

Voluntary Bass Creel Survey  
Minnesota Waters  
(Summary 2003-2015)  
Cooperative Project between the  
Minnesota B.A.S.S. Nation and Minnesota  
Department of Natural Resources

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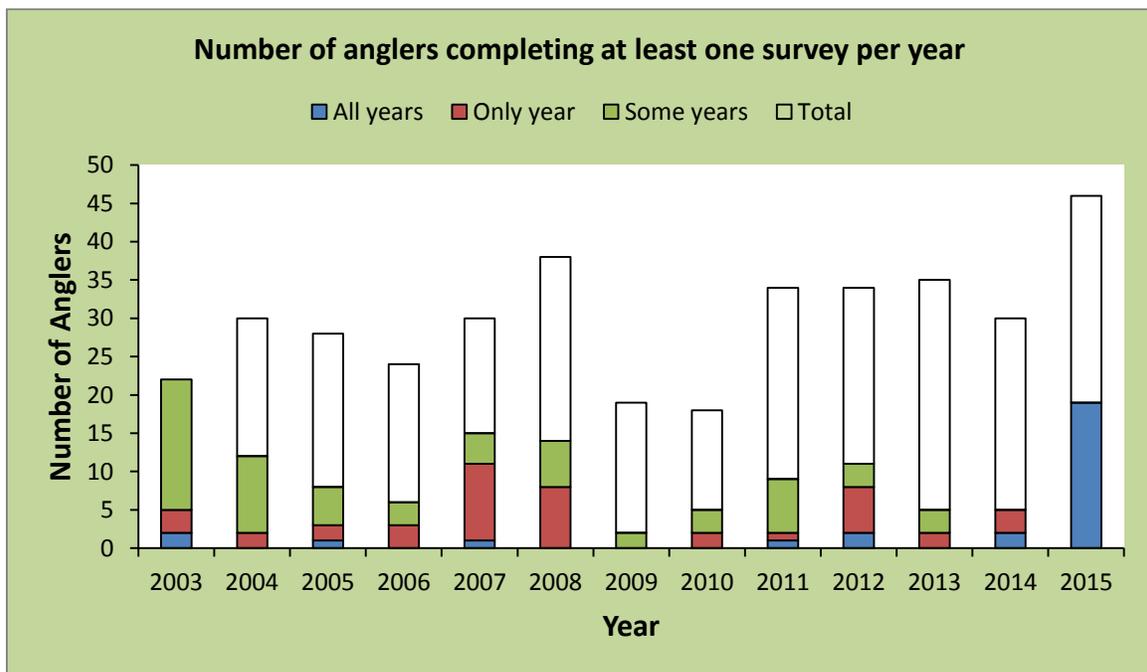
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## Summary of angler participation, angling effort, and bass catches

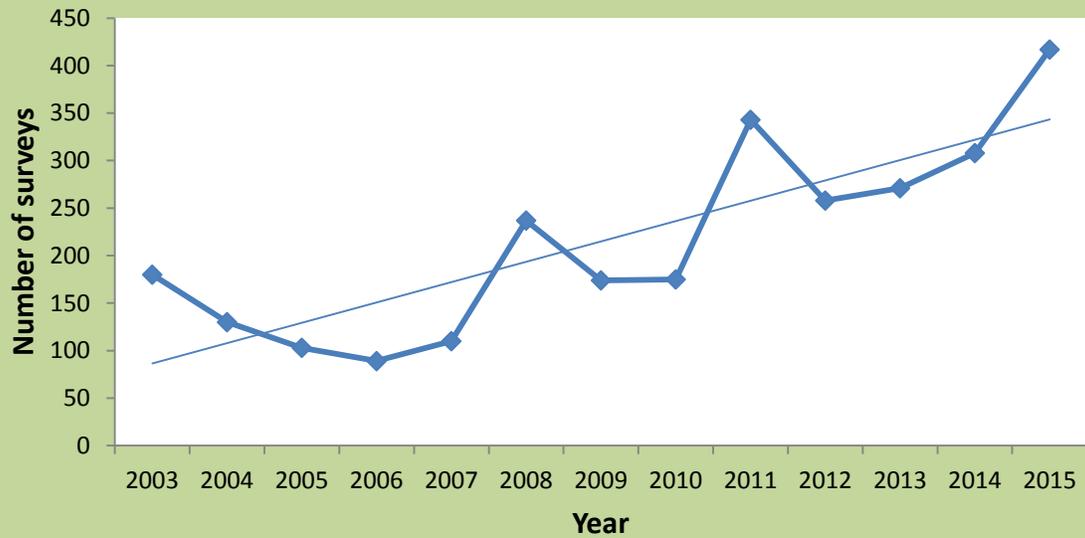
Record high numbers of surveys, individual anglers completing surveys, number of different water bodies fished, fish caught, and fishing hours occurred in 2015, making it the best year of the voluntary bass creel survey program. A total of 46 different anglers completed at least one survey in 2015, and they provided a total of 417 completed surveys. Previous highs were 38 anglers in 2008 and 343 completed surveys in 2011. Nineteen anglers contributed for the first time at least one completed survey; this was the second highest total of first-time participants since the creel survey began in 2003. At least one completed survey was made for 91 different water bodies. Lastly, anglers in 2015 fished a total of 4,556 hours, catching 3,818 Largemouth Bass and 804 Smallmouth Bass 12 inches or longer.

