

XVII.—REPORT OF A RECONNAISSANCE OF THE SHAD-RIVERS SOUTH OF THE POTOMAC.

By H. C. YARROW, M. D.

1.—INTRODUCTORY REMARKS.

WASHINGTON, D. C., *April 17, 1873.*

SIR: In accordance with your instructions, I submit the following as the result of my investigations in the States of Virginia, North and South Carolina, and Georgia in regard to the shad, herring, and rock fisheries, with a view to inquiring into the alleged decrease of these fish and the best methods of, and most favorable localities for, establishing hatching-houses for their artificial propagation.

Having received the necessary leave of absence through the courtesy of my commanding officer, Lieut. George M. Wheeler, of the United States Engineer Corps, I left Washington for Richmond, Va., on the night of the 2d instant, arriving in the latter city on the morning of the 3d.

At Richmond I visited the fish-market, but found only a few of the above-mentioned species of fish. The limited number of shad for sale commanded a price beyond the means of most persons. On inquiring the cause of this I learned that but a small number were now caught in the James River, and that for five years past the supply had been steadily decreasing, at the rate of probably 10 per cent. annually; that to such an extent had this decrease continued that but few fishermen were willing to risk their limited capital in an occupation promising such meager results. The cause of the decrease was variously stated. Traps, filth from the sewers of the city, constant fishing, and the plying of numerous steam-vessels are thought to drive the fish from their spawning beds.

The shad seen commanded a ready sale at from 65 cents to \$1 per pair. At this time, April 3, the spawn was not within three weeks of being ripe. The first shad of the season were taken in the latter part of February. The fishermen, generally, expect the season to close about the last of May. Herring abounded in this market. They were from Pamlico and Albemarle Sounds. The price asked for them was from \$4 @ \$5 per 1,000. Some rock-fish were also seen which were taken near the city; these brought from 8 cents to 10 cents per pound.

2.—GREAT DECREASE OF FISH IN GEORGIA.

I next visited Augusta, Ga., where, according to all accounts, a most lamentable decrease in the supply of shad has existed for some time.

Mr. J. Higgs, of No. 8 Ellis street, an intelligent fisherman, informed me that it was his belief that there were not one-eighth as many shad in the Savannah River at the present time as formerly. He attributes the decrease to the numerous traps and nets used since the war, and the offal from the gas-works and paper-mills near the city of Savannah. He further informed me that shad running up the river and meeting, from the sources mentioned, impurities in the water, would retreat to Broad River, below the city. His statements were corroborated by Mr. Powell of the city marshal's office, and other persons of intelligence. I do not doubt the correctness of the views of Mr. Higgs to a certain extent, but consider the chief offending cause to be the numerous traps and nets which cover the face of the river from its mouth to Augusta. At this date there are perhaps 150 nets between Savannah and Augusta, while the average daily haul per net is not more than twenty shad.

By invitation, I visited Mr. Powell's fishery, and found it to be an admirable location for hatching purposes on account of the natural advantages surrounding it, and the fact that here more fish are taken than at any other point on the river, except, it may be, at the traps of Mr. Thos. Heckle, about five miles above the city. The nets used by Mr. Powell are of ordinary gilling twine, with $5\frac{1}{2}$ -inch mesh, and are 85 yards in length and 18 feet deep. When fished the nets are drifted a mile or so down the river at intervals during the day and night. Mr. Powell estimates the decrease in the supply of shad in the last five years at one-half, and considers 20 fish a fair daily average during the season. At this date, April 6, 24 hours' fishing with three nets has resulted in the capture of 74 shad. This, however, is far above the number ordinarily taken in the time mentioned. According to this gentleman, shad make their appearance in the Savannah near Augusta early in March. This year, however, owing to the backwardness of spring, they did not appear until three weeks later than the usual time. They are taken until late in May.

