Paper presented at the Wild Trout Management Symposium at Yellowstone Park, Mammoth, Wyoming, Sept. 25-26, 1974.

CREEL, SIZE, SEASONS AND ANGLING METHODS— THE MANAGER'S VIEWPOINT

By Arthur N. Whitney

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Creel, size, seasons and angling methods (in other words, fishing regulations), in this manager's viewpoint, comprise one of the least important fishery management tools we have in Montana, as far as the long-range future of our wild trout resource is concerned. I would rank our management tools in descending order of importance as follows:

1. Habitat preservation, restoration and improvement.
2. Access purchase and development.
3. Population manipulation.
   A. Stocking sub-catchables.
   B. Chemical rehabilitation.
4. Regulations.
5. Planting catchable-sized trout.

Since this Symposium is concerned only with wild trout management, number five can be ignored. Perhaps some would like to drop number three as well, but our experience has been that few anglers see any difference between a hatchery fingerling grown to catchable size in the wild and a fish of the same size that was spawned naturally. The use of fingerling trout is quite limited in Montana's streams, but these fish do provide the bulk of our trout fishing in reservoirs.

I rank regulations low in importance, not because I consider them ineffective, (although some undoubtedly are) but rather because their effect is very short term. Thus an error in setting too liberal a season or limit is not nearly as serious as is an error about what restrictions should be imposed on a streamside construction project. Since we have yet to have set a sport fishing regulation liberal enough to decimate a fish population in Montana, I will have to use a severe pollution problem as an example. In the winter of 1960 a strike-associated cessation of some rather primitive, but effective, pollution control operations at Butte and Warm Springs caused the Clark Fork River to turn an opaque brick red from Deer Lodge to Missoula, a distance of over 75 miles. As nearly as we could determine with the sampling gear available at that time, all fish in that 75+ miles of the Clark Fork River died that winter. Super-liberal fishing regulations would be hard pressed to achieve the same result, although with several years of allowing nets, seines and dynamite and possibly offering a bounty on brown trout, suckers and whitefish, we might have approximated the same situation. I had never seen such a devastation of a stream trout fishery. When asked by reporters how long it would take the Clark Fork to come back, I said, "We just haven't had enough experience to know the answer to that question. I would guess 5 to 10 or maybe even 15 years." I was wrong. Within two years fishing was fairly good in the upper Clark Fork again. Today, even after sustaining a smaller, but still serious, pollution kill in 1967, the upper Clark Fork is one of the best wild stream trout fisheries in Montana.

Regardless of what importance fish managers attach to them, regulations are a matter of great concern to most of the anglers we work for. In sport fisheries management, as in most businesses, you don't survive unless you have at least half of your customers satisfied. Therefore, it behooves us to propose the best regulations we can that are commensurate with the capabilities of the resource, and then to temper these proposals with the desires of the majority of the anglers.

The major function of fishing regulations under Montana's relatively light fishing pressure is not to preserve fish stocks, but rather to attempt to provide a more equitable distribution of fish among anglers. However, studies have shown that the best 25% of the anglers take over 75% of the fish, and that about 45% of the anglers consistently catch nothing at all. Thus, a really equitable distribution of the catch is impossible under any regulation. But at least daily limits keep the differences between zero and a fairly low number.

Because the function of regulations is simple, it would seem logical that the regulations themselves could be simply written. Unfortunately, fishing regulations become more complex as both people and information on the fishery resource increases. In 1911 the Montana fishing regulations consisted on one sentence which, along with a few paragraphs that comprised Montana's hunting regulations in that year; all appeared on the back of each license. The fishing regulations said, "Fish may be caught at all times with a hook, line and pole." Today's fishing regulations fill the back of a large map. More people and more information have caused this change. In 1965, I bought a fishing license in Yukon Territory. The entire regulations were on the front of that li-

cense and said I was licensed to "fish by means of hook and line." One can infer that people pressures in Yukon Territory in 1965 were similar to what was found in Montana 50 years earlier.