Overall, a total of 133 different anglers contributed at least one creel survey from 2003 through 2015. This survey also includes the combined catch data from 10 youth-club tournaments and 23 other tournaments. Completed surveys have been made at least once for 226 water bodies in 44 counties in Minnesota; most surveys occurred in the Twin Cities metro area, Wright County, and in the Brainerd area.

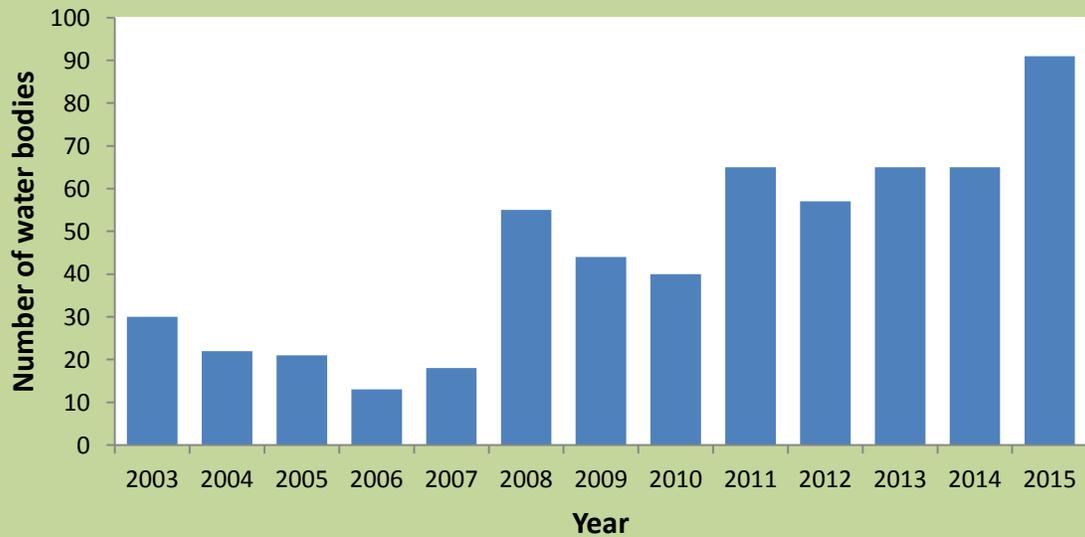


*The height of the colored bars combined on the above graph equals the total number of first-time participants for a given year, the height of the colored and clear bars combined equal the total number of participants for a given year. Blue denotes the number of anglers that contributed at least one survey per year during each year of this survey. Red denotes the number of anglers that participated only that year, and green denotes the number of anglers contributing more than one year but not each year of the duration of this survey.*

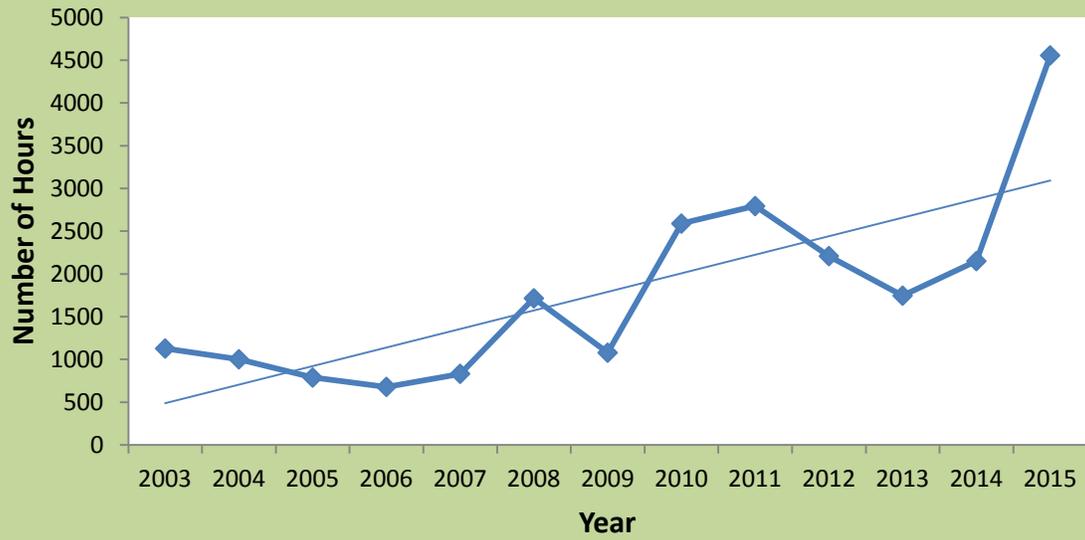
### Total number of completed surveys per year



