so it makes little sense to include them in computations of adult population abundance. This item should be forwarded to the TWG for discussion. Having uniform, standardized computation methods for population estimates would be desirable and should be discussed further.

5. Trophy Waters Proposal – The team recommends development of a list of waters designated and managed specifically as trophy fisheries (review and revision of the Class A1 waters). The list should contain waters with the **potential** to provide trophy fisheries (numbers of 48" and larger fish – not waters that at one time produced a large fish on an occasional basis). **Inclusion on the list does not necessarily mean that all these waters will have 50" minimum length limits.** Some may already have higher size limits, and some may already be meeting their potential, for example. Once the list is reviewed and complete, the classification of these waters (A1) will be updated. The Team recommended development of specific criteria to use to evaluate whether the designated waters are meeting their trophy potential, along with a mechanism to identify limiting factors and, ultimately, change management actions, where needed, to improve them (draft list **attached**). The criteria discussed (to determine whether the lake was meeting its potential) included: Modified PSD, Length at infinity and Omega (Length at infinity x K; from the Von Bertalanffy growth equation), mean length at maturity, density, forage community (presence-absence; catch/effort), and creel statistics (Catch/harvest/effort). Dan Isermann mentioned a simple system in use by MNDNR to measure changes in fishing effort that counts cars at boat ramps, similar to the DOT car counters. Criteria for lake selection were also discussed, and include lake size, forage composition, historic or contemporary reputation as a trophy fishery, and TSI. Simonson will compile available data and begin to develop specific numeric criteria.

a. Example – Evaluation of the 45" minimum length limit on Trout Lake. Steve Gilbert presented his trend data from Trout Lake, Vilas County. He found that the 45" minimum length limit has not resulted in improvements of the modified RSD. The muskellunge population is very small, and tribal harvest, along with a small population size, appears to be a factor in limiting the lakes ability to perform up to expectations. The regression model we use appears to overestimate safe harvest in large lakes with limited populations because they are predicted to have higher than observed populations, based on lake area. This is a joint-fishery issue that should be addressed within the Treaty Working Group.

6. Brood stock management.

a. Report from Spring 2008. Lac Courte Oreilles - We apparently used exactly 28 females this year along with around 60 males (we have somewhere around 88 genetic samples). We had over 20 quarts of excellent eggs that were collected over a 7 day period. There were 2 females in excess of 50", along with several in the upper 40"s. As far as Gary was concerned, this spring went the smoothest of the past 3 for the muskies, despite the abnormal weather conditions that crews experienced. Minocqua Chain –We spawned 20 females, ranging in size from 35" to 49", with 25 males from 27" to 42" in Minocqua, Kawagasaga, and Tomahawk.

b. Lake Selection. This is primarily a NOR function, which is implementation of the guidelines for brood stock management developed and adopted by this team. I have attached a recent update for information (also see below for information on 2008 test netting operations).

c. Effect of 1:1 pairings on effective population size – This spring, hatchery crews had a difficult time collecting a sufficient number of males to achieve the 3:1 (male : female) pairing recommended under the brood stock management plan. They requested that we develop alternatives to the 3:1 and come up with recommended numbers of fish that would need to be spawned under a 1:1 pairing scenario. Dr. Sloss did a preliminary analysis and suggested that, assuming a 7-year generation time, 36 females and 36 males would provide the same effective population size. Under a 5-year generation time, 50 females and 50 males would be needed to provide similar.

d. Pit tag retention in adults – Not discussed.

