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THE EASTERN SPECKLED TROUT

(*Salvelinus fontinalis*)

NO outing is more popular among those who love angling than to get away for a day's fishing for speckled trout. There was a time when good trout fishing could be found within easy reach of almost every part of Ontario and other provinces of Eastern Canada, but the trout has gradually disappeared from so many of the streams in the older settled districts, that now it is necessary for most of us to go long distances to indulge in this splendid sport.



THE EASTERN SPECKLED TROUT

The mottled back and the almost square cut tail distinguish the speckled trout from the lake trout in which the back is uniformly coloured and the tail deeply forked.

The speckled trout owes its popularity to several features. No fish surpasses it in beauty. While the fish vary widely in coloration even in the same waters, all have scattered over their sides a number of brilliant red spots surrounded by rings of blue. It is to these spots that it owes its common name. Usually the general colour is dark green with darker mottlings on the back. In late summer and in autumn, the lower sides of the males are a flaming red. The speckled trout is a gamy fish, that is, it fights to get away when it is hooked, and does not give up and allow itself to be pulled in like a stick or old boot. Then too, its flesh is tasty.

*Reprinted from THE SCHOOL, October, 1936.

While game fish are sought more for the sport of catching them than for the food to be derived from their flesh, yet a game species whose flesh is delicately flavoured has an added claim to popularity. Another feature which enhances the charm of the speckled trout is the attractiveness of the conditions under which it is found. It is a fish of cool, unspoiled streams, especially those of some current, flowing through natural country. In the spring and early summer, when speckled trout fishing is at its best, it is refreshing to follow such a stream in search of fish, to see the birds and other wild creatures found in such places, and to enjoy nature at its best.

If we can bring back the trout to streams from which they have disappeared, and keep them plentiful in waters where they still occur, it will add a great deal to the attractiveness of our country.

Some people believe that there are different kinds of speckled trout because trout from different localities vary so much, especially in size and coloration. Most of these differences are due to the conditions under which the fish live. Thus fish in clear, cold streams are bright greenish; fish in brownish water flowing from boggy places where there is much decaying vegetation are brownish, and trout that go into salt water, as they often do in the region of the Gulf of St. Lawrence and the Maritime Provinces, become quite silvery after a sojourn in the sea. Similarly fish in small streams where there is little food, often do not grow more than seven or eight inches in length, no matter how long they live, whereas trout in large rivers sometimes reach a weight of several pounds. So far as known, there is only one species of eastern speckled trout, the differences in colour, size, body shape, etc., being due to differences in the character of the water and the amount of food available.

In waters producing an abundance of food, the trout grow to a size of five or six pounds, or even more, but where food is scarce they mature at a length of seven or eight inches. If a bird or mammal does not get enough food, it dies or becomes stunted and abnormal, but fish are different. When food is scarce, fish cease growing, but this does not interfere seriously with their normal life history; young are produced and the species carries on quite successfully at the smaller size. The largest weight recorded for a speckled trout is fourteen and a half pounds. This fish was taken in the Nipigon river in 1915.

Speckled trout cannot live in warm water, and that is the reason for their disappearance from some of the streams in which they once thrived. Formerly, these streams flowed through forests or between banks shaded by shrubs and bushes. Now the sun beats directly on the stream, warming the water above the temperature at which trout can survive. When the forest is cleared away and the fields are cultivated, the stream is flooded

with muddy water in spring; and trout will not live in water carrying a load of sediment. If most of the water which falls as snow or rain quickly runs away as floods, there is little to maintain the flow in summer and the stream contains very little water at that season. This is harmful in several ways. Fewer fish can live in a small amount of water than in a large one, a small quantity of water will be raised to a higher temperature by the same heat than a large quantity, and, as we shall see later, the same amount of pollution is more injurious in a small stream than in a large one.

The pollution of our streams by running into them various wastes from mills and factories also serves to make them unsuitable places for trout to live. Some of the materials that are being placed in our streams are waste liquids from gas plants, galvanizing establishments, dye works, steel mills, woollen mills, creameries, slaughter houses, chemical factories, paper mills, and mines. Some of these materials are injurious to fish by removing the oxygen from the water; others are poisonous to them.

A fish must secure oxygen to support its life. An animal on land obtains its oxygen from the air it breathes. In the lung, the oxygen passes into the blood through the thin walls of the blood vessels. There is a good deal of oxygen dissolved in the water of most lakes and streams, and this oxygen passes into the blood of the fish through the thin walls of the blood vessels of the gills. Oxygen can be removed from water by boiling it. If a fish is placed in water that has been boiled and then cooled, it will soon die, just as a mouse dies if placed in a bottle from which all air has been removed. Some kinds of fish can live in water containing very little oxygen, but trout will live only in waters of high oxygen content. Some substances placed in streams are injurious to fish because they remove the oxygen from the water. Wastes from creameries, which at first thought would not appear to be harmful, reduce the oxygen content of the water and render it unsuitable for trout. A small amount of pollution in a large river may not be serious, but where many factories pour waste materials into a stream whose flow has shrunk to only a fraction of its former volume, conditions are made very difficult or impossible for such fish as trout, which require clear, cold, well-oxygenated waters.

Many streams in which trout were once found, now contain only chubs, suckers, and other coarse fish. It is sometimes thought that the coming of the chubs and suckers has driven out the trout. This is usually not the case. What happens is that the stream becomes unsuitable for trout, and as the trout die out, coarse fish come in.

In some streams where conditions are still favourable for trout, there are not as many fish as there should be because of over-fishing. If too

few adult trout are left in the streams, the production of young is not sufficient to keep up the supply. The number of fish which we can take from a lake or stream year after year is limited, just as it is in the case of domestic animals on a farm. If we kill more than the natural increase each year, the stock will gradually be reduced. An account of the reproduction of the trout will help in understanding how the population is maintained. The speckled trout spawns (deposits its eggs) in the fall, usually in October; but in some areas it is much later. Most of the fish move upstream at this time and bury their eggs in the sand or gravel of the stream bed. From these eggs, small trout about half an inch long hatch in late February or March. At first they are very helpless; and if they are unable to find enough of the tiny animals on which they feed, or if they cannot conceal themselves, many of them die of starvation or are eaten by enemies. There is so enormous a loss at this stage, that from several hundred eggs produced by each female, only a few dozen trout reach a size of two or three inches. There is not much that can be done to reduce this loss under natural conditions in a stream. In hatcheries the little fish are protected from enemies and given sufficient food, so that a much higher percentage of the eggs produce young trout. It is impossible to eliminate all the enemies of young trout in a stream. They are preyed on, for instance, by large predaceous insects, and sometimes by water spiders. Perhaps their worst enemies are the larger trout. If there are more trout in a stream than can find food, the big ones eat the little ones. There is a definite limit to the number of trout which any body of water can support, and that number is determined in large measure by the food available for trout of different sizes.

If conditions in a stream have been changed by removal of the forest, by pollution, or by other means, so that trout cannot find food or shelter, or if the temperature becomes too high in summer, it is useless to place fish raised in hatcheries in the stream. Hatcheries can only help increase the fish in a stream or lake, when conditions in the water are such that more fish can live there than are produced naturally. The chief means that can be employed for the conservation of speckled trout is to restore or maintain suitable conditions in streams and other waters where this species can live, and then to limit the catch to a number which can be taken year after year without reducing the supply.

J. R. D.