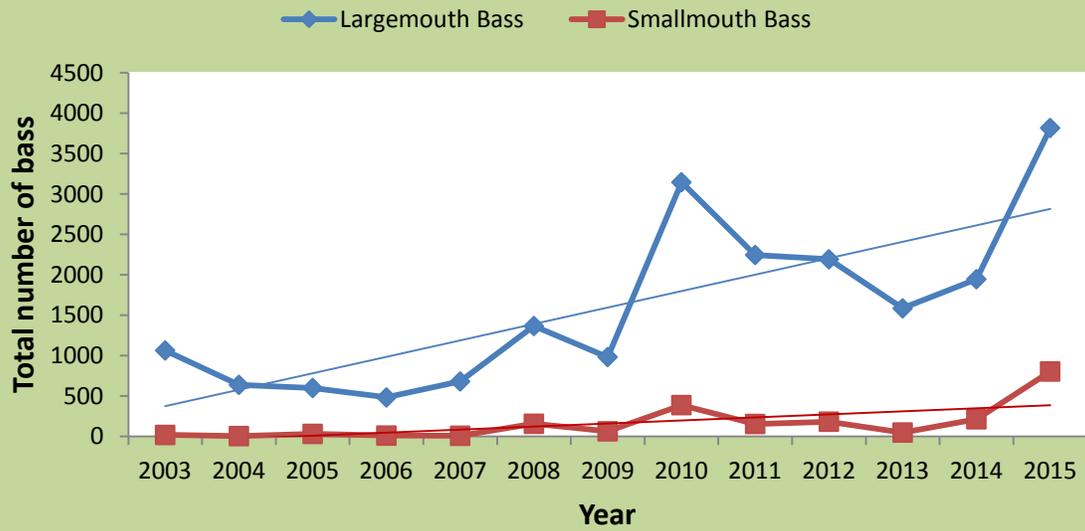
### Number of water bodies surveyed per year



### Total angling effort (hours) per year



### Number of bass $\geq 12$ " caught per year



## Overall evaluation of creel survey data

Regardless of where they work, nearly all fisheries professionals in Minnesota and elsewhere have science backgrounds; thus, by nature, are skeptical of data collected by unfamiliar or non-traditional methods. Voluntary creel surveys can provide useful information on targeted fisheries, but, unfortunately, some (within Minnesota and elsewhere) have also been shown to be of limited utility because anglers provided erroneous information. Thus, we have to evaluate for accuracy these creel survey data.

Estimates of size structure and relative abundance of both species of bass can be made with those data provided in these creel surveys. Thus, I evaluated these two valuable characteristics that help describe bass populations in Minnesota waters.

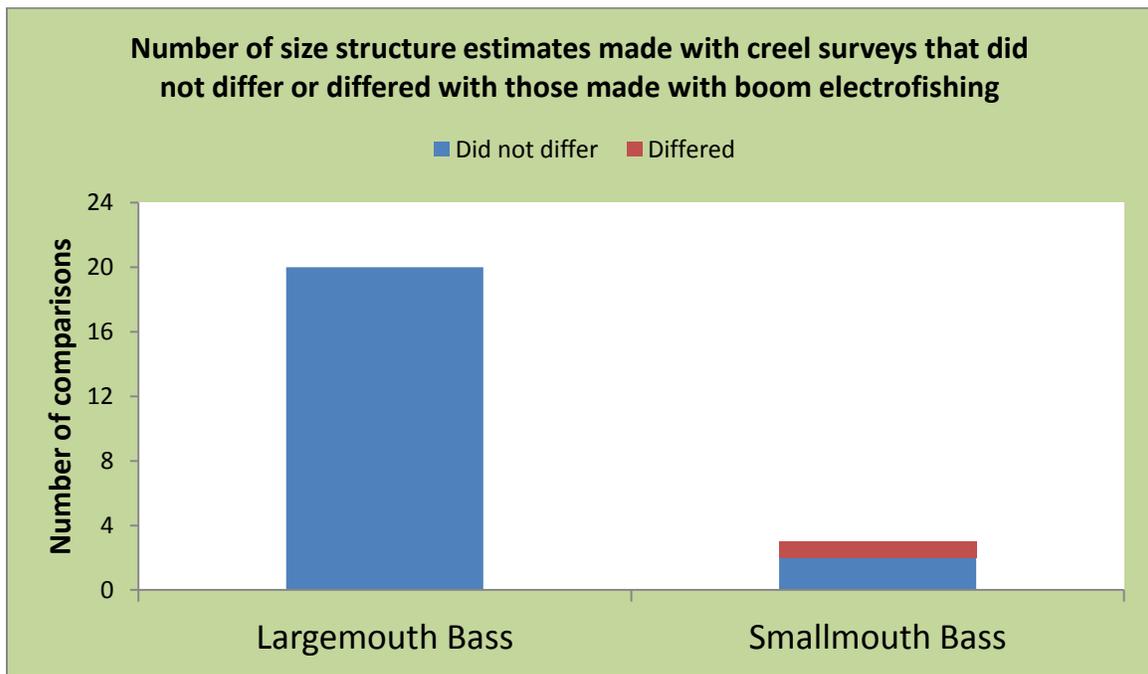
Size structure gives us an indication on how long bass can get, consistency of hatching success, mortality, and growth; thus, is an incredibly valuable piece of information. For example, a healthy, stable bass population consists of a high proportion of smaller bass, smaller proportions of intermediate-sized bass, and some, but low numbers of very large bass. Presence of very large bass ( $\geq 20$  inches) in Minnesota waters indicates that growth and annual survival are good. A consistent lack of very large bass in a population suggests that growth could be too slow, survival could be too low, or a combination of both. High numbers of larger bass relative to smaller bass indicates or a very high proportion of small bass to larger bass suggest more variable hatching and rearing success of young bass among years. When observing high proportions of large bass, odds are good that the larger bass arose from a single strong year class and that poor hatches or rearing occurred during the next several years afterward. Conversely, an extremely high proportion of small bass also indicates a strong year-class that preceded several years when very low or no hatching or rearing success occurred.

