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The Use of Glass Minnow Traps in Trout Streams

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Any time after June 15, and up to Labor Day of this year trout fishermen may be surprised to see a man in hip boots wading up and down a mile or so of stream, apparently operating a trap line. He has no rod nor creel, but instead may be carrying a minnow bucket or perhaps one or two glass minnow traps. Effective this season, the operation of glass minnow traps in certain designated trout streams has been legalized by the legislature. Following are the reasons for the new regulation and a description of the methods best employed in trapping minnows.

In Michigan at the present time, there is an acute shortage of good bait minnows for the angler seeking to capture those wary game fish living in our many lakes and streams. This shortage becomes more apparent during the months of July and August when the demand for the larger bait minnows is increased. Many streams are open to both the

fisherman and the commercial bait dealers for seining or trapping minnows, but other streams in the same area, coming under the classification of trout waters, have been closed to all commercial minnow dealers. This created a heavy concentration of minnow dealers in the streams designated as open for commercial minnow removal. More than thirteen hundred retail minnow dealers in the state are attempting to supply minnows for fishermen, and they are generally successful in utilizing the available surplus of minnows in the open waters before July 1 of each year leaving the streams rather barren of minnows for the remainder of the summer. In contrast, a large population of desirable bait minnows in many trout streams is not harvested.

The scarcity of bait minnows prompted a series of experiments and research by the Institute to determine methods for alleviating this critical condition. An experiment was conducted to find a method of harvesting the minnows from trout streams without jeopardizing the trout population. All trout streams in the state have been closed to commercial minnow dealers in the belief that seining and trapping would have a detrimental effect on the trout. Consequently, in the summer of 1944, Mr. George Washburn conducted a series of experiments to determine the effect of glass minnow trapping in trout streams.*

The glass minnow trap used in the experiments was the commercial type trap, which can be described as a glass cylinder with a funnel opening into one end and a screw cap on the opposite end to remove the trapped minnows. Twelve of these traps were utilized in the investigation during the months of June, July, and August, 1944, in a total of

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* Washburn, George N., 1945. Experimental use of glass minnow traps in certain Michigan trout streams. Institute for Fisheries Report No. 984. (Mimeographed).

24 streams classified as trout water. The streams were located in 13 counties in both the Lake Michigan and Lake Huron drainage systems in the northern part of the lower peninsula, and included several widely known trout streams. For example, the North and East Branches of the Au Sable, Betsie, Clam, and Rifle rivers are all familiar names to the trout fishermen, and all contain an unharvested crop of bait minnows. Also included in the experiments were marginal trout streams and trout streams without such famous reputations.

There was considerable variation in the minnow populations of the streams investigated. The relative populations of minnows was determined by the number of minnows caught per trap per hour. The greatest catch during the experiment was 109 per trap hour in the Upper Thunder Bay River, Montmorency County, and the average catch in all streams where minnows were taken was approximately 30 per trap hour. There was also a noticeable variation in the catch per trap hour within a stream. Some sections contained more minnows, and often it was difficult to locate a good place to set the trap, due to swift water or vegetation, resulting in a low catch even though there were many minnows in the area.

During the entire investigation, a total of 5,442 fish were taken in the glass traps. Of these, 5,420 were minnows and the remaining 22 were game fish. The 5,420 minnows were represented by 12 different species, but only seven species occurred frequently. The species taken in the greatest numbers was the common shiner, followed in order by the creek chub, hornyhead chub, longnose dace, redbelly dace, bluntnose minnow, and northern finescale dace. The three most common species (common shiner, creek chub, and hornyhead chub) totaled 4,429 or 81 percent of the total catch.

As mentioned above, a total of 22 game fish were taken, making a ratio of only one game fish for every 247 minnows. The game fish consisted of 6 fingerling trout, 7 yellow perch, 1 largemouth bass, 2 pumpkinseed sunfish, 3 longeared sunfish and 3 rock bass. All were alive and could have been returned to the streams without injury.

