

109.—RECONNAISSANCE OF FLORIDA RIVERS WITH A VIEW TO SHAD HATCHING.**By WM. HAMLEN.**

In obedience to instructions, I left Washington on the 28th of February, 1884, for Florida, for the purpose of examining the rivers of that State, and to ascertain their yield of shad and the possibilities of establishing shad-hatching stations.

I arrived at Jacksonville, Fla., on Saturday morning, March 1, and proceeded to the fish market, in which I found 29 shad. From the market I went to the fish dealers and discovered 45 shad, a total of 74, of which number but 5 were roe shad. All the fish were very small and hard. In conversation with a dealer, he informed me that he had not shipped, up to this date during the present season, more than 300 fish, whereas five years ago he shipped ten or twelve thousand by March 1. I also made inquiry about the fishing on the Saint John's River, and was informed that no operations were being conducted on that river this season.

SAINT MARY'S RIVER.—On the afternoon of March 1 I left Jacksonville for Boulogne Station, which I reached at 5.40 p. m. Spent the night there, and early next morning, March 2, procured a boat and went up the Saint Mary's River to about 8 miles above the railroad bridge. Found no fishermen on the river at all in that location, but saw a large number of shad "washing." Returned to Boulogne, where I spent the night.

On the 3d of March I proceeded down the river as far as Calico Hill, where I found 33 shad, all hard.

On the morning of the 4th went still further down the river to Orange Bluff. At a point about midway between Calico Hill and Orange Bluff found five men fishing bow-nets for shad. They averaged about 15 shad each on a tide. At Orange Bluff there were three bow-nets and one gill-net. The former averaged about 15 shad each to a tide and the latter about 25.

I hired a man and boat at Orange Bluff, and left about 3 p. m. for King's Ferry, where I arrived at 6 p. m. On the way I overhauled three bow-nets, and examined 33 shad which were all hard. At King's Ferry I found three bow-nets which averaged 15 shad each to a tide. The fish at this point were very fine, the roes and males being about equally divided.

That same night, March 4, overhauled 76 shad in three gill-nets belonging to Captain Fisher, between King's Ferry and the Brick Yard. Of this number I stripped 13 ripe females from which 240,000 eggs were obtained, which were deposited in the river.

In the afternoon of March 5, overhauled 54 shad that had been caught in daylight. Found none ripe.

March 6 examined 58 shad taken in same three gill-nets. Found 5 ripe fish from which were taken 100,000 eggs, which were also placed in the river between Brick Yard and King's Ferry.

Of the localities examined thus far, I think that either King's Ferry or Brick Yard would be the best point for establishing a shad-hatching station. Captain Fisher commenced operations on January 5, and caught 9 shad at Brick Yard Landing on January 18. He will continue to operate until April 15, if the fishing warrants it. I was informed that on March 9, 1877, some of the fishermen on the Saint Mary's caught as many as 126 shad in two hours' fishing. The net used was a bow net, 11 feet deep, 8 feet wide, and 2-inch mesh.

SATILLA RIVER.—On the 7th of March I left King's Ferry for Fernandina, where I expected to receive further orders. Remained at this point until the 11th, when I received a telegram instructing me to go to the Satilla River and examine it for evidences of shad.

Accordingly I left Fernandina on the 11th for Saint Mary's, Ga., for the purpose of ascertaining the route to Satilla, and to secure the services of a guide. This having been accomplished, I left Saint Mary's on the morning of the 13th by road for the Satilla River, where I arrived, at Jefferson, about 28 miles above Brunswick, at 1 o'clock. Procured a boat and went down the river, but found no shad fishermen at all. Interviewed a man named Henry Thomas, who told me that he had been living on the river about thirty years, and before sawmills were built on the river they used to get 25 or 30 fish from bow-nets in a night's fishing, but that now shad were so scarce they were unable to do anything in that line.

George Scott informed me that he has not seen a shad taken on the Satilla for six or seven years. They caught nothing but trout and bream in their bow-nets; the river was too full of logs to fish gill-nets. Captain Richardson expressed the same views.

Returned to Saint Mary's on the 14th, and proceeded to Fernandina to report the result of my investigations. Received telegraphic instructions to remain at Fernandina until arrival of the steamer Fish Hawk, which was due there the 18th.

FISH HAWK WORK.—Fish Hawk arrived in the morning of the 18th at 7 o'clock, and on the 19th she went up the Saint Mary's River to King's Ferry and selected a position at that point for trying to catch shad and secure eggs, but the fish in this run of shad at that time were very "hard."

On the 20th, I went up the river as far as Calico Hill, where I fished all night, but caught nothing but male shad. Returned to King's Ferry on the 21st and joined the Fish Hawk. Found a telegram instructing me that as soon as Fish Hawk was located to proceed to Washington and report. I accordingly left on the 22d, and arrived in Washington on the morning of the 24th.

RECOMMENDATIONS.—My investigations proved that the best place for capturing shad was the Saint Mary's River between King's Ferry and Brick Yard, and if a vessel properly equipped for the purpose could remove the logs from the river at the places indicated, I think a successful season would be assured.

A hatching station might be located at King's Ferry, where there is a large saw-mill, store for supplies, etc., and plenty of wharf room on which to locate a steam-pump and hatching cones. Fuel is abundant and very cheap, and there is a branch railroad to Hillyard Station.

The hatching station should be supplied with a small boiler and steam-pump, and fifteen cones should be put up. To run this station successfully, I should recommend that ten men be assigned to duty at it. Lumber is very cheap at the mill, should any be needed.

The station should be established about the first of February in order to give plenty of time before the fish begin to run, to clear properly the hauls and reaches on the river of logs, so there should be no impediment to the drifting of the gill-nets.

I should also recommend that two sturgeon nets be supplied—one above and one below the gill-nets and seines in order to protect them from destruction by the sturgeons, which are very plentiful. These nets should be 12-inch mesh, of 42-thread, 40 fathoms long, to fish about 18 feet of water.

WASHINGTON, D. C., April 7, 1884.

110.—NOTE ON THE BREEDING OF EELS.

By **EDWARD H. THOMPSON.**

[From a letter to Prof. S. F. Baird.]

I mailed you yesterday a box containing specimens of the *Anguillidæ* (young). Yesterday morning, while working up material on the "*Gelasma* of Buzzard's Bay," I noticed the following facts:

West Falmouth Harbor is an inlet from Buzzard's Bay and terminates in a sandy marsh densely carpeted with marsh-grass. Through this marsh a narrow ditch has been cut to drain a contiguous cranberry bog. The ditch has of late years been completely stopped by a thick plank placed athwart it, thus forming a complete *cul-de-sac*. The plank is above common tide-water, but is generally dripping with water that trickles through from the bog above. The part of the ditch of which I speak is hardly, if ever, free from the water, which comes principally from the cranberry bogs. A thick black mud lies on the bottom. As I passed the plank I noticed upon it a singular appearance. Approaching closer, I found it to consist of a large number of tiny eels massed together in a solid bundle. The mass, I should say, could have been contained in a pint measure.

FOREST HILL, W. FALMOUTH, MASS., May 17, 1884.