If evaluations suggest reliable catch per hour data, catch per hour is used as an indicator of relative abundance (not actual abundance). We in DNR use it to compare differences in abundance between lakes; if catch per hour is higher in one lake than another, we can conclude that the lake with the higher catch per hour has more bass. Similarly, if catch per hour is higher in one year than another, we can conclude that abundance was higher during the year with the higher catch per hour.

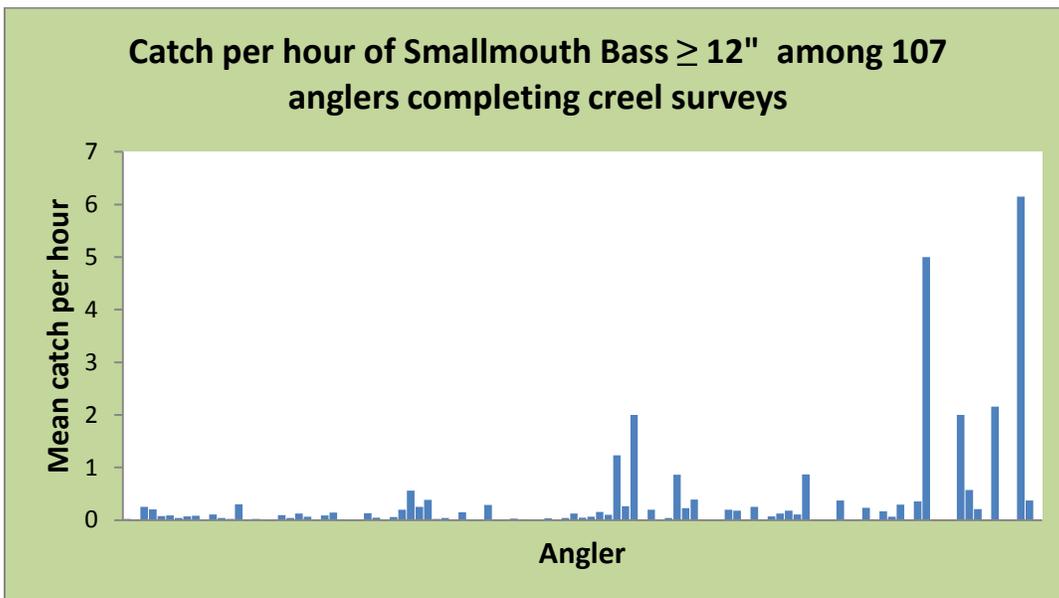
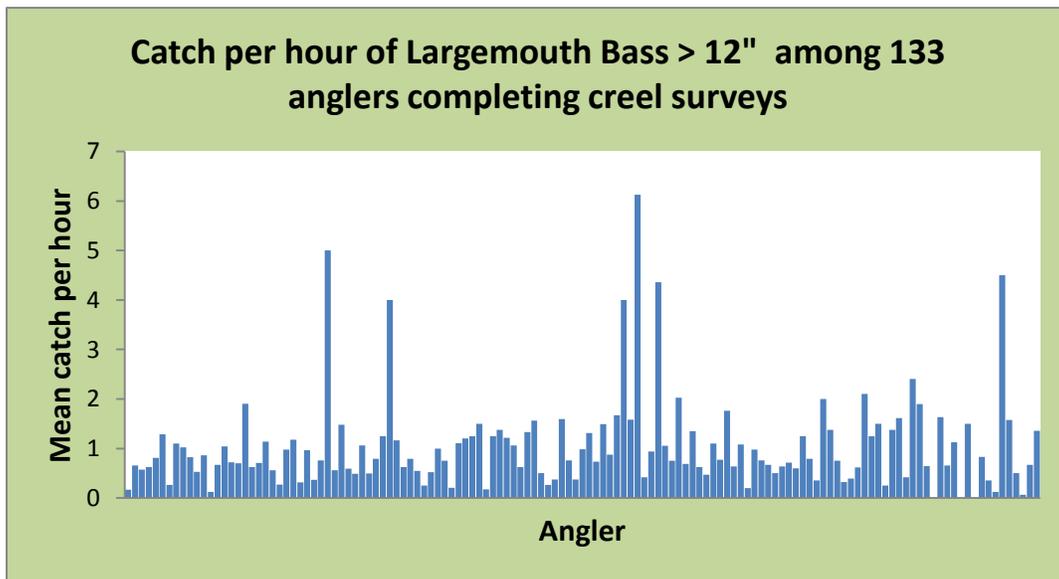
In a nutshell, my evaluations suggest that these creel surveys provide reliable estimates of size structure for Largemouth Bass and Smallmouth Bass  $\geq 12$  inches for individual lakes when 20 or more bass are measured per lake per year. Among 20 lakes with sufficient catches ( $\geq 20$ ) of Largemouth Bass, size structures estimated with creel surveys matched those estimated from boom electrofishing catches. Boom electrofishing is the primary gear used to assess size structure of Largemouth Bass in Minnesota. For Smallmouth Bass, size structures estimated

