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A SUGGESTION FOR DECREASING THE TIME AND  
EXPENSE OF REARING TROUT TO LEGAL SIZE

by

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In years to come, we may want to increase hatchery production or maintain present production levels but decrease the cost of operation. The time saved by decreasing the length of time necessary to rear trout to legal size could be utilized in rearing greater numbers of trout or fewer fish to larger size.

The cost of production would also diminish because the man hours required to feed, care for and handle these fish till they reach legal size would be lessened.

It is a known fact that water temperature and the growth rate of fish are closely correlated. Trout reared in ponds where the water temperature is just below or near the optimum will grow more rapidly than fish held in ponds where the water temperature is considerably below the optimum, although the fish in both ponds may be given the same care. Hence, if water temperatures could be maintained at optimum levels for growth, trout could be reared in far less time than is required under our present hatchery set-up. By maintaining optimum water temperatures from the egg to the time the trout reaches legal size it should be possible to decrease the rearing time by at least one fourth and possibly a third.

Brook trout are usually through spawning by December 1 and most of our hatcheries have their supply of eggs by mid-December. At optimum temperatures (50-57°F.) the egg will usually develop in 33 to 44 days (Needham, 1938). By the middle of January most of the eggs should be hatched and by the first of February the young fry taking food. This would shorten the present hatching time considerably. Needham also states that "In extremely cold water below 40°F. trout eggs generally will be three months and more in hatching." This is about the temperature of the water used in most of our northern hatcheries. If it were possible to begin the feeding of these fish two months sooner under optimum water temperatures, they should reach legal size at a much earlier date than they would if handled under the present uncontrolled water temperatures.

Under the present system the water temperature is controlled more or less by weather conditions. From November to April the water in most of Michigan's hatcheries would have to be heated in some manner in order to keep the temperature between 50 and 60°F. To heat with hot air, steam or hot water the amount of water necessary to supply a hatchery would not prove feasible.

In recent years architects and engineers have studied ways and means of partially heating homes through heat from the sun's rays. As a result of their studies we have the "solar home." "All of its main rooms face south behind a virtually unbroken expanse of clear glass...when the winter sun swings low on the southern horizon, its beams slant in under the eave and flood the house with heat and light...more than half the winter days in Chicago and other Midwest cities are sunny--and even on cloudy days from five to 50 percent of the sun's heat penetrates the clouds. By October when the sun stays closer to the southern horizon, its rays shine through the lower part of the windows; and by December they flood the entire floor of every room facing south. Night losses of heat through the glass walls

is minimized by the use of thermopane, a double- or triple glazed glass with a dehydrated air space. Such glass does not frost or fog with condensation." (Wallace, January, 1944.)

A building constructed along similar lines could be built to house a storage pool of water. On sunny days the water would be warmed by the sun's rays and on cloudy or stormy days it could be warmed by other means. If other hatchery buildings were designed and constructed along similar lines the savings on fuel costs would permit heating the water storage house on days when the water was not warmed sufficiently by the sun.

Perhaps one of the disadvantages of such a scheme is the possibility of increases in mortality rates, because at higher water temperatures trout are more susceptible to disease. However, one can afford to lose more fish during and right after hatching than later on when the fish are larger and more valuable. If trout can be reared to a larger size before placing them in outdoor ponds there will be less likelihood of high losses in transfer, and during the rearing period, and these same fish could be reared to legal size in less time than now is required.

#### Literature Cited

Needham, Paul R. 1938. Trout Streams. Comstock Publ. Co., p. 32.

Wallace, Ralph. January, 1944. The Proven Merit of a Solar Home.

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