Understanding the role of length and creel limits—and angler compliance—in fisheries management.

Fisheries Management 101

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Illinois anglers enjoy quality fishing opportunities thanks to scientifically managed fisheries.

Sometimes, micromanagement is a good thing. When it comes to the management of Illinois' individually unique fisheries, it's absolutely essential.

Example: There is no statewide length limit for largemouth bass. Ever wonder why? It's because some lakes or rivers benefit from specific size or catch limits—a 14-inch minimum length with a 6-per-day limit, for example—while others need something entirely different.

Providing anglers with diverse, high-quality fishing opportunities requires an intimate understanding of the fish and aquatic communities in Illinois' lakes, ponds, rivers and streams. Department of Natural Resources (DNR) fisheries biologists routinely conduct surveys to collect information necessary for developing management plans tailored to enhance the fishing potential of Illinois' waters.

A multitude of factors are taken into account when developing a management plan—fish growth rates, species composition, body condition, reproductive success and recruitment (the number of fish surviving to reach one year of age), natural mortality, density, population size structure, food availability, fishing pressure, and the species composition and abundance of aquatic plants. The physical and chemical characteristics of each body of water—size, fertility and maximum and average depth—also are considered.

Careful analysis of these data allows biologists to design an integrated, multi-faceted, management plan and maximize fishing opportunities for each specific body of water. Plans typically include a combination of site-specific recommendations for fish stocking or removal, vegetation control and habitat enhancement.

But, arguably, the most important management tools are species-specific length and creel limits, the foundation of most fisheries management plans. These limits are designed to manipulate angler harvest in a manner that will enhance the density and size of the sportfish population. To understand why length and creel limits are such important management tools, one must understand how they function and what they are designed to accomplish.

Creel Limits

Creel limits—sometimes referred to as daily bag limits—restrict the number of fish an angler can harvest per day.

Electrofishing sampling provides fisheries biologists a harmless way to examine fish populations.

They are used to reduce angler-induced mortality and, in conjunction with length limits, protect a species or certain size of fish from over-harvest. They are especially useful for less abundant predator species such as bass, walleye, sauger, northern pike and muskie, but also can be useful in some instances for more prolific species such as crappie, white bass and bluegill. These limits typically range from one to 10 fish per day depending upon the circumstances and the specific management objective.

Creel limits also can be used to distribute the catch more equitably, providing the opportunity for more anglers to participate in the harvest. This technique is generally used for more prolific species—crappie, sunfish or white bass—and for species whose populations have been enhanced by DNR's stocking program, a practice sometimes referred to as put-grow-and-take. Daily creel limits for the latter are typically conservative, ranging from one to six fish per day, while those designed to distribute the harvest of more prolific species are more liberal, ranging from 15 to 25 per day.

Length Limits

Length or slot (size) limits protect a specific size of fish from harvest. In Illinois, the most common types of size limits are minimum length limits and slot length limits.

Minimum length limits protect fish under a specified length from harvest. This regulation is most effective for species exhibiting average or above average growth rates combined with low natural recruitment. They are most commonly used to protect fish until they reach sexual maturity, or to allow fish to attain a quality or trophy size.

By increasing predator densities, minimum length limits also can function as a tool to reduce the density of prey species. For example: A minimum length limit can be used to increase the number of bass which will, in most cases, increase predation on the sunfish population. This increased predation can in turn reduce sunfish numbers, resulting in improved growth rates and an increase in average size. Minimum length limits typically increase angler catch rates, reduce harvest and increase the size structure of the population.

Slot length limits protect a specific size of fish while allowing anglers to harvest fish larger and smaller than the protected size. This type of regulation is most effective for species exhibiting high rates of natural reproduction and recruitment combined with slow growth rates.

Successful slot limits reduce the density of the smaller fish, improve growth rates and increase the size structure of the population. Harvesting fish below

A healthy Illinois lake should have quality bass and bluegill populations.

the protected slot reduces overcrowding, which in turn helps to increase growth rates and reduce the high natural mortality rate typically associated with a slow-growing, stunted population. Fish that reach the slot length are protected during a relatively brief period of rapid growth until they reach a quality size preferred by most anglers.

By reducing natural mortality and increasing growth rates, a successful slot limit increases the number of large fish in the population. On the other hand, if anglers fail to harvest fish below the protected slot, the slot limit will function as a minimum length limit with only fish above the slot harvested. When this occurs, overcrowding will worsen, growth rates will continue to decline and the slot limit will fail.

Factors Influencing Regulation Success

The success of length and creel limits is dependant upon many factors—changes in reproductive success, natural mortality, growth rates and fishing pressure. Fisheries biologists regularly monitor these variables and, when significant changes are detected, regulations are adjusted to compensate for their influence on the population.

For example, a significant increase in reproductive success may result in slow growth and high natural mortality rates for bass protected with a minimum length limit. Changing the minimum length limit to a slot limit can reduce overcrowding of small bass, improve growth rates and reduce natural mortality.

Role of Anglers

Length and creel limits are important management tools, but their success relies heavily upon angler cooperation and compliance. In the case of slot limits, success is dependant not only on anglers returning fish within the protected slot, but also on their willingness to harvest fish below the protected slot. Failure to harvest fish below the protected slot compounds problems the limit was designed to alleviate (i.e. high natural mortality and slow growth).

Angler cooperation and compliance are essential to the successful management of Illinois lakes, rivers and streams. Without the support of anglers, regulations are ineffective and fishing quality declines.

Length and creel limits offer anglers the opportunity to work hand-in-hand with biologists to manage fisheries resources. By obeying length and creel limits and harvesting fish below protected slots, anglers play an active role in improving and maintaining quality fishing opportunities—now and for the future.

Thousands of individual fish are weighed and measured annually from Illinois lakes and rivers.

Jackson County anglers Brian Barnes (front) and Brad Jones enjoy spring crappie fishing at a DNR-managed lake.

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