Pondering Bass Mortality

Understanding the factors that contribute to bass mortality (deaths) is important when assessing management options for bass fisheries. Let’s discuss the components of mortality in bass populations and what they mean for fishing. We usually separate mortality into two components: fishing and natural mortality.

Fishing mortality is obviously mortality associated with fishing. Fishing mortality has several components including harvest, fish that die from being caught and immediately released, and tournament mortality. Tournament mortality is from fish that die from the additional stress of being confined in livewells, transported, pass through weigh-in procedures, and released.

Bass fisheries represent a unique situation in fisheries, because harvest of bass has declined through the years due to changes in angler behavior from catch and release. Compared to many species such as crappie, walleye, and striped bass, largemouth bass fisheries nowadays typically have very high rates of voluntary release, meaning that anglers release fish that are above the length limit and legal to harvest. Recent creel survey data from the southeastern US indicate that voluntary release of bass is often over 75%, meaning that over 75% of all fish legal to harvest are released. In some lakes it’s been measured at over 90%! The result of catch-and-release fishing is that harvest has declined and fishing mortality levels are generally lower than they were 20 years ago. This is obviously good news and has contributed to maintaining good fisheries despite high angler use. Catch and release works.

However, with this decline in harvest have come some challenges, because the components of fishing mortality on bass populations are changing. Of the fishing-associated mortality sources, mortality from tournaments and from catch and release fishing are now a bigger part of the total fishing mortality pie for bass populations. The evidence suggests that this is not because those sources have increased, it’s because the amount of harvest has declined. Even though we’ve developed methods to improve fish care and attempt to minimize tournament-associated mortality, fish losses due to hooking mortality and tournaments activities are always going to occur. Our ability to reduce these losses of fish will be a continuing challenge, but they should also be considered in relation to the other mortality source, natural mortality.
Natural mortality is a mortality source that we can seldom control. Natural mortality estimates in adult bass populations are usually between 15 and 40%, meaning that even in the absence of fishing about 15-35% of the bass in a population die each year due to natural causes. Causes of natural mortality include diseases and parasites, predation by other fish and birds, and starvation.

Periodic high episodes of natural mortality also occur, such as the cases of largemouth bass virus several years ago. Oxygen levels occasionally decline to lethal levels due to big rainfall events and lake turnover, resulting in fish kills. The golden algae blooms in Texas have caused lake-wide mortalities in a few cases. Nevertheless, even without these rare high-profile events, natural mortality is always occurring in bass populations and is an important factor that drives the abundance and size of fish.

The result of natural mortality is that bass populations are nearly always composed of more small, young fish than older large fish, even in lakes and ponds that have no fishing! Fish that die from natural mortality are replaced by recruitment of young fish into the adult population.

So, when you think about bass populations, it’s important to realize that fishing-related impacts to bass are only one component of mortality. Minimizing tournament impacts and catch-and-release practices will continue to be important to the conservation of our bass fishery resources. However, natural mortality occurs simply because its part of the fish’s life history.