Mr. Thos. Heckle, who also owns a valuable fishery five miles above Augusta, as stated, does not use nets, but secures the shad by means of traps formed of stakes of wood. Mr. Heckle takes in these traps not more, perhaps, than ten fish per day on an average during the shad season; but notwithstanding the limited catch, I have no hesitation in recommending his fishery as favorable for a hatching-house, since in the traps the fish remain alive until the moment of their removal, whereas in the drift-nets they are frequently drowned, and thereby rendered useless so far as their spawn is concerned. Mr. Heckle informed me that he had fished the Savannah for a number of years, and that eight years ago 1,500 shad were taken at a single haul. At present a haul of over 40 seldom occurs. They sell readily at from 75 cents to \$1.25 per pair, while formerly they brought but from 5 cents to 12 cents each. The shad-spawn will be ripe in about ten days hence.

Rock-fish are quite numerous in the Savannah River later in the season,

although they too have greatly decreased in numbers within the past few years. It is the impression among fishermen that they spawn as near the head-waters of the river as it is possible for them to get. Mr. Heckle earnestly recommends that the Commissioner of Fish and Fisheries authorize the introduction and reproduction of the red-bellied perch and bald-headed bream, common in this neighborhood, into more northern waters as well as into the waters of this vicinity. These fish, he informs me, are highly esteemed and readily command a high price. Some ten years since he placed a few bream in a pond on his plantation, which have increased a thousand fold, the species appearing to do quite as well in the sluggish water of the pond as in the rapid stream.

My next point was Columbia, South Carolina. In former years the Congaree and Wateree Rivers, near Columbia, were justly considered most excellent fishing-grounds for shad. Such, however, is not the case at the present time, nor has it been for several years past, not a sufficient number of shad being taken to warrant the expenditure of either time or money in their capture. A few are caught occasionally near the city in scoop-nets, but no regularly organized shad-fishing is carried on. It was impossible to ascertain the cause of the decrease. Rock-fish are still caught in these waters, but not to any great extent.

3.—DECREASE IN NORTH CAROLINA.

At Wilmington, N. C., the next place visited, I found the condition of affairs, with regard to the decrease of shad, to be about the same as that which existed at Columbia and Augusta. Owing to the peculiar character of the bottom and banks of the Cape Fear River, no seines are used in its waters for shad-fishing, the only means employed being drift-nets. Intelligent observers stated that the daily catch of this fish in the Cape Fear, between the mouth of the river and Fayetteville, is not at present more than 100 pairs. Here, ten years ago, shad sold at from eight to ten cents apiece; they now bring from 60 cents to \$1.25 a pair. The cause of the decrease could not be ascertained. I found but very few shad from the Cape Fear in the market. The fishermen informed me that five years since a haul of 150 pairs in a single day was quite a common occurrence; to-day they seldom take over 20 pairs. The first shad of the present season were two taken on the 28th of January; none, however, were subsequently seen until the 5th of February, when the number began to increase. At this date (April 8) the spawn is far from being ripe. The shad season closes here in the latter part of April.

In the Wilmington market I observed numbers of drum, trout, whiting, and herring from Masonboro' Sound. Herring, however, are not so abundant as formerly. The price they command at this point, is from \$3 to \$5 per 1,000, though at the sound, seven miles distant, they

may be had for 50 cents per 1,000. They appear early in April, at which time the spawn is well advanced. I learned from the fishermen that it was the custom of the herring to deposit its eggs near the head-waters of rivers and creeks.

It may not be uninteresting to mention that, according to Mr. W. W. Nutt, of Wilmington, mackerel appeared in the Cape Fear River for the first time in the fall of 1872; but the people knowing nothing about them declined to use them as an article of food; bunches of from six to eight found few purchasers at twenty-five cents the bunch. Sturgeon are so numerous in the Cape Fear as almost to preclude the possibility of drift-fishing in the month of April.

