

Michigan Muskellunge Fishing Regulations



**Michigan Department of Natural Resources - Fisheries Division
Proposal for Muskellunge Regulations in Michigan**

Prepared by the Esocid Committee, January 2012

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Biology

Muskellunge (*Esox masquinongy*) are a rather unique fish species in Michigan and their characteristics require that fishing regulations directed at them be specialized. Growth of muskellunge varies widely across the state. Some populations do not possess the potential for the average muskellunge to reach legal size (42 inches), while other populations possess the potential to regularly produce muskellunge exceeding 50 inches. Thus, a single statewide regulation results in a wide range of harvest potential. Similar to northern pike, muskellunge exhibit density-dependent growth; however, the degree of density-dependence is much lower given the lower densities. While densities of northern pike typically range from 0.5 to 10 adults per acre, densities of muskellunge are generally below 0.5 adults per acre, and are quite often below 0.1 adults per acre. Like northern pike, higher-density muskellunge populations with below-average growth tend to occur in relatively shallow waterbodies with abundant aquatic vegetation and woody debris. A lower-density population with above-average growth tends to occur in relatively large, deep waterbodies or in waterbodies connected to the Great Lakes.

Perhaps the most significant characteristic of muskellunge populations that merits specialized regulations is their age and size at maturity. Size at maturity varies from around 32-34 inches for males in some slower-growth waters to 42-44 inches for females in higher-growth waters. Regulations based on the size at maturity for females will be overprotective for males because of the fact that males mature several years earlier than females. If regulations were based on the size at maturity for males, they would be under-protective of females thereby reducing the spawning stock necessary to sustain the population where natural reproduction occurs.

The spawning season for muskellunge also varies widely in Michigan. Some populations begin spawning soon after ice-out, which may be as early as April in southern Michigan, while other populations begin spawning in May and can continue through early June in northern Michigan and Great Lakes populations. This wide range in spawning period makes it difficult to protect populations with a single statewide season without being overly restrictive for populations in the southern latitudes of the state. In this paper, we evaluate the biological implications of recent muskellunge regulation proposals from two angler groups in Michigan and recommend a range of potential regulation options that could be considered.

Fishery Status, Trends, and Issues

Recreational fishing regulations for muskellunge in Michigan have changed from historic perspectives. As fishing effort and exploitation have increased, minimum size limit (MSL) and possession limit regulations have become more restrictive. In 1939, statewide regulations were a 30-inch MSL with no possession limit. In 1970 the possession limit was reduced to 1 fish per day. Since 1995, the statewide regulations have been a 42-inch MSL with a 1-fish daily possession limit. In addition to these general regulations, Michigan-Wisconsin boundary waters and 19 inland waters have various special regulations that include a 50-inch MSL, a shortened season (last Saturday in April to November 30), or tackle restrictions (artificial lures only). Additionally, 30 populations are closed to all spearing or spearing muskellunge in particular.

A review of muskellunge management in North America (Kerr 2011) revealed that muskellunge regulations in Michigan are no longer among the most conservative relative to northern and Great Lakes state and provinces. The MSL for the muskellunge population in Wisconsin waters of Green Bay is 50 in, the MSL for the St. Lawrence River is 48-in, and the statewide MSL for Minnesota is 48 in. Alternatively, several states and provinces also have multiple MSLs so that regulations can be tailored to various population types. In general, recent changes to MSLs for muskellunge are based on growth potential and size at maturity (Kerr and Olver 1996, Farrel et al. 2003).

Michigan's statewide 42-inch MSL for muskellunge was designed to be biologically conservative and to assure adequate reproduction in most populations. The nature of a statewide regulation, however, is that it will not suit all populations. For example, recent age and maturity information for the Antrim Chain muskellunge population

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suggests that the 42-in MSL does not adequately protect females for spawning (Hanchin, in press). The majority of female muskellunge in the Antrim Chain mature around the same time they reach legal size, thus providing no guarantee that an individual has had the opportunity to spawn once. Similarly, Williams (1954) reported lengths of female muskellunge harvested during the spawning period in the Indian River (Cheboygan) ranging from 38 to 46 inches, suggesting an average size at maturity around 40-42 inches. Similar age and size at maturity likely occurs in most other populations that are or once were connected to the Great Lakes. Schrouder (1973) noted some female Great Lakes muskellunge maturing as early as 32 inches, but noted numerous that were immature at 37 inches. In contrast to inadequate protection, other Michigan populations have been found to be overprotected under the 42-in MSL since the average fish in those populations is not likely to reach legal size. Thus, some populations may not be adequately protected under a 42-in MSL, while other populations may be overprotected to the point that a harvest opportunity does not exist. Kerr and Olver (1996) cautioned that minimum size limits for muskellunge need to mesh with the maturation process of the fish. Although length and maturity data is lacking for most muskellunge populations in Michigan, information on growth potential and time to reach legal size is available and should be used for setting appropriate size limits.