I believe the history of Montana's fishing regulations can be categorized into four periods. The first, the period of the single sentence regulation I have already mentioned. It was probably supported by a belief that planting large numbers of trout fry everywhere would provide an inexhaustible supply of fish for anglers limited to the use of hook and line.

During the second period people must have had an intense desire to protect the resource, but apparently had no better understanding of how fish populations worked than before. The regulations during the second period consisted of a county by county listing of limits, seasons and closed waters that was quite complex and repetitious. These regulations filled a small book. Persons trained in the science of fishery biology and equipped with skills and tools that enabled them to get a better understanding of what goes on beneath the surface of the waters appeared in the latter part of this period and eventually were instrumental in bringing it to an end.

Montana's third period of fishing regulations came with a better understanding of fish population dynamics, a desire to allow as much fishing as the resource could provide, and a realization that habitat preservation, not fishing regulations, is the real kay to the future of our wild trout fishing. We are still in this period, with regulations printed on the back of a map and containing many year-round seasons, liberal creel limits and no restrictions on type of lure.

Montana fisheries managers can see a new period of fishing regulations on the horizon. Changes will be prompted by a growing group of anglers who prefer catching large trout (even if they have to release them) to catching and keeping larger numbers of smaller fish. This group is still in the minority, and I am confident that all regulations will not be revised immediately to serve their interests. However, I think their desires represent a valid request of the resource and that it will be logical for us to meet these demands in some areas.

To do this will result in fewer trout being taken by anglers and more trout dying of natural causes than do so now. We know in certain areas we have studied, such as the Madison, that total mortalities are about 60 percent each year and that the anglers' catch represents only 20 percent of this (or 12 percent of the total population). Reducing the anglers' percentage even further would not be "good business" as far as providing maximum fishing opportunities is concerned. However, it certainly can be done in some areas for the anglers who really prefer catching and releasing a few larger trout to catching and keeping more small fish.

We are fortunate to be concerned with fish and not with elk or deer. Every severe winter I am thankful that surplus trout merely die unobserved under the ice rather than spectacularly on the highways or around haystacks as deer and elk do. The big game manager simply cannot go along with regulations which would allow a surplus the same way a fisheries or game bird manager can. Big game can destroy its habitat, fish and birds cannot. Managing for surplus fish or birds will only deprive some fishermen (or hunters) of their sport. And if that is what these fishermen or hunters want, the management agencies can certainly give it to them. It may not be "good" management in the classical sense, but it will have no long lasting detrimental effect on the resource.

Therefore, persons wanting this different type of management should let their desires be known. But I hope they will state such requests in the terms of what they want to catch and not as a set of regulations they would like to see tried. Researchers like Bob Hunt have evaluated enough restrictive regulations so we have a pretty good idea of what will work and what won't. Thus, while we would react rather violently to a request simply for fly fishing only on some stream or streams in Montana, we would have a much more agreeable reaction to a request to provide more larger fish in some waters. And also, I would hope that management agencies would not be deluged with requests to evaluate new combinations of restrictive regulations that somebody feels will produce really fantastic fishing. In Montana, I am sure any dissipation of our present investigative efforts into what qualities of stream trout habitat it is most essential to preserve will be most vigorously resisted. This would not be because we think such requests do not have merit; it would only be because we are not nearly as concerned about how best to increase the size of the wild trout you and I catch today as we are about whether we can save enough habitat so that our grandchildren will still be able to catch wild trout.

Dr. McFadden: *I want to make one comment in relation to what can sometimes seem to be an inconsistency of restrictive regulations from one situation to another. Obviously, the importance of restrictive regulations is going to have a lot to do with the harvest rate of the fish, and I see that harvest rate as being determined largely by two factors. One is the obvious one, fishing pressure; and the other is the size of the population that is being fished. A small population, for example*

headwater stream resident cutthroat, is likely to be much more susceptible to depletion by fishing than a very large population, numerically speaking, and occupying a much larger habitat. Secondly, as was said earlier, the species of trout that you're talking about is of immense importance in relation to utility of restrictive regulations, running the gamut from brook trout, which most people are smarter than, to brown trout, which are smarter than most people.