The Au Sable River system, consisting of the Main Au Sable River, North Branch and East Branch, is one of the most popular trout streams in Michigan. This stream yielded 1,810 minnows and 5 trout, or a ratio of 362 minnows to one trout. If this ratio is a sample representative of the entire stream, it can be assumed that in harvesting 200,000 minnows from a stream like the Au Sable, 550 trout fingerlings would be taken in the glass traps. This number of trout, even of fingerling size, might be considered of economic importance by the fishermen who cast several hours for the thrill of catching just one trout, but when only glass traps are employed to catch minnows the trout are not destroyed. The inside of the trap is perfectly smooth with no sharp edges or projections that could harm fish, and there is a sufficient flow of fresh water through the trap to supply oxygen to the trapped fish. When the minnows are removed from the traps, the trout can be released into the stream in good physical condition with a better chance for survival than an undersize fish taken with a hook and line and then released.

Many of the glass traps were set in good trout habitat and near pools that were known to harbor trout, and even then trapping a trout was the exception rather than the rule. Certainly the taking of only six fingerling trout during the entire experiment on this stream system

should be conclusive evidence that glass trapping could not remove enough trout from the streams to decrease the anglers' chances of filling his creel even if the small trout were not returned to the water.

Now let's take a look at the effect of removing minnows from the trout streams. Practically every fisherman will agree that the number of minnows in a stream is much greater than the number of trout in the same stream, and there is evidence that trout and many species of minnows utilize the same type of natural food. Therefore it seems quite certain that large numbers of minnows lower the production of trout, and that the removal of these minnows would result in more food and space for trout. Also, many species of our stream dwelling minnows are carniverous. That is, they prey on other fish smaller than themselves, and certainly a small trout fry would be a choice morsel. Food habit studies have shown that some minnows are consumed especially by larger trout, but in most waters aquatic insects make up the bulk of the diet. It is our present belief that the competition of minnows for these insects outweighs their limited food value to trout. More research is needed to determine the actual benefit or detriment of a minnow population in a trout stream, but at the present time there are indications that an excess of minnows may be quite detrimental to the trout population.

At the conclusion of the above study, it was recommended that certain sections of trout streams be opened to the commercial minnow dealers using glass traps only. The state legislature subsequently gave the Director of Conservation authority to designate trout streams, or portions of trout streams, open for glass minnow trapping. Following are the rules for 1948 as issued under date of November 1, 1947:

In addition to other designated non-trout waters, a number of trout streams and portions of trout streams are designated open only from June 15 to September 5, inclusive, 1948 to the taking of minnows for commercial purposes and for personal use under the following restrictions (lists of open waters available from the Conservation Department):

1. Glass minnow traps not more than 24 inches long and with opening not exceeding 1-1/4 inches in diameter and hook and line only may be used.
2. Glass traps must be marked and identified with a white float marker not less than 2" x 6" bearing owner's name and address.
3. Owner of traps or his representative must be in immediate attendance while traps are being used.
4. Traps shall be baited with a cereal bait only.

For several reasons the open season for glass trapping has been limited to this period. The restricted season should reduce interference between trout fishermen and minnow trappers, as much of the trout fishing is usually over by June 15. Another reason for the late opening date is to allow the more important bait minnows an opportunity to spawn, thereby providing a crop for the following year.

Glass trapping is a very effective method of taking minnows from a stream. It is generally agreed among commercial minnow dealers that by the use of glass traps more minnows of desirable size can be caught than by seining and that less damage is done to the stream and to the minnows by this method of capture. However, in the experiments just

described, the traps were definitely selective as to the relative size of minnows captured. Practically all trapped minnows were over two inches in length and none over six inches in length was captured, although many larger than this were observed in the streams. This selective quality of the glass traps will assure a brood stock of larger minnows for spawning the following spring, and in addition minnows will not be taken or destroyed while they are small and of no value as bait, but will be left in the stream until they have had sufficient time to reach marketable size.

