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**169.—NOTES ON THE SHAD SEASON OF 1884, WITH REFERENCES TO OTHER SPECIES.****By CHAS. W. SMILEY.**

The following items have been received from different sources, and indicate generally a good season:

**THE DELAWARE RIVER.**—A shad weighing over 7 pounds was speared below the canal company's dam in the Delaware River at this place last night (May 3). This is the first shad of the season, and its early appearance in these upper waters is another illustration of the success that has followed the efforts of the United States Fish Commissioner in restocking the Delaware with shad. For twenty-five years preceding the restocking, which was begun in 1872, no shad was seen further up stream than Milford, 30 miles below Lackawaxen, although they had been at one time plentiful at Hancock, over 50 miles above here. Thousands were annually taken between Lackawaxen and Hancock in eel-weirs and bush-seines, the rough and rocky part of the river preventing the drawing of nets. Not only the mature fish were captured, but the young fry were destroyed in immense numbers by hundreds of traps. This indiscriminate slaughter of shad, from the headwaters of the Delaware to tide-water, resulted in their total disappearance from the stream above Milford, and in 1872 the fisheries at that place yielded only single fish where they had once rewarded the fishermen with enormous hauls.

In 1875, three years after the restocking experiments had been tried, there was a notable increase in the catches at Milford, and in 1876 shad again appeared as far up as Lackawaxen. The increase has been large and steady ever since, and now shad arrive here in large schools every spring. They are unable to go further up the river, as the canal company's dam is an obstruction which they cannot overcome. But for that, the upper waters of the Delaware would soon be as well supplied with shad as they were half a century ago. As they are now protected against bush-seines and eel-weirs, and as nets cannot be successfully used above Milford, there would be no means for the people up the valley to take the fish, except by spearing, which is the manner in which they are captured at Lackawaxen. They gather at the foot of the dam and remain there. Men and boys collect at night at the bulkheads and breakwaters. By throwing strong light on the water by means of jacks the fish are plainly brought to view and are speared by the hundred. The one killed last night was the largest one ever seen so far up the river.

**SALMON.**—At the time the river was restocked with shad, salmon were also introduced into it. It was believed that this would be followed with great success, as the Delaware is a natural salmon and trout stream, and when the valley was first settled by the whites teemed with both of these fish. In 1877 a large salmon was captured near Port Jervis, and one weighing 9 pounds was killed at Easton. Since then, however, none have been taken, although they have been introduced by the thousand both in the upper and lower waters.

**TROUT.**—The stocking of the river with California trout has been a success, as they have appeared in large numbers in the upper stream and its tributaries, according to reports from those regions.

LACKAWAXEN, PA., *May 4, 1884.*

**THE HUDSON.**—The run of shad for a few days past has been heavy. One fisherman caught over 600 in one day last week, another over 400, and single drifts of from 50 to 200 fish each are reported. The water is yet "roily" from the spring freshets. The fish are unable to see the fine thread nets used, hence the fishing can still be done by daylight. The heavy run of shad has reduced the prices rapidly, and fine fish can now be had here for from 15 to 20 cents each.

For many miles the river is now daily filled with shad nets, and the passing boats and vessels navigate the channel with great difficulty. There is great strife among the fishermen for the first place or best chance to throw their nets.

**STURGEON AND BASS.**—It is found that sturgeon are more plentiful in the river than usual so early in the season and the huge fish are giving considerable trouble by tearing the nets. Large bass have also been taken of late, and a few California trout have been caught at some points.

KINGSTON, N. Y., *May 7, 1884.*

**NARRAGANSETT BAY.**—John H. Barden writes to Professor Baird as follows: "We are having an excellent run of shad in our bay this year, from what we put in four years ago. For the past two years we have not been able to plant any, which will give a small run for the next two years. There is nothing that we can do that will help all classes so much as a good supply of fish. We have one of the best bays in the world and we want a large supply to put in.

"ROCKLAND, R. I., *May 6, 1884.*"

We have had the best run in our bay this year for the past ten years, from those put in four years ago.

PONAGANSETT, R. I., *June 5, 1884.*

**WARREN RIVER AND GREENWICH BAY.**—Mr. Henry T. Root, of the Rhode Island Commission of Inland Fisheries, writing to the editor of the Providence Journal, says: "In the article 'Some Notes about Fish,'

in this morning's Journal, the writer attributed the plentifulness of shad in the Warren River and Greenwich Bay to the unusual height of the Connecticut River and its coolness, owing to the late melted snow. Allow me to suggest a more plausible theory, and one more to the credit of the instinctive habits of the shad. In June, 1881, Mr. Newton Dexter, of the Rhode Island Commission of Inland Fisheries, placed in the upper waters of the Warren River 500,000 young shad. The present spring is the time that these shad should return in their mature state. Many of us have been awaiting this very time, believing that we should not be disappointed, and that the quantities of shad caught in our waters this season would materially reduce the price, and such has proved to be the fact. At this writing more shad by many hundreds have been taken from Warren River than were taken there during the whole of last season, and by many it is thought the biggest run of shad has not yet arrived. The theory of snow-water having forced the shad to seek warmer waters may apply to their being repelled from Palmer River in such numbers as to account in a measure for the quantities in Greenwich Bay."

**SAINT JOHN'S RIVER.**—Writing from Palatka, Fla., December 15, 1883, Mr. H. H. Cary, superintendent of Georgia fish commission, said:

"The shad have commenced running in the Saint John's River. Several were caught this morning or last night near this place in gill-nets. On making examination I find they are mostly males. I found one female with roe pretty well developed, but not ripe. I will spend several days in endeavoring to find the spawning grounds of the shad in the Saint John's. So far as I know, this is an unsolved problem, as there are no shoals in this river. I am impressed that the spawn is cast upon the sands of upper lakes connected with or really forming a part of the river. If any results are obtained the United States Commission shall have the benefit of them."

