

Proposed Regulations

Recruitment is the key variable that drives northern pike population dynamics. Therefore, the proposed toolbox of regulations is based on the magnitude of recruitment in a population, as well as the population's potential for providing (or preserving) large fish.

1. **40 inch Minimum Size Limit** For trophy/heritage lakes where we're trying to preserve or restore pristine populations of very big fish. Used for populations with *low recruitment*, good growth rates, and a historical tradition of producing big fish.
2. **30 inch Minimum Size Limit** Also for *low recruitment* where the goal is to improve densities of medium to large size pike. This type of population will usually also have good potential for individual fish growth.
3. **24-36 inch Protected Slot Limit** For *moderate to high recruitment* populations where the goal is to provide opportunities to harvest small pike while at the same time improving densities of medium to large size fish.

Biological Considerations

Recruitment

Correct assessment of recruitment is important for placing a population into the above regulation categories. Because we do not have direct measures of recruitment, the extent of recruitment must be judged by combinations of gillnet catch rates, assessment of available spawning habitat, evaluations of stocking practices, and (if available) population density estimates. Where we have density estimates, densities of 5 fish (14 inches or larger) per acre are indicative of low recruitment. Gillnet catch rates associated with low recruitment are usually less than 5 fish/net, and are often less than 3 fish/net. Examples of lakes with moderate recruitment had gillnet catch rates of 6-10 fish/net. High recruitment would likely be more than 10 fish/net. Evaluations of stocking and available spawning habitat will be judgments by field staff.

Growth

Low recruitment typically results in good growth rates. Average backcalculated lengths at age for low density/low recruitment populations have been *at least* the following:

Age	Average backcalculated length (inches)	
	Males	Females
2	16.1	16.8
3	19.6	21.1
4	21.6	23.5

Growth information by sex should be provided, if possible, and future growth data should be collected by sex for candidate lakes. Providing age distribution of gillnet catches may also make it possible to calculate mortality rates for the population.

Fish Sizes

Low recruitment/low density populations typically have average lengths (in gillnet catches) of 21 inches or greater and good populations may be over 24 inches. PSDs of greater than 40% are also indicative of low density populations. Moderate recruitment lakes had average lengths of 18-22 inches (usually less than 21 inches) and PSDs of 18- 60% (usually less than 40%) in gillnet catches. Definitions of stock and quality sizes for calculating PSDs of northern pike are 13.8 inches (350 mm) stock length and (20.9 inches (530 mm) quality length.

Historical Characteristics/Potential

Historical records and anecdotal information about potential sizes of pike will be useful information to consider. An obvious example would be Basswood Lake, where the state record pike was caught. Populations with a reputation for producing large fish may also have PSDs in excess of 90% for gillnet catches.

Current Fishery

Pertinent information about recreational fishing, such as angling and spearing effort and catch data from previous creel surveys, if available, will be useful for judging the appropriateness of one of the regulations, as well as for future evaluation of the regulation.

Fish Community

Availability of appropriate sizes and types of forage influence pike growth. Presence of appropriate size cisco and yellow perch are important for good pike growth. In some management areas, it is also felt that densities of large pike have a positive influence on panfish population size structure so that it may also be useful to consider the consequences that a regulation may have on bluegill or perch fisheries in a lake.

Lake Characteristics

Several characteristics of a lake's basin can influence recruitment or the potential to grow and support large pike. Low recruitment is often associated with large, deep lakes that have limited spawning sites. Coolwater refugia in large, deep lakes also seem to support big pike. In contrast, large areas of shallow water with wild rice beds, or other grasses and sedges, provide good habitat for spawning and nursery areas that can lead to high recruitment of pike. Lake basins that are broadly connected to other basins make enforcement and evaluation of regulations more difficult.

Social Considerations

Social concerns are obviously a huge influence in this process and most field staff have a good feel for these issues. The following list is only intended to be a reminder of the types of issues to consider.

Spearing Pressure

No need to say much here except that experimental size limits have initially driven spearkers away from individual lakes.

Lakeshore Ownership and Development

High rates of development (for example, cabins every 100 ft.) make it difficult to collectively communicate with lake owners. In contrast, it may be easier to get buy-in on a lake with predominantly state or federal ownership.

Resorts

Resort owners have the potential to influence much of the fishing effort and attitudes of people fishing a lake.

Lake Associations

A progressive lake association can be an important asset in promoting a regulation.

Border Waters Jurisdiction

For example, Ontario border lakes

Location of the Lake with Regards to Other Regulations

Ideally we would like to distribute unique fishing opportunities throughout the state.

Enforcement

Enforcement is a principal concern for the success of special regulations, and enforcement at the local level is key. C.O.s should be invited and strongly encouraged to provide their own input during lake selection. (It's especially important that they participate in the process before they hear about it from the public!) They should also be invited and strongly encouraged to attend public meetings about the regulations.

Evaluation

Population Assessments

In addition to pre-regulation netting in 2002, we are proposing that the evaluation period be 15 years, with assessment netting every five years (i.e. at year 5, 10, and 15). Assessment netting should consist of some combination of spring trap netting, spring short-term gill netting, and routine summer population assessment netting. All three netting methods are very comparable in terms of average length and size structure (as measured by PSD) of pike in the catches. Maximum length of pike observed is usually larger from spring trap netting, and spring trapping can often be accomplished before walleye spawning operations get into full swing. Spring short-term gill netting has been an effective technique for sampling northern pike. Nets are set for 3-4 hours during the morning or mid-day while water temperatures are still cool (<60° F) in the spring. Advantages of spring short-term gill netting are that it is (usually) a non-lethal sampling method, you can avoid netting in dangerous or miserable weather, and it is very specific for northern pike. By-catches of other species are very low, with the exception of high yellow perch catches in lakes with dense populations of small perch (a problem that can be avoided by not using the ¾ inch mesh). Regardless of the sampling methods used, we will need data on sizes, growth, age structure, and catch rates of pike.