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Catch & Release Fishing
Is It Really Necessary?

Each year more fishermen crowd what many feel are already overcrowded fishing waters. The question is can fishermen do anything to assure that their catches do not decrease?

By Bob Knopf Contributing Editor

Official estimates indicate there will be a continuous increase in the number of fishermen during the coming years; resulting in a possible decrease in catchable fish for each fisherman. Not a very promising picture, to be sure. But we fishermen CAN have an influence on this gloomy forecast. Yes, we can! To find out how, please read on.

Each year more fishermen crowd what many feel are already overcrowded waters, forcing fishermen to share their favorite lakes and streams with more fishermen. As a result, overfished waters are becoming more common everywhere, and many of the lakes we fish today are not yielding fish to their potential.

Complicating the problem, anglers today are more competent and catch more fish than the average angler of only five years ago. Sophisticated fish-catching equipment coupled with the knowledge of how to find and catch various species of game fish has made the modern day angler, you and me, a substantial threat to any game fish that swims.

Unfortunately, although the number of fishermen increases each year, the number of fishing waters throughout the nation remains relatively constant.

The reservoir boom that occurred in the past twenty-five years, and which caused the construction of hundreds of new fishing waters, may be about over. Although reservoirs created a sometimes excellent fishery, they eliminated many other land uses, and often the previously existing stream fish species. Reservoirs often cost many thousands of dollars to maintain and many reservoirs have serious, though little publicized problems. Most people now agree that it is not feasible to increase the number of fishing waters as an effective means to reduce fishing pressure.

State and Federal agencies who record license sales and who estimate fishing trends repeatedly show that in the future there will be a continuous increase in the number of fishermen, which means a resultant decrease in catchable and keepable fish for each fisherman. No, this is not a pretty picture, however, it's inevitable just like increases in the price of gas and other forms of energy.

The energy situation in the U.S. will not help matters. Some fishermen will no longer fish, mostly those people who fished once or twice a year and who traveled long distances to more remote or scenic areas to combine vacationing and fishing.

Most fishermen will fish lakes and streams closer to home to reduce their gas expenditures and cost. Since metropolitan areas are "home" to more people than rural areas, this will put more pressure on "metropolitan" lakes and streams. If you happen to live in a secluded area that has prime fishing water, consider yourself extremely fortunate. You may have quality fishing for a few more years than most of us.

Some rich or very dedicated anglers will still be able to get quality fishing by flying off to remote wilderness areas, however, for most fishermen, in most places, most of the time, fishing pressure is going to increase, and because a given number of fish must be spread among more anglers, fishing catches are going to decrease!

I do not wish to be the harbinger of doom, however, one of the most serious threats to fishing fun is game fish depletion, caused simply by excess fishing pressure.

Pollution from industrial discharges, etc. is still a problem and will continue to eliminate some fishing waters, but other waters are being cleaned up and will again begin to produce quantities of fish. (They may not be consumable, but you will be able to fish for them.) Acid rains and other variable source pollutional problems are not easily remedied and have many of us fisheries people downright worried!

Knowing that fishing pressure will increase, that pollution will eliminate the fishing potential of some lakes and streams, and that energy will become a more restricting factor, what can we do to assure that our catches do not decrease?

Learning the best possible times and places to fish, how to avoid more heavily-fished waters and how to utilize underutilized fish species are ways to increase your catches.

As readers of Fishing Facts you are already helping yourself to catch more fish. You are increasing your knowledge so that you will become a better fisherman, and knowledge is the key to fishing success. Increasing your knowledge should enable you to catch as many fish now as before, and in spite of these adverse factors, should allow you to actually increase the number of fish you catch. However, because you catch more fish than the average person, you are a threat to fishing and its future unless you release some of the fish you catch.

Practicing a liberal catch and release fishing program is the most important thing that each of us can do to assure that fishing quality does not deteriorate. Period!

Some of you may not catch large quantities of game fish. If you don't catch many game fish each year, then by all means, keep the legal ones that you do catch. But, if you fish regularly and you're a skilled fisherman and catch substantial numbers of large game fish, including bass, northern pike, walleye, muskie, trout, salmon or any large piscivorous (fish-eating) fish, then YOU can substantially reduce game fish populations in the lakes and streams you fish.