I next proceeded to New Berne, N. C., which is situated at the confluence of the Trent and Neuse Rivers. The latter of these rivers has for years been celebrated not only for the fine quality of its shad, but for the very great number taken annually. In this river the decrease in the supply, if there is any, is hardly perceptible; although I was informed by trustworthy observers that, notwithstanding double the number of men are now engaged in fishing, no more fish are brought to market than was usual ten years ago; from which it might be inferred that the supply is not as great as formerly. Most of the fishing is by means of drift-nets, although a certain number of draw-seines are also employed. From what I could gather, Goose Island, a short distance above New Berne, is the locality affording the greatest number of fish. At this place Messrs. Pettiford, Brinson, Vincent, and others own extensive fisheries. These gentlemen estimated the daily catch as varying from 50 to 250 fish, 100 probably being a fair average. At this point there is a number of small islands, with narrow channels between, of a depth of 20 feet, wherein the shad appear to resort for the purpose of spawning, as their eggs are frequently found floating in the water, and, at this date, running out of the fish when netted.

Mr. Parish, who owns a fishery on the Trent, just opposite the city, (but whose specialty is herring-fishing,) caught 199 shad at one haul last year. Up to the present time, this year, his largest haul is 128. He uses a net 500 yards in length and 125 meshes deep, the meshes being $1\frac{1}{4}$ inches in size. The first shad of the season, in any number, at this point, were taken February 14, since which time the supply has been steadily increasing. The season will close the latter part of April. At the present time no fewer than 2,000 nets of different kinds, are in operation between the mouth of the Neuse River and Goldsboro, N. C., and if this industry is continued we must expect, in a short time, the same deplorable scarcity of shad here as in the rivers farther south.

Mr. B. B. Lane, another intelligent fisherman, and also for many years a dealer, informs me as follows: "Shad generally make their first appearance in the Neuse in the middle of January, the first one of this year being caught January 9. During the present season, from the

latter date to April 10, six dealers have handled at New Berne alone no less than 75,000 shad by actual count. In addition there are some six or eight other dealers who probably, at a fair estimate, have handled 50,000 more, and if we take this number as indicating one-half the entire catch, we would have, in round numbers, the sum of 250,000 fish as the total catch in this vicinity for the period named." I am inclined to believe this a very moderate estimate for the Neuse, since many shad are taken at Kinston, Goldsborough, Smithfield, and other points on the river of which no account has been made, and I have no doubt that more than 500,000 shad are caught during the entire season in this river. The price of shad has varied very little in the last ten years, the retail price being about 70 and the wholesale 40 cents per pair. From this point shad are shipped in ice to all parts of the Southern States.

Although herring are still very numerous in the vicinity of New Berne, the general impression prevails that the supply has somewhat decreased within a few years. These fish appear to enter the river in three "washes," so called; the first and largest of which takes place about Easter Sunday. The largest single haul last year at the fishery of Mr. Parish was 29,800. He informs me that, at this date, he has taken at one haul over 20,000. Mr. B. B. Lane states, with regard to herring, that the six firms above alluded to have handled upward of 450,000 within the past ten days, and that the other dealers have probably handled 250,000; but that the total of these is but a small proportion of the whole number caught, as the citizens probably buy twice as many from the boatmen. He thinks that a million and a half have been taken during the period in question, and that a still greater number was taken in the same length of time last year. The largest single haul of herring ever made in this river was 41,000, by Mr. Brinson. These fish are seen as early as the middle of January, and disappear about the middle of May. In April the spawn are well advanced, and there is no doubt the fish run up the creeks and head-waters of rivers to deposit their eggs. The price of herring varies very little. They command at wholesale \$3.50, and at retail, about \$6, per 1,000. The prices are much lower than before the war.

Rock fish are quite numerous, and up to this time, about the 1st of January, some 3,000 have been handled by the dealers. It is thought they have decreased in numbers during the last five years. They are taken during nearly the entire year. They sell at from 8 to 10 cents per pound. Drum have also decreased, but for what reason is not known; probably cold winters, in which they perish in great numbers, may have an effect. At Kinston, on the North Carolina Railroad, some twenty miles above New Berne, a few shad have been taken, but not a sufficient number, however, to render their fishing remunerative. Seines and drift-nets are used here.

4.—CONTRIVANCES THAT CAPTURE ALL THE FISH.