The final point I wanted to make about restrictive regulations is that their utility is very directly related to the productivity of the waters on which they're imposed. In a very highly productive situation, where the emphasis is on a lot of biomass turning over in the system, you probably can't stockpile very extensively, and, if you remove fish from the population, they are rapidly replaced. When you go to very unproductive streams, the rate of elaboration of new biomass, new fish flesh, is very slow because of limited productivity. When you remove a fish from the system, it's not very rapidly replaced; in fact, the lag time for replacement may be of the order of years. Stockpiling to maintain a fairly high standing crop for a fishery can be a very effective objective that's implemented through restrictive regulations.

We will move along now to our next speaker, who is Bob Hunt, who will continue our discussion of angling regulations in relation to wild trout. Bob is a fishery biologist with the State of Wisconsin.

ANGLING REGULATIONS IN RELATION TO WILD TROUT MANAGEMENT

By Robert L. Hunt

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I am in thorough agreement with the list of management priorities established by Art Whitney, the preceding speaker. Habitat preservation, restoration and improvement certainly belong at the top of my list of trout management priorities too, at least when viewed on a broad management perspective such as that of managing all the trout waters in a state or province. However, I believe it is also necessary that at the local focus of managing a specific stream, watershed, or sector of a state or province, trout fishing regulations assume first priority where (1) habitat quality is not an issue, or (2) the threat of overfishing is so serious that it must receive special management attention.

Evidently excessive fishing pressure is not a problem yet in Montana, hence the biological implications of managing (or satisfying) fishermen. But such may not always be the case.

Close by the site of this Symposium it has become necessary to apply highly restrictive fishing regulations to restore and maintain a high quality fishery for wild cutthroat trout in Yellowstone Lake and in Yellowstone River within the Park. Preserving the pristine quality of these trout waters has not been enough to assure perpetuation of a high quality sport fishery (Anderson 1974).

A second example of first priority on fishing regulations is the proposed management scheme to preserve the world's finest trophy fisheries for lake trout in huge Great Slave Lake (11,000 square miles) and even larger Great Bear Lake (12,000 square miles) in Canada's Northwest Territories. Despite their remoteness, vastness, short fishing season (about four months), light angling pressure, and a sport fishery only 20 years old, it is evident that overharvest of trophy lake trout is occurring even though harvest rates approximate only one pound/acre/year in Great Slave Lake and 11 pounds/acre/year in Great Bear Lake. Deteriorating habitat quality in these lakes is no management problem now or in the forseeable future. The problem is excessive harvest of trophy-size lake trout to take home and smaller lake trout to eat on the spot, and from a fragile arctic environment that has low carrying capacity and low growth potential.

Strong management recommendations (Falk, Gillman and Dahlke 1973) have, therefore, been proposed to preserve these lakes for trophy lake trout fishing only by limiting anglers to one lake trout of 15 pounds or more per year and use of barbless hook lures.

The team of investigators concluded that the ultimate aim of their recommendations is to provide a method of preserving the unique fisheries of Great Bear and Great Slave lakes for future utilization. "As good sports fishing becomes rarer and numbers of fishermen increase, Great Bear and Great Slave lakes' appeal of unmarred wilderness and trophy fishing will become increasingly valuable, both aesthetically and economically."

Somewhere I read that there are two contrasting philosophies of life that prevail in West Germany. In the northern industrialized half of the nation, the attitude to life is characterized by the phrase, "The situation is serious but not hopeless." In the southern, more agrarian half, people view life with the philosophy that, "The situation is hopeless but not serious."

I suspect these same contrasting attitudes can be accurately applied to the future of wild trout