Let's briefly get away from what we as fishermen can do to combat fishing pressure and its effects and talk about what can be done by the various state governments and fisheries managers.

Fisheries managers can limit or restrict the duration of any or all fishing seasons. They can reduce the season by days, weeks or months, or eliminate it altogether. They can also regulate the number of fish allowed to be kept and their legal length. They can set limits for both minimum and maximum lengths, allowing, for example, fish over 12 inches to be kept, or fish under 13 inches to be kept. They can limit the number of fishing hours in a day, allowing fishing from 10:00 a.m.-to 7:00 p.m. each weekday and from 12:00 noon to 5:00 p.m. on weekends. They can limit the number of boats that are allowed access to launch ramps or reduce the number or even close launch ramps. They can increase the price of fishing licenses and charge launching fees and other miscellaneous fees.

The most common method to protect fish from increasing fishing pressure will be state regulated catch and release fishing. This will cause many already overfished waters to bounce back in a few years, however, most state catch and release programs will be initiated only when game fish populations reach a low, almost threatened level. They may not be initiated statewide or on the lake you fish. This doesn't mean that the lake you fish can't be overfished, it means it will be overfished unless you have your own catch and release program.

Fisheries managers do not have a large variety of regulations to choose from, largely because fishing laws and regulations must be reasonably easy for everyone to understand and must also be readily enforceable. This means that each state needs to have somewhat standardized, statewide regulations with as few exceptions as possible. Standardized regulations mean that some waters will be overprotected and others will be underprotected. There is no simple solution to this problem. The trend in many states in the past, whether intentional or unintentional, has been to underprotect the majority of lakes to give fishermen more freedom and the choice to keep as many fish as possible with as few restrictions as possible. As more and more anglers flock to lakes and streams, I think (and hope) this trend will change so that many of the more delicate lakes will be protected. Rigid regulations may cause some lakes to be overprotected, but this is the only way that your and my grandchildren will be able to experience fishing as you and I know it now.

Those are the direct controls available to fisheries managers, and as you may have noticed, none of them tends to increase the enjoyment of fishing. These regulations are not just theoretical, but they are real, and in the next few years you will see at least some of them begin to come into effect.

[NOTE NOT FROM ORIGINAL TEXT: Have any of you reading noticed that this article is from 1981! Have you also noticed any new restrictions on size and catch limits since 1981? For example, perch fishing on Seneca Lake, NY, historically had no limit. Today the limit is 50.]

FISHERIES MANAGERS CONTROLS

The below options are available to fisheries managers to directly regulate a sport fishery to reduce the consequences of overfishing. Notice that none of the options, with the exception of the last, will increase fishing fun

Limit or Regulate:	Length of fishing season Minimum fish length Maximum fish length Number of fish allowed to be kept Fishing hours in a day Number of boats allowed access to launch ramps
Reduce:	Fishing season by days, weeks or months, or eliminate it altogether The number of lake and stream access sites
Increase Prices / Charge Fees:	Increase fishing license fees Establish separate licenses for various species Charge boat access fees Charge day use fees
Establish:	Catch and release fishing

Fisheries managers also have a few indirect controls by which to reduce the effects of overfishing. Most of these

It is easy to discuss the types of lakes and streams that are susceptible to overfishing. ALL lakes and streams are susceptible to overfishing. Some are less susceptible than others, but to believe the lake or stream you fish is not susceptible to overfishing (even if it's Lake Erie for walleye), is to largely ignore the problem. There are no good, definite exceptions to this, even though some lakes can, at present, withstand extreme fishing pressure and still yield satisfactory to excellent catches.

Some fish species cannot withstand fishing pressure as well as other species, and because of this some species need more management protection. As a rule, species which take longer to reach maturity, those that spawn a limited number of times or those which have a more limited geographical range are more susceptible to overfishing.

Oftentimes creel size minimums give a crude indication of reproductive potential. Thus, if where you live bass must be 12 inches to keep, walleye 15 inches, and muskie 30 inches ... then you may use this to know that, muskie are probably the most susceptible to overfishing, followed by walleye and bass. Other factors dictate which species is most effected by overfishing in any given lake or stream but any large game fish species can be overfished.