Traps should be set in a moderate current with the perforated cap upstream and the funnel end downstream. If the traps are placed across the path of the current, or if the current is too rapid, the traps will be washed downstream or rolled against rocks and broken. A slow moving current, or still water, does not provide current sufficient to carry the bait out of the trap to attract the minnows. The current should be adequate to pass through the perforated screw cap and carry the bait out through the funnel opening, and also cause sufficient current inside the trap to keep the trapped minnows headed upstream away from the opening and freedom. Baiting the trap is essential. The bait should consist of finely ground soda crackers or bread, or rolled oats, and a small handful placed in each trap will be sufficient for approximately 30 minutes operation. As the current passes through the trap, bits of the bait are carried out through the funnel opening, forming a chain of food leading to the trap entrance. The minnows are attracted by this food and by the other particles of food in the transparent trap. A trap that is not well baited will rarely take a minnow. Some minnow trappers

have discovered that in addition to the bait a live minnow should be left in the trap each time the trapped minnows are removed and the trap rebaited. When the minnows in the stream approach a glass trap containing both bait and minnows, their greedy nature makes them almost desperate to get at the food the trapped minnows are apparently enjoying. From personal observation I have noted well-baited traps surrounded by large numbers of minnows and for a period of 15 or 20 minutes no minnow would enter the trap, but after a few had blundered in the remaining minnows in the surrounding area became very active and frantic to reach those that were swimming inside the trap with the food, resulting in the capture of 40 or 50 minnows in several minutes. All traps should be emptied at least once every 30 minutes to prevent the escape of the captured minnows after all the food has been eaten or washed out of the trap. If no bait remains in the trap very few fish will be taken and those in the trap will find their way to freedom again.

For efficient operation the traps should be set in an area free of dense vegetation. During the experiments it was noted that traps set in the midst of weed beds consistently took fewer fish than other sets. Generally the minnows will be found in pools or near obstructions during the day and consequently the traps should be set in those areas. The preferred location for setting the traps is at the head of a deep pool where the bait will be carried from the trap down into the pool. Sets along the sides of the pools also are very effective.

One of the most practical methods of trapping employed by many commercial dealers is to set ten or twelve glass traps at intervals along the stream. The trapper then begins at one end of the trap-line, emptying and rebaiting each trap in turn until he reaches the last trap. This

usually takes about 30 minutes so that after the last trap has been reset it will be time to start the same procedure over again. If an individual trap has made a good catch it should be reset in the same spot, but if the catch was poor it should be moved a few feet to a new location before it is baited and set again. By this method the trapper can take the available minnows in a few hundred feet of stream in several hours and then move the trap-line to another nearby section of the stream. Most trappers find that scattering their traps over a mile or two of stream and tending the traps only a few times a day will not give as good results as when the traps are concentrated and watched carefully. Also, by concentrating the traps the minnows do not have to be carried a long distance to the holding cans or tanks. Several 20 gallon cans punched full of holes and placed in the stream will hold a large number of minnows in good condition while the traps are in operation. When a full load has been trapped the minnows can be taken from the holding cans and placed in the carrying tanks for transportation. This method of holding will keep the minnows in better condition than holding them on a truck in the transporting tanks for several hours in warm weather.

Glass traps can be purchased or ordered from any sporting goods store. The larger trap, known as the "two gallon" size, is more durable and efficient than the smaller "one gallon" size. This larger trap is approximately 13 inches in length and 23 inches in circumference, with a funnel opening 1-1/8 inches in diameter. Another trap in common use is similar to the one just described except for a flat base 7 inches square which makes the trap more stable in faster currents. Both traps are equipped with metal handles to facilitate carrying.

Since the traps are made of glass they are easily broken while handling, and it is recommended that a wooden box, divided into individual compartments, be constructed for a carrying case. If not carried in a case or carefully packed box, the traps will roll very easy and break when they come in contact with other traps or metal portions of the vehicle.

The streams open to this type of trapping in Michigan are scattered throughout the state and regulations will be governed by local conditions. Therefore anyone desiring to participate in this venture should first check with the local conservation officer for regulations in the specific area.

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