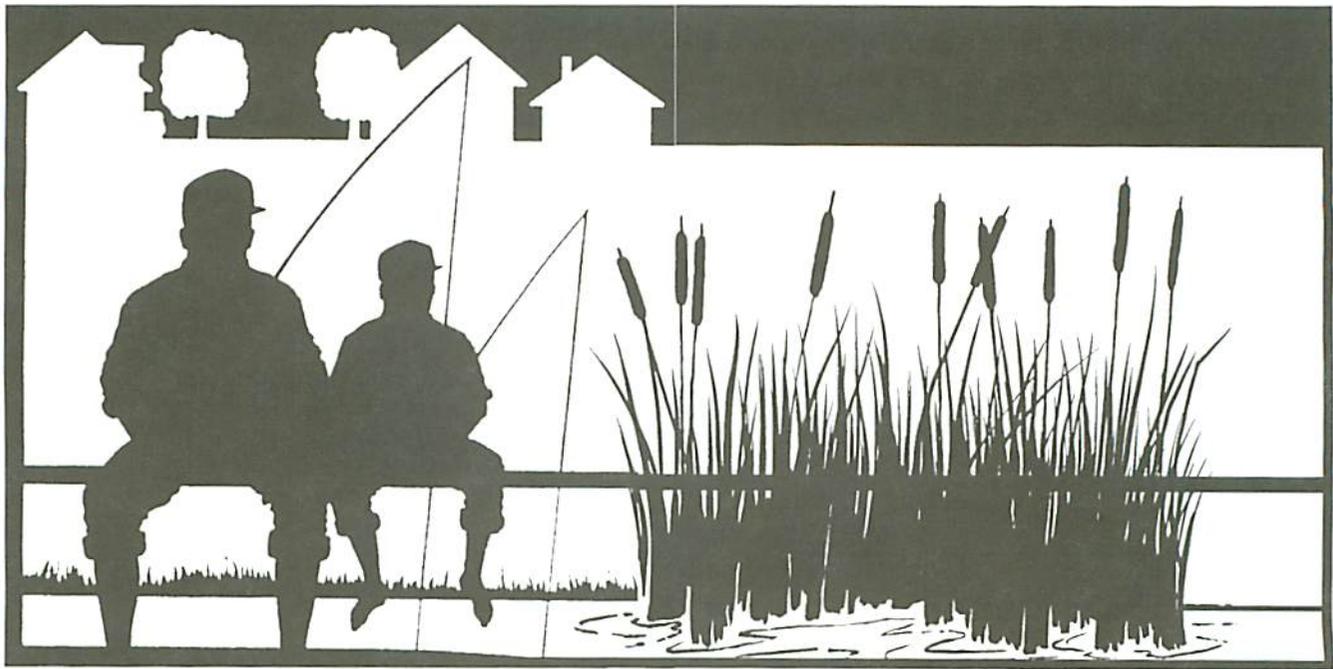




## *How Many Fish Do I Have?*

A Landowner's guide to Determine the Fish Community Status in Their Pond



What kinds of fish are in my pond? How many fish are in my pond? What sizes of fish are in my pond? What can I do to make the fishing better? These are all questions that are common among many pondowners in Missouri. The first three questions can be grouped together and rephrased as, "What is the status of my pond?" The fourth question cannot be answered until after the status of your pond is known. This *Aquaguide* will assist you in determining the status of your pond. First, there are a few terms to learn that will aid you in your quest for better fishing.

The first term to know is **population**. A population includes all of the individual fish of a particular species. For example, all of the bass in your pond make up the bass population, whereas all of the bluegill make up the bluegill population. The term **community** is used when describing all of the various populations that exist together. The most typical farm pond fish community consists of bluegill, largemouth bass, and channel catfish. This combination of fishes provides good

fishing opportunities, and management goals can be easily achieved. When other species such as carp, bullhead, crappie, etc. are introduced, management becomes much more difficult and unpredictable.

To determine the status of your fish community, a **sample** must be collected. Ideally, a sample should be made with enough effort to capture as many fish as possible. A good sample can yield information such as: 1) number of species present, 2) the abundance of each species 3) size ranges for each species, 4) fish weights, and 5) a general idea of fish health. Fisheries biologists use specialized equipment to obtain a good fish sample and, thus, a "snapshot" of the community.

There are approximately 500,000 farm ponds in Missouri. Obviously, the Missouri Department of Conservation cannot sample every pond. However, there is a relatively easy method for you, the landowner, to find out the status of your fish community without specialized equipment.

**Collecting Your Data**

You can determine the status of your pond by keeping a record of the fish you catch. This way of looking at your fish community is a lot of fun, but in order to get enough information, you will need to make several fishing trips. The best time to collect your sample is during spring. It is important to record the number, length, and species of each fish caught. For your convenience, blank data sheets for largemouth bass and bluegill are provided (Appendix A & B). An example of a completed data sheet is also provided (Figure 1). This method will allow you to observe trends in fish harvest over time, and provide information necessary for making management decisions. The key is to catch fish in near proportion to the different sizes that exist in the pond.

Here's how to do it:

**Largemouth Bass**

1. Use artificial lures like crankbaits, spinners, and plastic worms in three length categories: 1-to 2-inch, 2-to 4-inch, and 4-to 8-inch. The different lure sizes will allow you to target all sizes of bass in the pond.
2. Fish each lure for 30-minute intervals until you have caught at least 20 bass **8 inches or larger**. Do not record bass less than 8 inches. Each lure size must be fished for an equal amount of time before you stop fishing. This may take several trips to the pond to catch the desired number.
3. Fish all areas of the pond.
4. While bass fishing you **should not** collect data on bluegill.