It is difficult to list the qualities or characteristics of a lake or stream that make it more or less susceptible to overfishing because there are many exceptions. Not all biologists agree on where overfishing is most probable, however, certain lake types and conditions do lend themselves to overfishing.

Smaller lakes are more susceptible to overfishing. This is largely because larger lakes by their physical size can support larger populations of fish, but also, a large lake can more readily absorb the effect of any one or two anglers. A good fisherman, one person, YOU, can substantially reduce the game fish population in a lake smaller than 1000 acres in only a couple years. A small 0-300 acre natural lake may not maintain adequate fish stocks if only one or two knowledgeable fishermen fish weekly (and keep their catch) throughout the fishing season.

Oligotrophic (nutrient limited) lakes, such as the more northern, clear, .cold water lakes, are more susceptible to overfishing. This characteristic may overrule the size condition, which means that a large, oligotrophic lake is often more easily overfished than a smaller, more eutrophic (nutrient rich) lake.

Eutrophic or "dirty" lakes have more plant and animal plankton which is food for many small fish. These lakes can often support larger populations of game fish than their more clear, less nutrient rich counterparts. This is another reason it may pay you to fish dirtier water lakes.

Lakes in colder climates are more susceptible to overfishing, largely because both game and food fish have a shorter growing season and grow more slowly, often producing fewer eggs and offspring.

Lakes where fishing is allowed during spawning seasons are much more susceptible to overfishing. Removal of prespawn and spawning fish is a large part of the problem, but even catch and release practices can disrupt the spawning process enough to reduce spawning effectiveness.

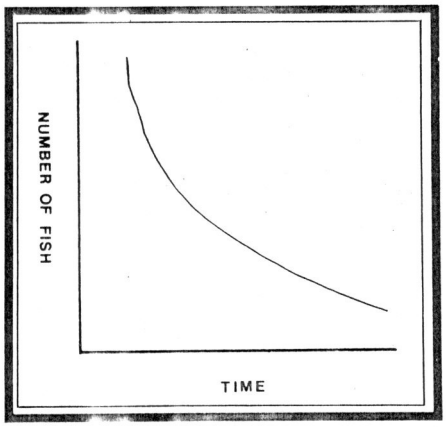

FIGURE 1, Survival of fish vs time. The rate of death is proportional to the number of fish at any particular time.

TABLE 1

The numbers and age composition of a bass population with a continuous mortality, age 0 through age 11, based on the addition of 10,000 fish from spawning each year. If **A** represents the stable lake you currently fish (50% mortality), then additional fishing pressure and its associated mortality without catch and release (70%) are shown by **B**. Lessoned fish mortality due to catch and release practices (30%) are represented by **C**. Note the difference in fishing quality especially in numbers of older (larger) fish! Unfortunately, many lakes are represented by **B**.

FISHING NOW

	Age of Fish Present											
	0	1	2	3	4	5	6	7	8	9	10	11
A (50%) Mortality	Number of Fish											
	10,000	5,000	2,500	1,250	625	312	156	78	39	20	10	5
	← Small →			← Medium →			← Large →			← Trophy →		

THE FUTURE – CATCH & RELEASE

	Age of Fish Present											
	0	1	2	3	4	5	6	7	8	9	10	11
B (70%) Mortality	Number of Fish											
	10,000	3,000	900	270	81	24	7	2	7	—	—	—
	← Small →			← Medium →			← Large →			← Trophy →		

THE FUTURE – CATCH & RELEASE

	Age of Fish Present											
	0	1	2	3	4	5	6	7	8	9	10	11
C (30%) Mortality	Number of Fish											
	10,000	7,000	4,900	3,430	2,401	1,681	1,176	824	576	404	282	198
	← Small →			← Medium →			← Large →			← Trophy →		

[NOTE NOT FROM ORIGINAL TEXT: Has anyone caught any 25-30 lb. Lake Trout, Brown Trout or Northern Pike from Seneca Lake or Cayuga Lake in NY lately? How about 15-lbers with any regularity, for that matter?]

Remote, wilderness lakes are more quickly overfished because the fish have not been gradually accustomed to anglers and to the repetition of catch techniques.

