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REGULATION OF SPORT FISHERIES[1]

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Regulations pertaining to sport fisheries are numerous and varied; their complexity is confirmed by even the most cursory examination of those now in force. Most have been imposed arbitrarily. By "passing a law" it was assumed that certain desirable objectives could be attained. Among the purposes of the regulations were to prevent depletion of the resource, to assure recruitment, to aid in equitable distribution of the harvest, and to facilitate enforcement. In general, the law makers have tended to regard the fishery resource as a non-renewable one in constant danger of depletion. Regulations which would permit wider utilization were exceptional. Not much effort was made to learn whether or not the regulations accomplished their stated purpose.

Along with a host of special or localized laws, regulations on sport fisheries usually stipulated methods of fishing, closed seasons,

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[1] Contribution from Dingell-Johnson Project F-27-R-2.

size limits, and creel limits. Such restrictions have been applied almost universally to sport fisheries.

As recently as the 1930's biologists and fisheries managers began to question the effectiveness and need of many regulations. Research findings indicated that angling had much less influence than had been assumed. Other factors such as natural mortality, growth rates, competition, year-class abundance, and changing habitats were found to be of far greater importance.

Today, ideal regulations for sport fisheries should permit maximum continued use without endangering the resource.

In Michigan and elsewhere biologists and fisheries managers have examined some regulations critically. A limited amount of information on the true effect of the regulations is available. In the following sections we have summarized briefly some of the findings.

Fishing methods

Angling. --Except for a few special situations methods are usually restricted to conventional angling tackle. With this restriction, and under foreseeable fishing pressures, there is little or no danger of anglers depleting any self-perpetuating fish population. Overproduction of small, slow-growing pan fish or coarse fish of little interest to anglers is a chronic problem in many lakes and it is certain that proper management will have to depend upon measures more drastic than fairly liberal

regulations on hook-and-line fishing. When self-sustaining fish populations are exposed to angling, only a fraction of the available fish will be removed, and even if exploitation is fairly severe, recruitment will quickly replace those fish taken by anglers. That angling will not deplete the stock has been noted by many investigators (3, 4, 6, 7, 8, 10, 11, 13, 17, 25, 26). Some states, notably Ohio, have removed virtually all restrictions and results to date indicate no decline in fish populations or fishing quality that can be attributed to the liberal regulations (4, 10). Recent attempts at population manipulation have shown that removal rates, with nets or toxicants, must be drastic to produce a noticeable result on growth rates of pan fish. Obviously, in many lakes all restrictions on angling for pan fish could be removed, and in selected situations netting could be permitted with potentially beneficial results.

Netting. --In general, netting has been permitted only for certain coarse fish such as suckers, ciscoes, smelt, or burbot. Little information is available on these special fisheries, and regulations applied to them are fairly liberal. In selected situations netting could be used as a means for greater utilization of these fish crops.

Spearing. --In Michigan, anglers have customarily taken northern pike, muskellunge, and sturgeon by spearing. There is also some spearing for other species such as whitefish, suckers, and ciscoes. We have no information to indicate that spearing, as usually practiced, far exceeds angling in effectiveness. For example, at Fletcher Floodwater, in the period 1948-1963, pike catch per hour of angling was not greatly different

from the catch per hour by spearing (ms. report, Williams and Christensen). Little effort has been made to learn if spearing is in fact more deadly than hook-and-line fishing. In one test, on a private lake, underwater spear fishermen were more successful in taking the larger game species than would have been expected of hook-and-line anglers.[2] With present knowledge it appears that controlled spearing, particularly for coarse fish, is a legitimate means of harvesting the fish crop.

Lure restrictions. --In recent years the effects of lure restrictions on trout fishing have been examined. In initial tests, comparisons between worms and flies were made (21). Use of worms resulted in an average mortality of 33 percent; flies, 5 percent. In a second series of tests, flies and "hardware" lures were compared (22). Results indicated that differences in hooking mortalities from flies and hardware were inconsequential. Field experiments where fishing was restricted to flies have been conducted (9, 16, 23). Results of such tests were: decreased fishing pressure where the regulation was in force, exploitation rates remained unchanged, average size of trout in the creel did not change, and fall populations of sub-legal trout remained more or less unchanged.

Closed seasons

Beginning in the late 1930's and early 1940's many states began to adopt more liberal regulations, such as the elimination of some or all

[2] Unpublished records in Institute files on two spear-fishing contests held by the Michigan Skin Divers Association, in Brophy Lake, Livingston County, during the summer of 1956.

closed seasons. Tests conducted in Michigan indicated that at least for pan fish there was no need for closed seasons (4). For the larger game fish--pike, bass, muskellunge, and walleyes--there was some question, but as more information becomes available, indications are that closed seasons may be dropped for most warm-water sport fisheries (4, 5, 10, 12, 13, 25, 26). The same principles probably apply to trout fisheries. Fish are prolific, and ordinarily recruitment will not be impaired by activities of the angler.

In general, removal of closed seasons can be expected to provide additional fishing and a somewhat increased harvest, depending upon fishing pressure.

Size limits

For pan fish in warm-water lakes, there is ample evidence that size limits are of little or no value, and under some circumstances may even be detrimental (4, 5, 12, 13). For game fish, evidence for and against size limits is far less conclusive. Tests in Michigan of "no size limit" and "higher size limits" provide some information (5). When anglers were permitted to take bass and other game fish of any size, total numerical harvest was increased considerably, with no decline in the catch of large bass (over 10 inches). Few walleyes were caught, and pike did not enter the catch until they had reached a length of 14 inches or more (5). In other tests, size limits were raised to 16 inches

on bass, and 24 inches on pike. Such restrictions resulted in lowered harvests, and decreased fishing pressure. Under an intensive management program, size limits can be adjusted to attain a specific objective, i.e., maximum weight of harvest. When maximum weight of harvest is sought, the "correct" size limit depends upon growth rate, and natural and fishing mortality (1, 18). When maximum numerical harvest is desired, size limits should be eliminated.

In many states, size limits are not applied to trout. In Michigan, a 6-inch limit and a 7-inch limit were compared (20). Under the 6-inch limit angling pressure remained the same, the number of unsuccessful trips declined by 6 percent, harvest by number was doubled and increased 60 percent by weight, and average length of the trout over 7 inches did not change. Tests of 9-inch limits produced a decrease in pressure, harvest of trout over 9 inches did not change, and fall populations in the special waters increased (9). In trout fisheries removal of size limits will yield the greatest numerical harvest; when maximum weight of harvest is desired, size limits may be justified.

Creel limits

Primary purposes of creel limits are to decrease exploitation and to distribute the catch. They seldom accomplish these objectives. For pan fish in warm-water lakes reduced exploitation is not a desirable objective. For most game fish and for trout, creel limits are often so high that they are attained by only the most skillful and persistent anglers.

For bag limits to be effective in distributing the catch, they must be very low (14, 15). Under certain conditions bag limits, if stringent enough, can help to increase the catch of the less successful angler (2).

Coarse or non-game fish

Regulations on coarse or non-game fish are fairly liberal. Regulations on these special fisheries have not been investigated extensively. Maximum utilization seems desirable, and could perhaps benefit other segments of the fish population.

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