

---

**Vol. IV, No. 11. Washington, D. C. July 31, 1884.**

---

**37.—REPORT ON THE SHAD WORK IN SOUTH CAROLINA IN 1883—  
TRANSPORTATION OF SHAD EGGS ON TRAYS.****By C. J. HUSKE,***Superintendent of Fish and Fisheries.*

According to the best information we have, there are about 52,000 shad taken annually in the waters of South Carolina. This constitutes the source to which we may look for our annual supply of eggs to propagate fry for restocking our rivers artificially. From fifteen to twenty thousand of this number are taken on Edisto River, within a distance along the river of about eight miles; the remaining number are taken in the waters of Winyah Bay and along Waccamaw River for a distance of twenty or thirty miles, while a few are taken from Santee River, and some, in small numbers, in most of the rivers from tide-water to the shoals of the up-country.

As has been previously reported, we have established a station, at small cost, on Edisto River, the operations of which for the past season will hereafter be reported; and it now remains for us to develop a station at Georgetown, and utilize, if possible, all ripe fish taken in the waters thereabouts. The fishing here is scattered over a wide area, and any work accomplished must, of necessity, be accompanied by many difficulties, and, at best, we can only hope for a limited number of eggs. To ascertain, if possible, some definite idea of the extent of the fisheries here, and the possibility of utilizing this point as a station, I visited, in June last, Mr. W. StJ. Mazyck, who lives on Waccamaw River, with whom I had had some correspondence on this subject, and made a partial inspection of the fisheries, with a view of locating a station during the present season. I found that fishing on the Waccamaw above Georgetown was done by drift-nets, at such distances apart as to render it impossible to attend all the boats with anything like a reasonable force, or with a reasonable hope of collecting sufficient spawn to justify the outlay it would have required to have carried on the work, as the fishing was all done in daylight, at which time we can obtain but few ripe fish. Besides these nets, there are some fish in Winyah Bay, and during the latter part of the season a number of the fishermen go up Sampit River, where they find shadding remunerative. At this season the fish here are in an advanced state, and a majority of those taken are ripe or in the proper condition to yield eggs. Mr. Mazyck, writing in May of the present year, informs me that one of the fishermen reported twenty-five ripe shad taken on the 5th of April from one net. This would be, averaging 20,000 eggs to a fish, 500,000 eggs.

This would indicate success if we can organize a force of spawntakers and establish a collecting station at Georgetown. To have a force of men regularly paid to take spawn, as is usually the case, would be too expensive to think of where the fishing is so scattered. I therefore propose, after instructing the fishermen in the art of stripping a shad, to furnish them with necessary pans, buckets, &c., and pay them so much a quart for all the eggs impregnated and brought to me in good condition delivered at Georgetown. This can be done, as there is daily communication between this place and points along the river.

#### TRANSPORTING EGGS ON TRAYS.

It has been ascertained by the United States Fish Commissioner, from repeated experiments, that the shad eggs can be kept for a number of hours on damp cloth spread on wire trays, and afterwards hatched successfully. This has been done for several years past by the Government, and is now the common mode of transporting the eggs from the fishing-grounds on Potomac River to the hatching-stations in Washington. To Mr. S. G. Worth, Commissioner of North Carolina, is due the credit of having shipped the first shad eggs in this way to any considerable distance. He reports success with several shipments last spring as follows:

"From Avoca, in Bertie County, I sent to Raleigh at various times during April and May a number of the eggs of the shad on trays of Canton flannel. The two points are distant about 220 miles, and the time they were on trays was thirty-one hours. The transfer was highly successful, and over 300,000 fry were hatched at the carp ponds near Raleigh and released into Neuse River, near by. The trays used were simple frames made of strips an inch square, with the fabric put on with tacks. When the eggs were ready for transfer, a number of cloths were wet and a layer of ova placed on each, either with a dipper or large spoon. About sixty-four occupy the space of a square inch, and when spread on the trays they slightly compress each other, the appearance being in shape like the cells of honey-comb, while the entire mass is nearly as clear and transparent as an equal bulk of rain-drops. A number of trays supplied with eggs were placed one upon another to the height of 10 or 12 inches and the whole number put into a box large and deep enough to allow 4 to 8 inches of moss to be introduced between the trays and box. The long moss of the coast was mixed with finely-broken ice, and a complete cushion of it packed on all sides and beneath. The moss formed an easy spring to prevent sudden jars, and at the same time arrest any undue rise in temperature. Boxed in this manner, eggs were sent to Raleigh by express without an attending messenger. \* \* \* I wrote to Professor Baird, the United States Fish Commissioner, and told him of the shipment of eggs made to Raleigh, and begged him to aid me in pressing the experiment further. With his usual courtesy, he promptly responded by sending three lots consist-

ing of 400,000 eggs; the first in charge of a special messenger, and the two latter by express. The first underwent a loss of 97 per cent, but the two latter, packed in accordance with my suggestions, suffered a loss of only 3½ per cent."