- e. Test netting 2008 (**attached**) – Martin Jennings, ISS, provided excellent reports on testing netting he conducted this past spring on 2 potential brood stock lakes, Lost Land/Teal Lakes and Moose Lake. Lost Land/Teal appear to be well suited as potential brood lakes. The primary issue here is whether the population continues to recruit from natural reproduction. There were a variety of issues encountered with Moose Lake that make it less suitable as a brood lake, including early spawning prior to complete ice-out, wide dispersion of muskellunge during spawning, skewed sex ratio >2.3:1 (male : female), and difficult access during winter draw-down water levels.
7. Universal Receptors. There was interest in reviewing the criteria and process for determinations of the original list of “Universal Receptor” waters. The original list was developed in 2003 to advise musky fishing clubs on where Private Stocking Permits would be issued without concern for the genetics of the stocked fish. The list was based on waters outside the native range without natural reproduction. This list should be considered fluid in that any waters outside the native range that do exhibit natural reproduction should be removed. The Standing Team suggested that an electrofishing catch rate of 0.5 young-of-year/mile would be considered sufficient to remove a water from the list. The standing team further reiterated that universal receptor lakes with the potential for natural reproduction should only be stocked in alternate years and should be evaluated for existing natural reproduction on an ongoing basis.
  8. Stocking Guidance. Additional discussion ensued regarding having better guidelines for feedback on musky stocking. There needs to be a stronger link between the propagation system and the available survey data to ensure the most efficient use of limited hatchery fish. The Standing Team is committed to developing evaluation criteria for stocked musky fisheries. The potential criteria include: return to creel (specific angler catch rates), natural reproduction (0.5 young-of-year/mile fall electrofishing); population estimate (density; adults/acre); catch per net night (preliminary criteria discussed included 0.5/net night – average, 1/net night – good, and 1.5-2/net night – excellent). Stocked waters should be evaluated every 10 years to ensure that fishery objectives are continuing to be met). Some additional data analyses are needed to clarify these criteria.
  9. Review Musky Quotas in light of production cuts due to increased distribution costs. This item has been taken care of through budget adjustments; no need to review. We did recommend local discretion when cuts are needed and suggest that larger larges should have higher priority than smaller lakes, in keeping with our general desire to improve trophy fishing opportunities.
  10. Captive Brood Lake Guidance (**attached**). The Standing Team reviewed and approved the general guidance on developing and maintaining stocked brood stock lakes. There are still some details to be worked out with Brian Sloss. Once these additions are made, a second version will be distributed for review and approval. Then, an issue brief will be presented to the FM Board for implementation.
  11. Leech Lake Study. On Hold in WI. We continue to cooperate with the IL Natural History Survey on a Leech Lake strain comparison. There was some discussion concerning the research project that has been placed on hold for two years now. The research staff involved plan to move on to other projects, rather than waiting for this study to materialize. There was a suggestion that the field portion of the study be handed over to regional staff, if fish are ever obtained from MN. The regional fisheries supervisor is not in favor of putting this workload on fisheries biologists. Given that we are unable to obtain eggs from MN, the Standing Team again recommended that this study be cancelled.

#### Informational Items

12. GL Spotted - Long-term brood stock management plan for spots robust to VHS (i.e., increase diversity, other inland sources – brood lakes/holding waters; egg disinfection).
  - a. OMNR and Fleming College have cooperated with us again this year for great lakes musky production. OMNR gathered gametes and Fleming College is rearing fingerlings. If APHIS approves our request, then fingerlings will be transferred to Wisconsin this fall. We have entered musky quotas for Anderson and Archibald Lakes, should these fish

become available. The Musky Team discussed and approved the stocking of the great lakes musky into these lakes. The Standing Team discussed this at the last meeting and also recommended stocking in Elkhart Lake and Little Green Lake. We need to check to make sure that these quota requests are entered.

