

Article by John L Mowat written in 1883 to the *Miramichi Advance*. It is to convince readers that salmon hatcheries should be used to make sure the stock of salmon does not diminish. He shows a remarkable knowledge of every detail of how to breed salmon and speaks about his impressive experimentation on the Restigouche and its tributaries.

[From the "*Miramichi Advance*," Aug. 2, 1883.]  
**Mr. Mowat on Salmon-Breeding.**

To the Editor of the *Miramichi Advance*.

MY DEAR SIR,—I am much obliged for your editorial remarks on my former letter, but cannot refrain from again referring to the subject, in order to try to remove some of your prejudices against pisciculture, and, if I cannot do so, to give you some reasons why I have it so strong on the brain. You say it has been the protection afforded, not the hatchery, which has preserved the salmon fishery on the Restigouche. I thank you for that admission, but most respectable parties, both here and elsewhere—and who pretend to know all about the habits, nature and process of the production of the salmon family, from the time the ova leaves the female until they return 25 or 30 pounds—hold a different view, and declare the decrease of the fisheries is solely to be attributed to "those Hatcheries," and I regret to find you amongst the number. May I give you some of the reasons why nine-tenths of the ova laid naturally are not fecundated.—Salmon must lay their ova in shoal rapid water, and their ridd is opened longitudinally. If that rapid they could not open it, as the quick water is the lever, throwing or rather working the gravel downwards as the fish move it. They could not make it crosswise to form an eddy. Instinct teaches them that it would fill up faster than they could open it. As the eggs are of denser gravity than the water, they are caught in the interstices of the gravel. When ejected the orifice in the outer shell or skin is open to receive a portion of the germinating fluid of the male and I have found, from experiments, that an egg submerged for two or three minutes, has absorbed so much water that the orifice has closed, and it has lost its susceptibility to impregnation. Consequently the larger portion—in many instances the whole—of the milt is swept by the rapid current out of the ridd without touching the egg. Again, a large male will often be amongst a dozen or more fish on a bar, and he is similar to a large bull in a herd if a smaller one attempts to come near, chasing the smaller males away from the females oftener than he does the trout. Very often a fresh supply of fish will move up or down to a bar or bed where other fish have deposited. They have instinct to know that the ridds are easier opened where the gravel was moved the day previous, but not instinct enough to know that they are destroying whatever fructified ova may be in the beds, for if the egg be shaken or moved ever so little, for thirty days, it is gone, added a dead egg. Such are some of the reasons why 10% of naturally laid ova only come to life and from careful experiments I have made in examining the ridds left dry by the receding water, I believe that estimate too high.

We next have the fall ice often running

freezing on the bottom by heavy pressure of back water piling the ice in mountains for miles, and it is worse in the spring when it is not uncommon to see large floes, where they laid dry during the winter, lift with a foot deep of the frozen gravel adhering to the floe. Then comes a five, six or seven feet perpendicular rise of water, causing the gravel and silt to roll on the bottom, so you can hear it quite distinctly before you reach the river. Such, Sir, is a picture, and not an overdrawn one, of the first stage of the salmon ova in our Canadian rivers.

From your extensive correspondence you must be aware of the outcry in Scotland and England if a week's hard frost occur, fearing the damage to the salmon ridds. I see that at the Howietown Hatchery they do not practice the old mode of retaining the fry until they reach the smolt stage, finding it better to distribute at the absorption of the sac just as it is done here.

It would be hardly possible to feed the fry through our long hard winter, but quite possible to retain them in ponds until November, thus saving many from their natural enemies. So convinced am I of the necessity of artificial assistance, now that the salmon are so much valued for sport and commerce and the drain is yearly increasing far more than the natural supply will furnish, that it will yet be necessary to place a hatchery on every one of our good salmon streams—and have the young of the fish which belong to the stream placed in it by millions. I do not expect you will deny that every river has its own distinctive species of salmon. If it were not so, the salmon on nearing the coast would take the first river they came to and there is just as much difference between the fish of different rivers, as there is in the different varieties or breeds of sheep or cattle. The fish belonging to the tributaries of the Restigouche will not ascend the main river and they are quite different in size, shape and color. I did plant in the Nepisiquit River, fry two years, taken from large Restigouche salmon. Is it not possible on their return 25 lb fish they passed it and came up the Restigouche? The Nepisiquit salmon are only 10 lb fish. To the Jacquet river I did the same. Another small river at Tide Head here I planted for three seasons. I put in 100,000 fry yearly, even planting the eggs in the gravel before the fry came out. My friend, Mr. Busteed, caught the young smolt when trouting. As yet, no adult salmon has entered it. I have planted millions of fry in the Upsalquitch and Metapedia rivers, branches of the Restigouche. Strange to say, the salmon in them are not, in quantity, more than usual, while the main Restigouche river is fairly alive with salmon. The fish buyers also notice in the season's catch, very few Metapedia or Upsalquitch fish. Now, sir, all my parent fish were main river salmon, consequently, the

young fry although planted in different rivers, have all returned to the parent stream. There is no other solution possible.

Another point, I believe this year's fish were either naturally or artificially hatched in 1876 or 1877, and this is their first arrival since they went to sea as smolts. Who knows their life in the ocean and when they return? None of the breeding fish on the great Columbia and Fraser Rivers ever get back to sea. Every year the large fish return. Should they return yearly would there not be a great number of fish of all sizes? True, we have some grilse, but few in proportion to what there should be were all to come back, and no man ever yet saw a female grilse in our rivers here. Why is this so? I do believe, though, that a salmon, after depositing once, returns annually (if spared) to perform the same process. The reason why I believe this is that I have taken ova for three seasons in succession from my marked fish, and caught them on the same bar or place in the river each time.

As to the continuous decrease of the salmon fisheries shown by census returns and statistics, I say they are unreliable. I myself have known a fisherman sign an affidavit to one half his catch; a fisherman will not give it. They once were taxed \$1.00 per bbl., and have not forgotten it. Just take the increase of netting stations for the last twenty years or less. In the Baie Chaleur it is probably 50% or more.

How many frezers were in existence twenty years ago, and how many now in the salmon trade? True, fish are worth more, but the capital invested in the trade and fishery is 500 to 1. Notwithstanding the great scarcity of fish, frozen salmon, last March, was so much of a drug in the markets that they were sold for 12cts per lb. What was the angling catch twenty years ago? Nothing. It was supposed the fish would not rise to the fly, and fact was that there was none or very few. What is it to-day? The angling catch will tally by the 1,000 fish with a 23lb average. Now, Mr. Editor, to close this long letter, I have given you facts pure and simple. If I am prejudiced in favor of artificial assistance to keep up the stock in our rivers, it is from pure conviction of its necessity from actual observation and experience. As I before said, I have no axe to grind, and will never breed another fish in Canada. I have refrained from touching on the benefits of Pisciculture as shown in America, Great Britain, France, Germany, Russia and even among the heathen Chinese. Rather let us examine their systems and modes of conducting it, improve ours where wrong; and not, like fools, condemn the whole on account of errors in management or because expected results did not realize our expectations.

I am, Sir,

JOHN MOWAT.