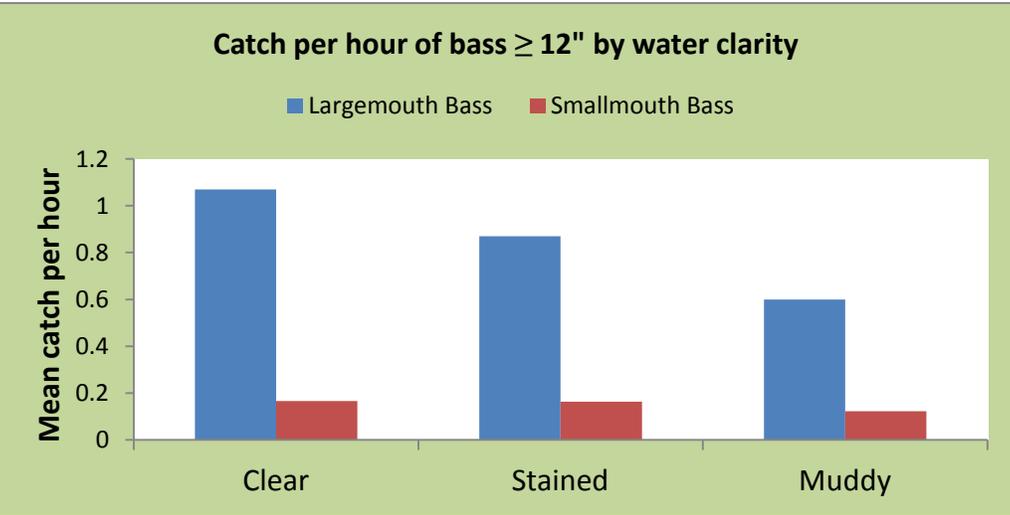
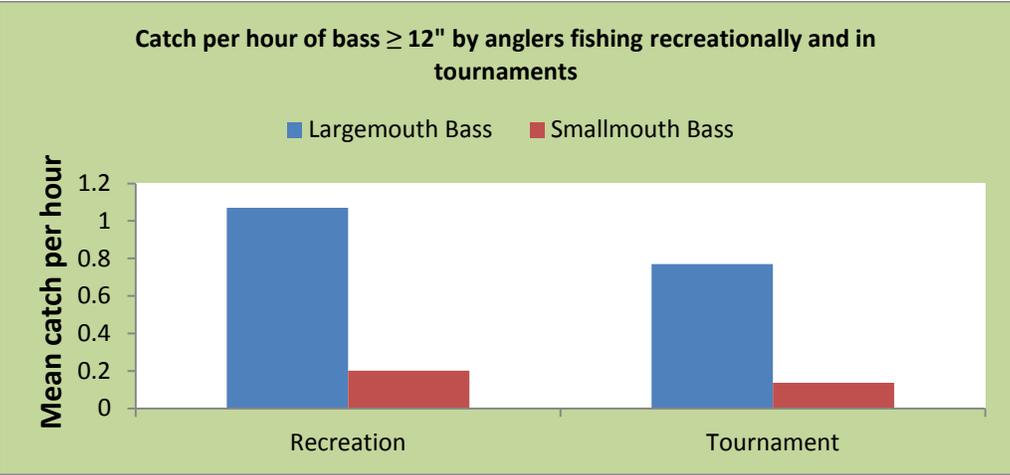
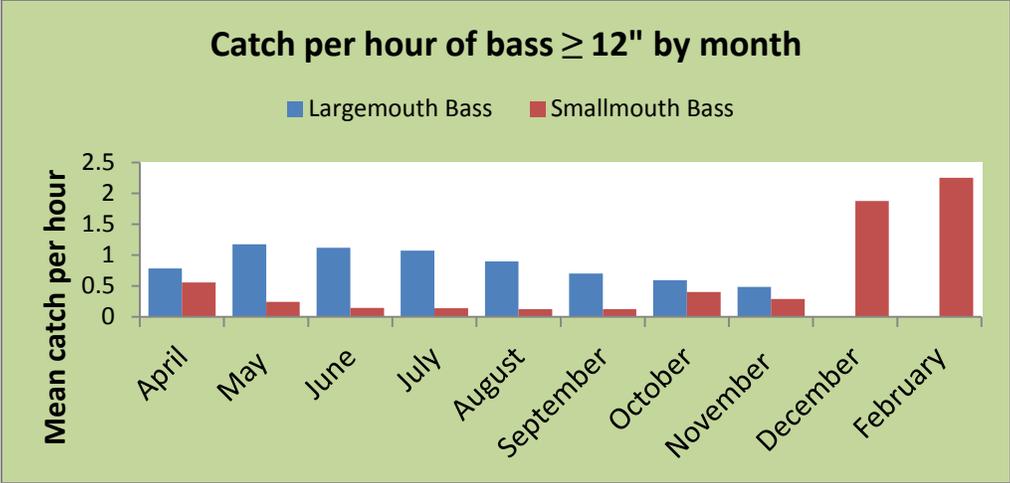
with creel surveys matched those from boom electrofishing in two of three lakes, but size structure estimates made with this creel survey matched very well the size structure estimate generated from the standard DNR creel survey conducted at Mille Lacs in 2015.