Figure 1. Example of how to calculate the PSD for largemouth bass. The same procedure is used for bluegill except that the length classification changes (see text for correct sizes to use for bluegill). Once the PSD's are calculated for both bass and bluegill, use Figure 2. to properly assess your fishery.

Largemouth Bass Data Sheet				
Length (in.)	# Caught	Total # of all fish caught		Total # of fish >12"
8	0			
9	2			
10	3			
11	5			
12	1			
13	1			
14	5			
15	3			
16	3			
17	0			
18	0			
19	0			
20	0			
21	0			
22	0			
23	0			
24	0			
		23	A	
				13
				B

Here's how you calculate the PSD for largemouth bass:  $(B - A) \times 100$ . The answer is 56.5. In other words, nearly 57% of the bass in your pond are 12 inches or greater in length.

### Bluegill

1. Use worms, crickets, or some type of small artificial lure. Very light line (2-6 lb test), small hooks (#6 or smaller), and light split shot work best.

2. Fish until you collect at least 50 bluegill **3 inches or larger**. Do not record fish less than 3 inches. If you use different lures, be sure to fish each for an equal amount of time. Again, it may take several trips to the pond to catch the desired number of fish.

3. Fish all areas of the pond.

4. While bluegill fishing you **should not** collect data on bass.

### Channel Catfish

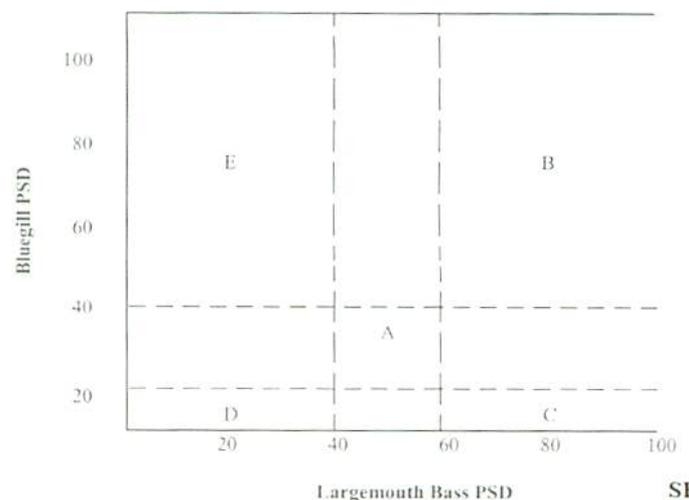
Channel catfish reproduction in ponds containing largemouth bass is rare. Stocked catfish are typically the only individuals present and supplemental stocking of catfish  $\geq 8$  inches is required to maintain the population. If catfish are harvested periodically, restock the number harvested plus an additional 10% to account for natural mortality. Note the body condition of your catfish. If the catfish are overstocked or if the food supply is limited, the fish will appear skinny. Removing some fish and discontinuing stocking will allow others to grow faster.

### Making Sense of Your Data

Once your sample has been collected it's time to determine the status of your fish community. There are some simple calculations that can be made to summarize your catch. One calculation that biologists commonly use to determine the size distribution of bass-bluegill populations is called Proportional Stock Density (PSD). Although the term "PSD" may sound intimidating, it's very easy to calculate. You will need to calculate a PSD for your bass and another PSD for your bluegill. To determine the PSD for bass, divide the total number of quality bass (12 inches and larger) by the total number of all bass caught (8 inches and larger) and then multiply by 100. For bluegill PSD, divide the total number of quality bluegill (6 inches and larger) by the total number of all bluegill caught (3 inches and larger) and then multiply by 100. The PSD numbers you get will allow you and/or a fisheries biologist to get a good idea of your pond's status. See Figure 1, for an example of how to calculate a PSD.

Now that you have PSD's for bass and bluegill, it's time to interpret the results. In other words, you're going to answer the question, "What do these numbers mean?" Simply use the grid (see Figure 2) and your PSD's to find out the status of your fish community. Congratulations! You have determined the **status** of your pond. For example, if your bass PSD was 20 and your bluegill PSD was 55, then your community is in grid "E". In this example, your bass population is overcrowded but you have a quality bluegill population. So what now? The last step to quality fishing is to decide on a management plan (remember question 4 from the first paragraph?). It's up to you to decide what type of fishing you want your pond to provide. Do you want big bass? How about big bluegill? What about a pond that offers bluegill and bass in a variety of sizes? Several *Aquaguides* are available to assist you with different management options. Call your local MDC office and ask to speak with a fisheries management biologist to ensure that the management option you seek is feasible. Be sure to have your data handy!

Figure 2. Grid (modified from *Inland Fisheries Management in North America*) comparing PSD's of largemouth bass and bluegill. Parallel lines bound the desired PSD ranges. A) mutual balance for satisfactory fishing, B) community consisting of large, old specimens, indicative of an unfished population, C) stunted bluegill interfering with bass reproduction, D) overfishing of bass and stunted bluegill, and E) high population of small bass overeating young bluegill.



Appendix A. Blank data sheet for largemouth bass. Use tally marks each time you catch a fish within a given length category. PSD for largemouth bass =  $(B \div A) \times 100$ .

Largemouth Bass Data Sheet			
Length (in.)	# Caught	Total # of all fish caught	Total # of fish $\geq 12$ "
8		A	B
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			

Appendix B. Blank data sheet for bluegill. Use tally marks each time you catch a fish within a given length category. PSD for bluegill =  $(B \div A) \times 100$ .

Bluegill Data Sheet			
Length (in.)	# Caught	Total # of all fish caught	Total # of fish $\geq 6$ "
3		A	B
4			
5			
6			
7			
8			
9			
10			
11			
12			