Similar to size limits, most Great Lakes states and provinces have more restrictive fishing seasons for muskellunge than Michigan, with most opening in June and running through November or December. The current muskellunge season in Michigan does not protect all populations from harvest during the spawning season (Williams 1954, Hanchin, in press). In fact, a 2011 poll of DNR biologists found that 72% of muskellunge waters statewide were not protected from harvest during the spawning period with current seasons. Public concern has been raised in the past (Williams 1954) and recently (DNR files) over the harvest of spawning muskellunge in the Antrim Chain, the Indian River Chain, and the Black Lake system. While these harvests may have been legal, the harvest of fish during spawning concentrations can be so efficient that overharvest will occur and cause recruitment to be low (Hansen et al. 2000).

While the majority of muskellunge anglers practice catch and release, exploitation can be high on some populations. Hanchin (In press) recently reported a one year exploitation rate of 36% for muskellunge in Elk and Skegemog lakes. Although the two-year average exploitation rate was only 18%, fishing mortality accounted for all of the annual mortality for adult muskellunge in that system. While the Elk-Skegemog system still produces large muskellunge in the face of high exploitation, the potential of the population is being restricted by high harvest. Relatively high exploitation (14%) was also noted recently for muskellunge in Peavy Pond (Hanchin 2011). Recreational harvest of muskellunge is not the only source of fishing mortality since Tribal anglers also harvest muskellunge in Michigan. Tribal governments have different management objectives for muskellunge in Michigan, and accordingly have lower or no MSLs. Thus, all sources of mortality need to be taken into consideration when regulations are selected.

Unlike Michigan, recreational muskellunge spearing is not allowed in any other Great Lakes state and province. The reasons for spearing bans vary, but it is most often due to the management of muskellunge for large sizes, which requires limiting mortality through a variety of methods, one of which is spearing. In Minnesota, muskellunge are managed for “trophy” angling opportunities and utilize spearing bans as one method to accomplish that goal (Anonymous 2008). In Wisconsin, the spearing ban for muskellunge is largely a tradition, and it has not been allowed since they began regulating fishing (Tim Simonson, personal communication). In 1986, spearing for muskellunge was allowed in four states (Ragan et al. 1986), but more recently only Michigan reported allowing muskellunge spearing (Kerr 2011).

Management Objectives

The Esocid Committee believes that muskellunge regulations should be consistent with the DNR Muskellunge Management Plan, which proposes that muskellunge should be managed on a statewide basis with uniform

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management objectives that optimize the abundance of large fish, while ensuring the sustainability and ecological integrity of the rest of the fish community. The plan does, however, allow the use of special regulations to manage certain populations that require more or less restrictive regulations.

Regulation Proposals

Two proposals have been presented by angler groups for review and consideration. The proposal from the Michigan Darkhouse Anglers Association (MDAA) proposes a reduction in the MSL to 32 in and offers that a reduced possession limit (to 1 or 2 per season) is an acceptable trade-off for counteracting the increased harvest associated with the less restrictive MSL. MDAA is also amenable to a small number of waters being managed for trophy muskellunge. The Michigan Muskie Alliance (MMA) proposed three scenarios for statewide muskellunge regulation including a statewide MSL of 46 inches and some combination of a seasonal bag limit of one or two fish, and different seasons for regions North or South of M-55. Various MSL recommendations were also made during the public comment period for the Muskellunge Management Plan and though they included lower MSLs, the majority of comments were in favor of a higher MSL.

Seasons

The Esocid Committee believes that the current season for muskellunge does not protect most populations (both U.P. and northern L.P.) from harvest during the spawning period. Managers characterized only 28% of muskellunge waters statewide as being protected from harvest during the spawning period. The major need for protection during the spawning period is that muskellunge can congregate at high densities in rivers and shallow bays during the spawning period. They are not currently being harmed to any large degree since angler effort is generally low at that time of year and the number of overall anglers targeting muskellunge is relatively low. However, interest in muskellunge fishing is increasing and there is growing public sentiment that harvest taking place during the spawning period in some northern L.P. rivers is unacceptably high. The seasons proposed by the MMA would offer greater protection for later-spawning populations in the northern L.P., though it would likely increase harvest on populations in the southern L.P. that mainly rely on stocking. In muskellunge populations that rely entirely on stocking, protection during the spawning period is not necessary, unless they congregate at such high density that increases in angler catchability could pose a problem to the overall quality of the fishery.

Possession limits

The Esocid Committee believes that few Michigan muskellunge populations have been negatively affected under the current possession limit of one per day; however, this perceived protection is also largely due to the common practice of catch and release by muskellunge anglers. If muskellunge anglers were more harvest oriented, the possession limit would likely not offer enough protection from overharvest. Additionally, in some waters anglers harvest more than one muskellunge per season and the overall harvest is high enough to cause reductions in size structure. A possession limit of 1 or 2 per season (with catch and release still allowed) would reduce harvest in those vulnerable systems. A seasonal harvest limit of 1 or 2 muskellunge would require a harvest tag or some type of reporting since it would increase non-compliance of the law without one.