- b. Fish and Wildlife Service Grant – David Rowe provided a summary of his proposed project on Green Bay. Funding for the project looks promising. Briefly, the project aims to locate areas the muskellunge are using for spawning in the Lower Fox River and Green Bay using micro-transmitters implanted in oviducts of 20 pre-spawn females. They will then characterize spawning habitat and attempt to locate other areas that might have suitable habitats. Down the road, there may be an opportunity to stock eggs in other likely locations identified through this effort. Interestingly, they are starting to see natural muskellunge x northern pike hybrids, particularly in the Sturgeon Bay area.
13. Update on VHS - Regulations/APHIS restrictions/Egg disinfection. Ohio has detected VHS in musky ovarian fluid. The New York Department of Environmental Conservation has had success with iodine as an egg disinfection technique for walleye. We have evaluated iodine treatment, from the perspective of hatching rate and fry survival and found no negative impacts of the treatment. Progress is being made, so It's just a matter of time before iodine treatment will be accepted as an egg disinfectant.
14. Musky Forum – The concept here is to provide a forum for musky anglers to voice concerns about the fishery. The issues raised would be forwarded to the standing team for consideration. I attempted to hold a Musky Forum last February in conjunction with the annual meeting of the WI Chapters of Muskies, Inc., at the Madison Fishing Expo. Several of the chapter representatives attended, but several of the initiators of the idea were not able to make it, other than John Aschenbrenner. We had a good discussion and several issues emerged, many of which we are already wrestling with, namely, management goals for the Great Lakes spotted muskellunge in Green Bay/Fox River, the early catch-and-release season, the concept of a musky stamp/musky license, trolling statewide (one line), a youth (16 and under) musky fishing season (catch and release only). It was good to be able to address these issues with the group and give the department's perspective. In the future, we will try to expand on this concept and feed the standing team with issues and ideas from avid musky anglers.
15. Cleithra from speared muskies. The GLIFWC collected 93 cleithra from 13 lakes this past spring, for an average of about 7 fish per lake. This is an excellent start and, through time, there will be a great collection of muskellunge age and growth data, probably rivaling the best repositories available anywhere. GLIFWC is expected to work with Kent Bass, Spooner, on aging the structures and they should have results by December 2008, with back-calculated length-at-age information.
16. UWGB Stock-recruit, population modeling - Lawrence Eslinger, graduate student at UWGB, provided an update on his thesis work. The thesis will have 3 chapters. First, a stock-recruitment model for Escanaba Lake. The best model was found to be the Ricker stock-recruitment model, with bluntnose minnow abundance strongly correlated with musky recruitment, along with adult muskellunge size-structure (-), northern pike abundance (-), and variation in May water temperature (-). Second, a comparison of muskellunge population dynamics among 4 lakes – Escanaba, Wolf, Plum (MI), and Big Crooked. Lawrence found relationships between density and size-structure (-), growth (-), condition (-), and recruitment (+). For all 4 lakes, the best stock-recruitment model (LnR) included adult muskellunge abundance (+), May mean water temperature (+), and total forage abundance (+). Muskellunge recruitment was also examined (all these lakes are naturally reproducing and have no development). Average recruitment within lakes ranges from 0.19 to 1.24 young-of-year per mile. Catch rates were typically higher in October (versus September) and when water temperatures were < 60 F (versus) > 60 F. The third chapter of Lawrence's thesis will examine the effects of changes in angler attitudes in Escanaba Lake from 1987 to 2007. Specific effort has consistently remained at about 8 hours/acre, whereas total effort has declined (averaging 33 hours/acre). Harvest has declined significantly. From 1987 to 1994, total exploitation averaged 0.143. After 1994, exploitation

has averaged 0.076. Between these 2 time periods, RSD34 has gone from 40% to 75% and RSD40 has gone from 5% to 17%. Recruitment is now about 0.5/mile. Over the entire time period, angler catch rates haven't changed. The average length of harvested fish (specific effort) averaged 35.1" and has increased over time. The average length of the incidental harvest was 31.1".

17. Genetics Study – Brian Sloss provided an update on the analyses to date; I have attached a progress report. So far, they are finding a general East versus West delineation of muskellunge populations across the north. There are some outliers that are yet to be explained, but either geologic factors or hatchery introductions have shaped some of these discrepancies from the general watershed boundaries. Brian is proposing to address this question through the examination of “unmanaged” fish (fish not normally stocked, such as johnny darters or rock bass). Removing some of the populations with more recent stocking events from the analysis resulted in a more definitive alignment with watershed boundaries.
18. Musky Spotlighting Project (University of MI, Musky Clubs Alliance, WDNR) – Bob Haase provided an update of this project, designed to develop a test model to predict musky spawning areas. Spawning locations were identified on several lakes and this year, the model was tested, along with collection of temporal data on variability in spawning locations. Bob identified a variety of other uses these data collected by volunteers, including helping spawning crews locate potential net locations, trend data on counts of muskellunge on lakes through time, etc. There is still some work to do in terms of correlating musky counts with actual abundance estimates. This coming spring, we will get the list of lakes planned for egg-take and population estimates so that Bob can line up volunteers to do spotlight surveys on these waters. Simonson will get the list to Bob.
19. Musky angler survey (2009-2011) – Brian Weigel, Science Services, has expressed interest in conducting this survey. Simonson will plan to write up a project this winter during our biennial workplanning process, with the idea of contracting the work to Brian and Jordan. Brian still has not made a formal commitment, but he is looking into the specifics.