Creel surveys could be the best assessment gear for estimating size structure of Smallmouth Bass among the diverse water bodies in Minnesota. Boom electrofishing often fails in many waters because Smallmouth Bass are too deep (more than 6 feet) to be captured with this gear. Trap netting and gill netting, the two other primary sampling gears used by DNR, capture just a tiny proportion of the Smallmouth Bass population; thus seldom provide enough bass for useful estimates of size structure.

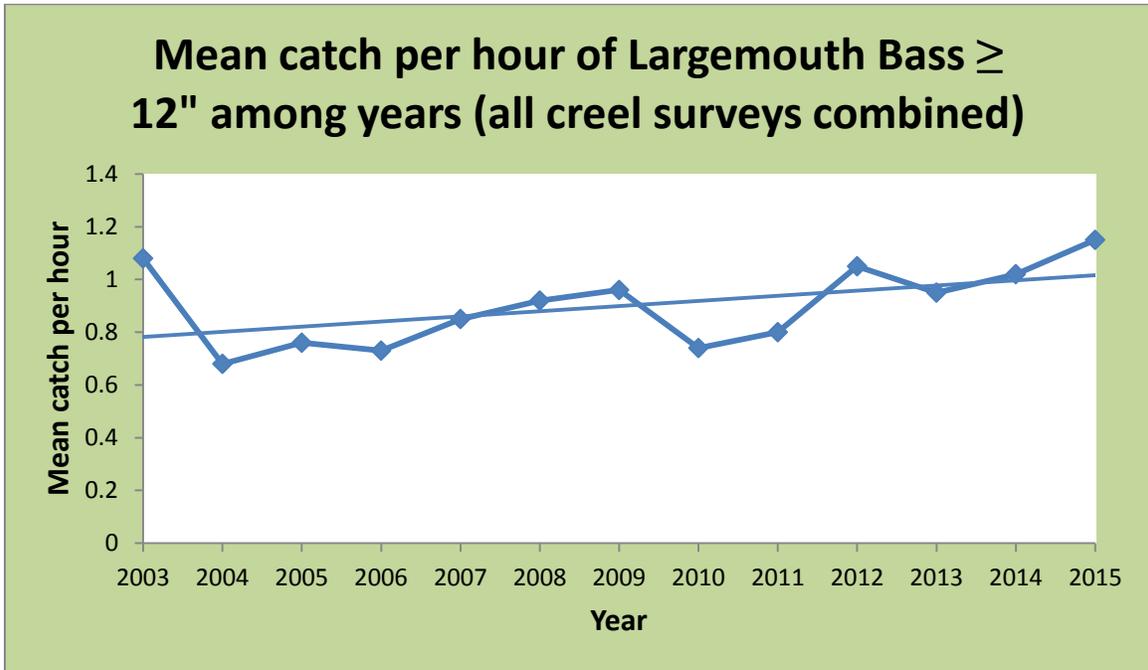


Conversely, catch per hour does not appear to be a reliable indicator of relative abundance within a given water body, but catch per hour from all creel surveys combined appear useful for describing statewide trends. Catch per hour varied quite a bit among anglers, among months of the year, they differed between recreational and tournament angling, and differed with different water clarity. In order for catch per hour to be of value for a given lake, several anglers need to provide catch data for all open-water months (April through November) for both types (tournaments and recreational) of fishing. This did not occur even at Lake Minnetonka, where, by far, the most creel surveys were done.