Non-weedy lakes are more susceptible to overfishing, largely because in weedy lakes fish often scatter in the weed beds making them more difficult to eliminate because angling techniques are somewhat restricted and because the fish are more scattered.

Steep-sided, deep water lakes are more susceptible to overfishing, mainly because they have less shallow, food shelf areas and are often food limited.

Lakes are more susceptible to overfishing than rivers and large streams, however, small creeks are more susceptible than either lakes or streams.

There are sometimes complicating factors that come into effect to completely alter the preceding situations, however, the listed conditions are good ballpark criteria.

Since you're only one person, what effect can you have on a fish population by either keeping or releasing the fish you catch?

I conduct research on a 700 acre reservoir that by most lake standards has an excellent and diverse assemblage of prime underwater structure. It contains large areas of weedy flats (food shelf areas) with obvious breaklines (dropoffs, sudden depth changes, etc.) dropping into deep water (sanctuary for large predatory fish). I have found four main areas where bass aggregate and have caught in the past 1 ½ years, 150 bass from these four spots. They have been 150 different bass because I have tagged them before their release. They ranged in size from 14 to 22 inches (½ to 6 lbs.) and averaged 16-17 inches, and included both largemouth and smallmouth.

Some of the larger fish were implanted with transmitters or "beepers" so I could follow where they go and what they do. (You can read about this in future issues of Fishing Facts.) Of the 150 bass caught at these four spots I kept approximately 20 for food. These were either the very biggest and oldest, say 19 inches (4-6 lbs.) or larger, or they were fish that had been gill hooked, or fish that I mishandled while unhooking. The remaining bass were released unharmed.

Let's look at the effect releasing those bass may have. It should be noted that fisheries managers use complex mathematical formulas to calculate fish mortality and survival figures. Keep in mind that this example is a simplification and will not show all the factors which affect bass survival.