At Goldsborough, also, on the Wilmington and Weldon Railroad, some thirty miles from New Berne, shad are taken, but in smaller quantities than at Kinston. At Smithfield, on the railroad leading to Raleigh, vast numbers of shad were taken in former years; now, however, but little fishing is carried on at this point. Just here, on the Neuse River, are a series of small falls, beyond which the fish seldom pass, although formerly numbers were taken within six miles of Raleigh.

At Rocky Mount, situated on the Tar River, on the railroad between Goldsborough and Weldon, Mr. Spicer owns quite an extensive shad-fishery, but the number of fish secured here in nowise compares with the number taken at the fisheries lower down the stream.

The next point of importance which I visited was Weldon, N. C. Here I had the good fortune to meet with Mr. John Emry, proprietor of the Emry House, mayor of the city, and controller of all the fisheries on this part of the Roanoke River. In this locality shad-fishing is carried on by means of scoop-nets and what are technically called "fish-slides." The scoop-nets, when in use, are allowed to trail in the rear of the boats, which are permitted to drift slowly down the stream. The fish-slides are solid and substantial structures, built of timber, and are placed in the strongest currents just below the falls at this point; these falls prevent the higher navigation of the river. The shad, seeking the headwaters of the stream, in endeavoring to find their way above the falls, get into the currents and are at once washed upon the screen of the slide, which slants upward from the bottom of the river. The force of the current effectually prevents their return. Owing to the ingenious construction of these traps, and the well-chosen positions in which they are placed, it is almost impossible for any fish to escape them, if seeking a higher part of the river.

Mr. Emry informed me that his average daily catch of shad for the season was perhaps 25 or 30. Commencing early in March, the season ends late in April. The number reported by Mr. Emry is, I believe, a low estimate, since I myself saw at a time when the shad were not "running" 15 taken upon the slide within two hours. It is his opinion that the supply has decreased in the Roanoke at least one-half in the last ten years, and, with due deference to his ingenious method of fishing, I must say that, in my opinion, if this plan is continued, shad will have disappeared almost entirely from these waters in a few years hence.

The price of shad varies very little at this point, 60 cents being about the average price per pair. The spawn of the shad will probably be ripe in about three weeks from this date, April 15.

Upon the slides are taken nearly every species of fish found in the Roanoke, sturgeon forming no inconsiderable item, while catfish, suckers, and rednose are captured in countless numbers. Later in the season the rock-fish resort to this locality in enormous numbers, and I am in-

formed that with two men constantly employed upon the slide to remove them, it is almost impossible to make room for the succeeding ones. Mr. Emry facetiously observed that should the commission desire the eggs of the rock, he could furnish a car-load in two weeks' time.

From Weldon I proceeded to Norfolk, Va., where the story heard so often within the past few days regarding the decrease in the supply of shad was repeated. Learning of no favorable localities in this neighborhood for the establishment of hatching-houses, I delayed only long enough to enable me to collect specimens of the food-fishes of the waters contiguous to the city.

From the testimony of the individuals I have mentioned, all more or less directly interested in shad-fishing, it is very evident that the supply of this fish has been steadily decreasing and continues to decrease year by year throughout southern waters; and further, it is my sincere belief that unless some means are employed to correct the state of affairs now existing in the sections visited, in a short time our tables will no longer be supplied with this delicate and highly-valued fish, whose advent in the spring is so eagerly anticipated.

As localities for hatching-houses, I have no hesitation in recommending Augusta, Ga., New Berne, N. C., and Weldon, N. C., since I am of the opinion that the ripe shad-spawn can be obtained in the best possible condition for propagating purposes at these points. I would also recommend that the Apalachicola, the Savannah, the Cape Fear, the Neuse, and the Roanoke Rivers be restocked with shad, close communication being made with all these streams by railroad.

In conclusion, I am happy in being able to state that at every place visited the greatest interest was manifested in the operations of the United States fish commission, while the hope was expressed on every hand that the enterprise about to be inaugurated throughout the South and West, in restocking the southern waters with food-fishes, might prove eminently successful.

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