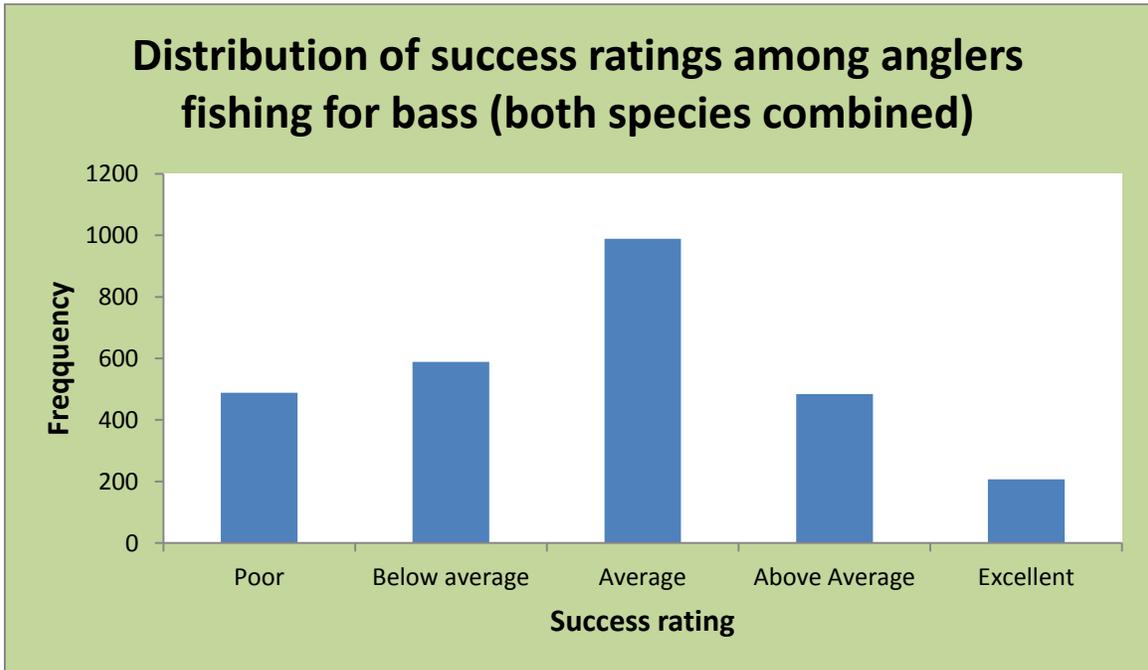




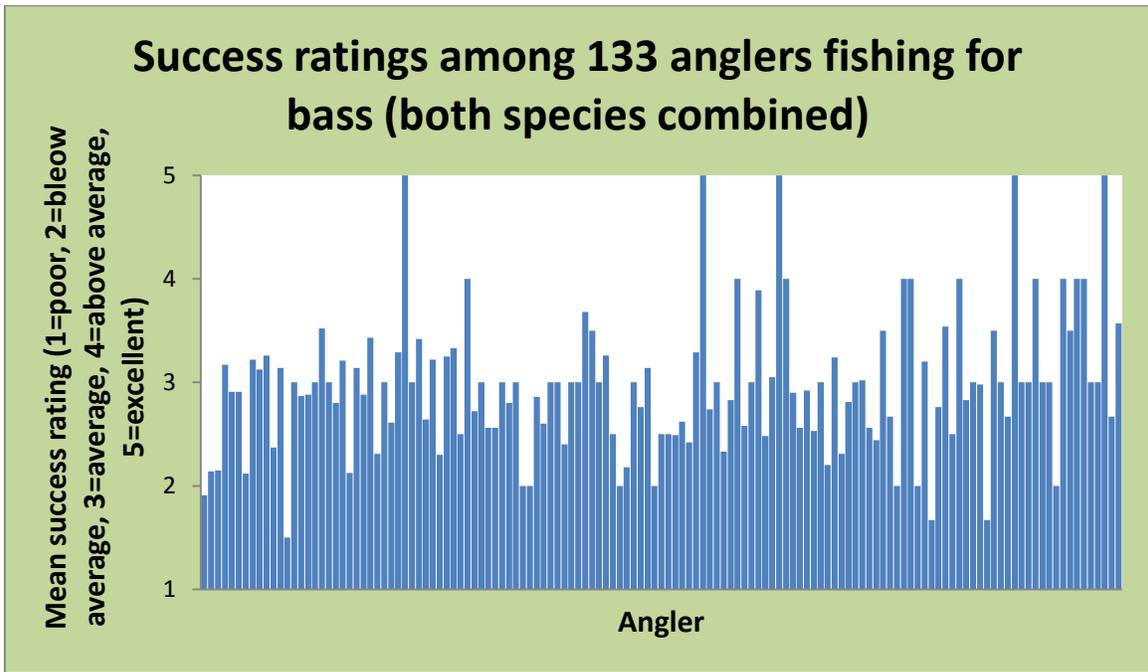
When catch per hour of Largemouth Bass is averaged among all creel surveys combined, catch per hour increases slightly with time. We observed this same trend in a statewide analysis of catch per gill net lift of Largemouth Bass; thus, overall catch per hour from these creel surveys appears to be a useful indicator of a statewide trend for Largemouth Bass.



Another piece of evidence suggesting good quality of data is that anglers demonstrated objectivity. I based this on distributions of success ratings reported by anglers. Anglers rated as either poor, below average, average, above average, or excellent their success they had on a given fishing event. Collectively, participants reported that most of time their fishing success was average followed by fewer ratings of below and above average, followed by fewer ratings of poor or excellent. This is what is supposed to happen if anglers are being objective.