It will be seen from this experiment here given in detail that the old and tedious method of transporting shad fry, which are delicate in the extreme and very difficult to transport, must soon give way to the transportation of the eggs instead, which will prove in every respect more satisfactory, as smaller loss will be incurred and the cost in money and labor much reduced. If we can succeed in collecting eggs at Georgetown, as above proposed, they can be easily shipped to Columbia, where a central station will be located, and from which point all the principal rivers in the State are in easy access.

We planted from the hatchery on Edisto River 725,000 shad in that river; 300,000 obtained from the United States Fish Commissioner, and shipped by myself from Washington, were planted in the Catawba River at the Charlotte, Columbia, and Augusta Railroad crossing; and 350,000, obtained from the same source, were shipped in the Government car and planted in Congaree River at Columbia, besides other shipments made by the United States Fish Commission to the headwaters of Savannah River.

#### HATCHERY ON EDISTO RIVER.

Although the number of eggs taken at this point is small, never before having exceeded the take of this year, which was a little more than one million, this is probably the most available location in the State for a shad station. The water is clear, and in nearly every bend of the river there are sand-bars which are natural spawning-grounds for all fish coming to maturity before having passed this point in the river; and could we have the advantages of haul-seines along the river in the several seining-holes, used in former times, we would, I am confident, catch many more fish in ripe or mature condition than it is possible to do with the gill-nets. The mature fish tarry around their favorite spawning-places and are not captured with the immature ones which travel with the tide as soon as it begins to flood, at which time the nets are set. This season we have taken more eggs than in any previous year, owing, in part, to more favorable weather, and partly to the fact of our having a larger corps of faithful assistants. We were enabled to attend every net fished on the river whenever fished, regardless of cold, rain, midnight hours, and many other disadvantages under which we labored. The fishing was all done after dark, and at nightfall the men all left camp, some going 2 or 3 miles up the river, and others a like distance in the opposite direction, and others at their posts at intermediate points, all subjected more or less to hardships, and some remaining all night in open boats on the river, subjected often to rough and disagreeable weather.

I began work with five assistants, only one of the number having ever seen a shad egg taken before; but after a short time, in which I explained the *modus operandi* of shad-stripping, by going through the process with a ripe shad in the presence of those who had no knowledge of the work, they became familiar with the method and lost no eggs that came in their reach.

While I was aware of the small number of fish released in comparison with our necessities and the work accomplished by other States, yet, in view of all the surroundings and the amount of money expended, the season's work was highly gratifying; and a reasonable hope may be entertained that we will be able in a few years to increase the capacity of this station, so that the Edisto may be abundantly stocked and shipments made to other rivers. A few fishermen make their appearance on the river the latter part of January, and by the 15th of February they are all at their accustomed localities and the season is in full blast, and continues till the first week in April, when the shad become scarce and the gar-fish so numerous and destructive to the nets that the fishermen are compelled to abandon further operations and surrender the river to them. Their work of destruction is so sure and well-known that it has become a custom among the fishermen to raise a white flag over their camps when these fish appear—which is a signal of surrender—and in a few days' time they are abandoned. I opened the hatching-house here about the first of March and ordered the "McDonald automatic glass hatching jar"; but, owing to delays at the manufacturer's, I did not receive them till late in the season, and so had to use the tin cans that were on hand.

After the receipt of the jars the percentage of eggs hatched was much better, and had I begun the season with them the number of fish released would have been greater. We are indebted to Colonel McDonald, of Virginia, the inventor, for this jar, which far surpasses any other apparatus for shad-hatching that fish-culturists have yet known.

#### 78.—REPORT ON CALIFORNIA TROUT DISTRIBUTION IN SOUTH CAROLINA IN 1883.

By C. J. HUSKE,

*Superintendent of Fish and Fisheries.*

On application to Professor Baird for a supply of California trout eggs, he sent me 5,000 eggs from the trout hatchery on McCloud River, California. I had previously prepared two temporary hatching-troughs in the department building at Columbia for their reception. They came to hand on the 8th of March, and, being engaged at the shad station, I was compelled to intrust them to the care of a novice, after having carefully unpacked and planted them in the troughs and devot-