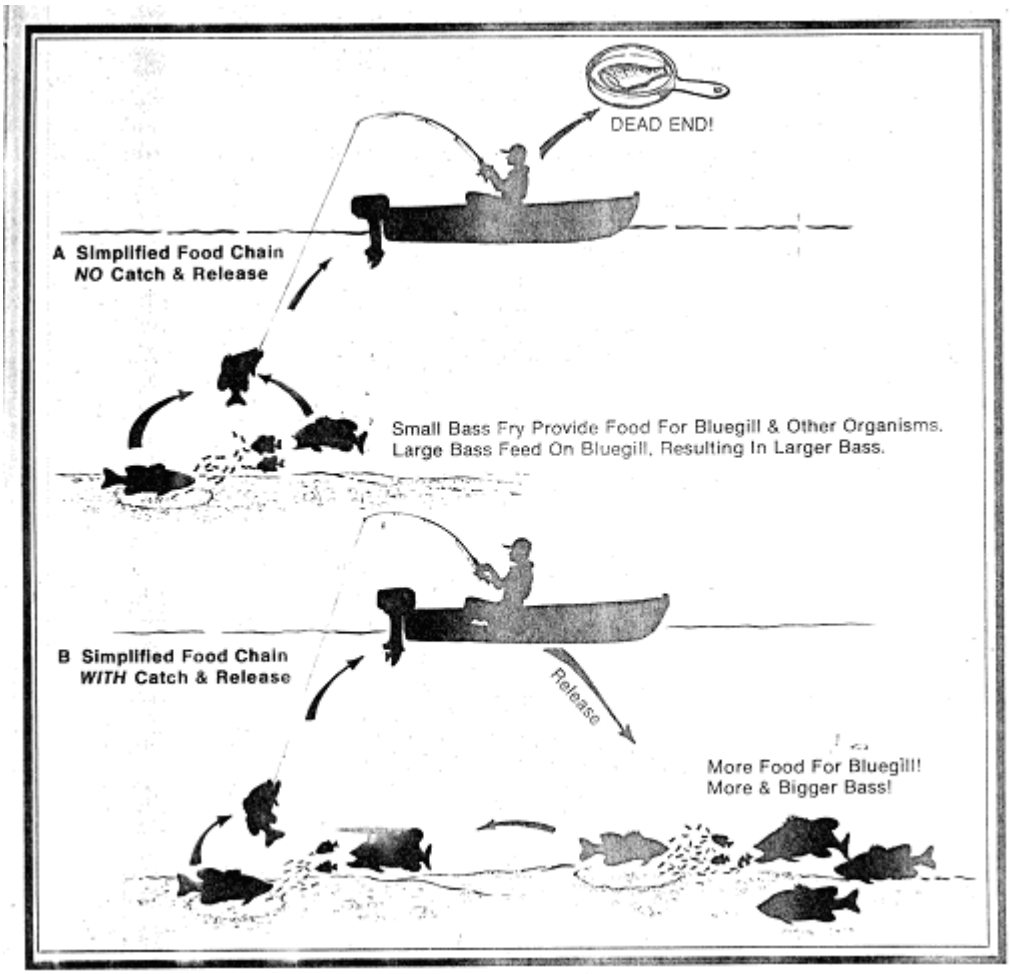

FIGURE 2, Simplified food chain with and without catch and release. A (without catch and release) is non-cyclic and is a dead end. B (with Catch and release) is cyclic and replenishes breeding stocks which in turn yield more fish.

Let's say for simplicity that I released 100 bass and that 50 were males and 50 were females (50 breeding pairs). Let's also assume that five of these pairs didn't spawn the following year and of those that did spawn, each spawning pair laid 25,000 eggs (the range is usually between 5,000 and 50,000). Of the 45 remaining pairs, let's assume fishermen caught the male bass off of five nests and the eggs were then eaten by bluegill and shiners. (The male bass is the guardian of the nest, eggs and small bass.) Then, a severe cold snap came through the area causing 10 more male bass to desert their nests, again allowing the eggs and fry to become food for foraging predatory fish. Now we're down to 30 nests, each with 25,000 eggs. Let's say that mortalities of the eggs and small

fish (0-2 weeks old) were 60%, a reasonable amount. That leaves 10,000 small bass per nest (300,000 total) to fight for continued life.

These 300,000 surviving bass still face many perils and they will continue to die (**Figure 1**). The bass will die from natural causes (predation, floods, disease, etc.) and from fishing. If the bass experience a continuous combined 50% mortality (the range is usually between 30 and 90%), then at the end of one year there will be 150,000 surviving bass; after two years there will be 75,000 surviving bass: etc. Bass numbers would continue to decrease by 50% each year (**Table 1**). Some lakes and years would have greater mortality, others would have less. This is a hypothetical situation, but it is easily within the range of conditions that naturally occur in many thousands of lakes and streams.

In a stable population, the number of new fish recruited each year will equal the mortality for that year. If we assume that natural mortality and fishing mortality are the same each year then a lake should have a stable population from one year to the next assuming stable recruitment. When fishing catches increase, because of more numbers of fishermen or because of more knowledgeable fishermen, then a previously balanced lake is no longer balanced, and fish populations will decline. As fish populations decline, catches decline, and the time spent making a catch increases.

In our example, 300,000 baby bass survived one spawning season, and the fish I released should live to spawn 4-8 more times. All told those same 100 bass could produce 1,200,000 to 2,400,000 offspring (and remember in approximately three years the surviving bass will begin producing offspring).

Another equally important point is that the eggs, fry and bass that are eaten or that die from natural causes, provide food for other species which in turn become food for the surviving bass. The entire system benefits. If I had put those 100 bass in my freezer to eat or had given them to a friend, they would have contributed nothing to the system. After two to five years of catch and release fishing there's a mighty big difference!

I personally have been practicing catch and release fishing for approximately five years. It is at times difficult ... I don't have stringers of fish to show my family or friends, and I don't have stringer pictures for use with articles. However, I do experience an inner excitement every time I gently lower a 4 or 5 lb. bass back into the water and watch it swim away.

Some people have been given the impression that catch and release fishing is to be recommended for only some fishermen who fish certain lakes under certain conditions. Others feel that if someone wants to release fish, fine, let THEM release THEIR fish.

You need to decide when a fish is most enjoyable to you, when it's leaping from the water bending your rod in a forceful arc, or when it's lying frozen in your freezer. In the long run there is no choice. Catch and release fishing is inevitable, you can start now and begin to replenish the lakes you fish or you can wait until your catches become less and less and state agencies force you into it. The choice is yours!