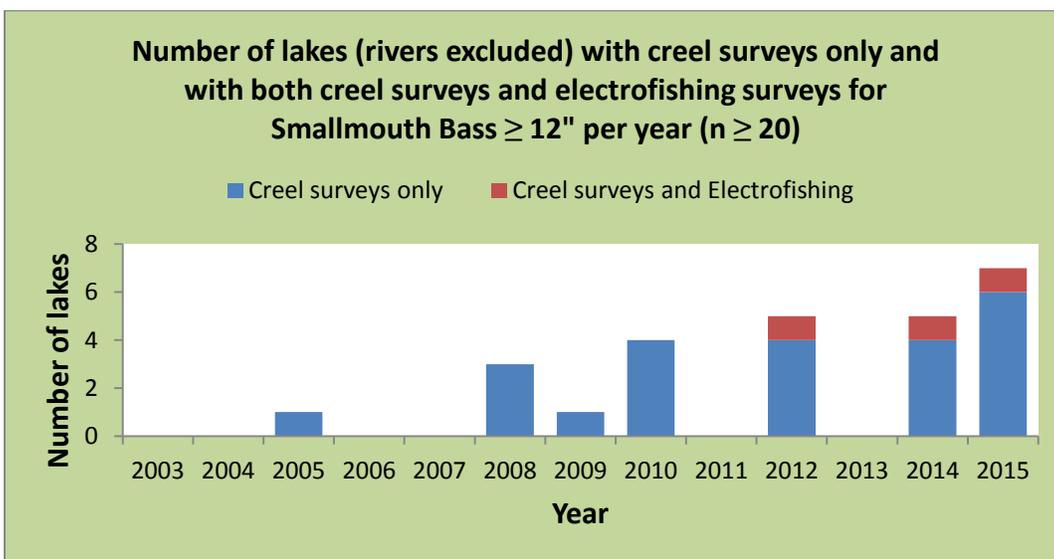
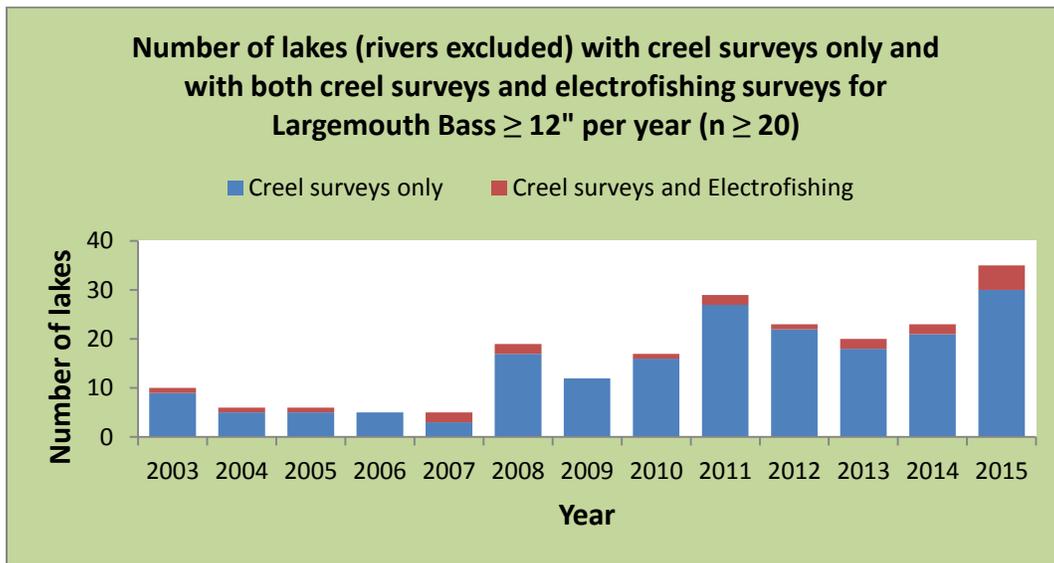


Of course, success ratings differed among anglers, but most anglers that contributed multiple surveys still had overall ratings at or near average (the number 3 equals average in graph below). Five anglers reported only excellent (the number 5 equals excellent in graph below), 10 others reported only an above average catch, and seven reported only a below average rating. Nearly all of these contributed one or two surveys. No one reported only poor (1 equals poor in graph below) success.



## Benefits of Creel Survey to Minnesota Department of Natural Resources

Our primary gear we use to assess Largemouth Bass populations is boom electrofishing. From 2003 through 2015, anglers participating in this creel survey provided 210 independent estimates of size structure of Largemouth Bass among many lakes from 2003 through 2015. We in DNR made 20 estimates of size structure across the same set of lakes during the same time frame. Thus, anglers contributing to this survey provided 190 estimates of size structure of Largemouth Bass that we in DNR did not obtain! Although most anglers in this survey focus on Largemouth Bass, this survey is also providing data on some Smallmouth Bass fisheries.



Data from these creel surveys also provide a connection between catch per hour and angler's view of fishing success, a value that is seldom quantified. For example, average success based on these creel surveys means that anglers catch just a little above one bass  $\geq 12$  inches per hour of fishing, and about 0.4 bass  $\geq 15$  inches per hour of fishing. Thus, a success rating can be estimated for those creel surveys that provide catch per hour estimates, but did not directly determine a success rating. Most if not all standard creel surveys done by DNR provide estimates of angler catch per hour, but questions about success are not asked during interviews by creel clerks.