Size limits

The Esocid Committee believes that the proposed 32-inch MSL is not adequate to prevent recruitment overfishing of most naturally-reproducing muskellunge populations in Michigan. There may be a few (<5) high-density populations that could tolerate harvest of fish below 42 inches, but it would not be many and we would likely not support any MSL below 38 inches. Populations relying entirely on stocking would have no requirement to protect spawners, and thus could also tolerate harvest of fish below 42 inches. However, stocked populations are currently managed with an MSL of 42 in or higher and a reduced MSL would likely reduce the size structure of those populations. The Esocid Committee believes that the 46-inch MSL proposed by MMA would do no harm to the majority of muskellunge populations in Michigan, and would actually provide additional protection for some populations.

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However, angler harvest of muskellunge would be reduced and harvest potential could be limited from some populations where the average fish does not have the potential to reach 46 inches. Finally, a recent survey of DNR fisheries managers revealed that the current 42-inch MSL was satisfactory for meeting their fisheries objectives, that harvest opportunities were available under the current MSL, and that no changes to the size limit were needed. Some managers indicated that given an additional regulation option there would be a few waters managed for further angling opportunity.

Summary

It is difficult to evaluate a single regulation (e.g. a size limit) since each regulation will work in concert with the other regulations (possession limit and season). For example, the protection gained by a change to a seasonal bag limit of 1 or 2 could also be achieved by a higher MSL with a daily possession limit of 1. Foremost, we believe the seasons for muskellunge in Michigan should protect spawning fish from harvest. We have regulations that protect walleye and northern pike during the spawning period and they are species that can actually tolerate greater harvest than muskellunge. Muskellunge seasons are not necessary for populations that rely entirely on stocking; however, it is preferable that seasons align in some manner that allows for simplicity in the regulations guide and ease of enforcement.

The benefits of reduced harvest under a seasonal harvest limit should be weighed thoughtfully against the losses and the other options for reducing harvest. We believe the strongest regulation for managing muskellunge is a higher MSL. Harvest reductions, where necessary, can be achieved through higher MSLs without restricting spear fishers and without taking on the burden of seasonal harvest limits. MSLs in populations with natural reproduction should be selected primarily based on the age and size when females mature. Further consideration should be given to the growth potential of each population when survey information becomes available for that particular population. The highest angling potential for muskellunge is realized at higher size limits largely because they extend the life span of the species and allows for repeated catches.

The following options were agreed upon by Fisheries Division and members of the Warmwater Resources Steering Committee:

Option 1. (Status quo) Harvest seasons = May 15 until March 15 for U.P. Great Lakes and inland waters, last Saturday in April until March 15 for L.P. inland waters, first Saturday in June until December 15 for L. St. Clair, St. Clair R., and Detroit R., no closed season for L.P. Great Lakes. Possession limit = 1 fish daily. Size limit = 42 in statewide, with some exceptions by county.

Option 2. Harvest season = first Saturday in June – March 15 statewide. Catch and immediate release from the last Saturday in April (L.P.) or May 15 (U.P.) to the Friday before the first Saturday in June. Possession limit = 1/day. Size limit = 42 in statewide, with the addition of a lower (38 in) MSL for a few high-density, slow-growth waters and/or stocked waters, and the addition of a higher (46 in) MSL for a few fast-growth waters where female size at maturity exceeds 42 in. Broodstock Lakes would remain at a 50 in MSL in order to maintain a viable rearing program, now and for the future.

Option 3. Harvest season = first Saturday in June – March 15 statewide. Catch and immediate release from the last Saturday in April (L.P.) or May 15 (U.P.) to the Friday before the first Saturday in June. Possession limit = 1/season (with tag and reporting requirement). Size limit = 42 in statewide, with the addition of a lower (38-in) MSL for a few high-density, slow-growth waters and/or stocked waters, and the addition of a higher (46) MSL for a few fast-growth waters where female size at maturity exceeds 42 in. Broodstock Lakes would remain at a 50 in MSL in order to maintain a viable rearing program, now and for the future.

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Option 4. Harvest seasons = May 15 – March 15 statewide, first Saturday in June – March 15 for Great Lakes populations. Catch and immediate release from the last Saturday in April to May 14 statewide and last Saturday in April to the Friday before the first Saturday in June for Great Lakes populations. Possession limit = 1/day. Size limit = 46 in statewide, with the addition of a lower (38-in) MSL for a few high-density, slow-growth waters and/or stocked waters. Broodstock Lakes would remain at a 50 in MSL in order to maintain a viable rearing program, now and for the future.

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