**POTOMAC RIVER.**—The following is compiled from an article which appeared in the Washington Evening Star of May 24:

The season has been a decided failure, worse than any season since 1878, when the catch was a little below the present season. Most of the fishermen set out early to get upon their respective shores with their gangs of men and appliances. Some of these lessees started down stream in February, and by the middle of March all were off, together with hundreds of gill netters and trap netters, to occupy the spaces in the river between the seines. Moxley's Point, the landing so long occupied by the late James Skidmore, about 15 miles down on the Maryland shore, was among the earliest occupied, with Capt. Edward Faunce to superintend the gang of thirty men. His 300 fathoms of seine have been actively engaged every ebb and flow of the tide, but with indifferent success.

As a general thing, herring make their first appearance before the

shad. The first herring taken this season was on the 18th of February, when 23 were caught at Moxley's Point. During the succeeding days of February only 1,033 herring were brought up to this market, and not one shad. The first shad caught this year was on the 5th of March, when 6 were sent up to market. About this time the cold weather came again and the fish were driven back into the bay by the northwest winds. No more shad were seen until the 10th of March, and but few herring.

The 3d of March, 3,672 herring were brought to this market, and no more were caught till the 10th of March, when 530 were landed; the 24th of March, 20,262 were received, the largest number for any one day in that month. The total number of herring in March from all the shores, on both sides of the river, was 185,540, and of shad, 20,351. April is the best month for the yield of fish in the Potomac. This city is only one of the many markets for Potomac shad and herring, but generally very large numbers of fresh shad are brought to our wharves to pack in ice. The number caught up to and including the 17th of May is 5,404,997 herring and 222,082 shad.

As before stated, the seines are nearly all cut out, but the river is bristling with trap and gill-nets from the highest tide-water to the Chesapeake Bay. With a very slight exception, every one engaged in fishing has sustained a positive loss. For instance Moxley's Point operated by the late James Skidmore's heirs did nothing. Heretofore this shore has been reckoned as first-class among the successful ones; next in detail is Bryan's Point, operated by Mr. Conrad Faunce, an old and reliable fisherman; then comes Greenway, Pamunkey, and Chapman's Point, before considered good shores, but this season they are failures. The above shores are on the Maryland side. On the Virginia side we have Ferry Landing, White House, Stony Point, and Freestone Point. These shores generally yield a small but sure profit, but this season they made signal failures, losing in the aggregate about \$7,000. The only exception to this general rule of loss is the Clifton, operated by Mr. Waller; The Gums, fished by Mr. Jerry Raub; and Windmill Point, operated by Messrs. Ewing & Co.; the last three named being the three lower shores on the Virginia side. Their success is attributable to the peculiarity of location, being shallow and flatly formed, together with a combination of circumstances such as the great rains in February and March, and northwest winds that prevailed during the month of April. These shores were the great center of attraction for the branch herring.

In regard to the artificial plants, were it not for the services of the United States Fish Commission, necessity would compel a cessation of fishing the large shores; and the Potomac, as far as the large fisheries are concerned, would be a thing of the past. In view of the fact of there being no legislative protection for shad and herring, they are fished in season and out of season, hence the almost extinction of one of our best food-fishes.

The following will show the decline in the numbers of shad. During the present season there have been caught and brought to the fish

wharf in this city 226,721 shad, while in 1868 Mr. John Gibson sent alone from Stony Point and High Point 219,205, nearly as many shad as all the fishermen on the Potomac sent to the wharf the present season.

At that time all the following shores were fished: On the Maryland side: Tent Landing, Moxley's Point, Bryan's Point, Greenway, Gut Landing, Pamunkey Point, Chapman's Point, Stump Neck, Budd's Ferry, and Goose Bay. On the Virginia side: Ferry Landing, White House, Stony Point, High Point, Marshall Hall, Freestone Point, Cock-Pit Point, Opossum Nose, Mr. Hoes', The Clifton, Arkendale, The Gums, Tumps, Windmill Point, and Caywood's, besides a host of smaller shores not mentioned. Some of the large fisheries were leased and rented for large sums annually, as the following will show. The shores on the Maryland side, ranged in price per annum from \$500 to \$1,000, while those on the Virginia side ranged still higher, Stony Point renting annually for a number of years for \$2,500, Freestone Point from \$1,300 to \$3,500, White House from \$1,000 to \$2,000, and other shores in proportion. At present but few of the large shores are fished, owing to the scarcity of fish.

No one cares to assume the risk incurred, while those which are fished are at very low rents, and many of them conditionally, the owners not caring to have their shores remain idle.

NANTICOKE RIVER.—E. L. Martin writes:

"We are just feeling the beneficial effects of the shad deposited by you in the Nanticoke. I am informed by old fishermen that notwithstanding the backward and unfavorable spring, there have been more shad taken from the Nanticoke than for many years. I have never seen larger or better ones.

SEAFORD, DEL., May 1, 1884.

SACRAMENTO RIVER.—The Havre de Grace Republican says:

"We learn from Commander Frederick Rodgers, U. S. N., now stationed at Mare Island, California, that shad are now being caught in large quantities in San Francisco Bay and other waters of California. There were no shad there until they were introduced by the United States Fish Commission several years ago, thus proving beyond a doubt the good results of their labors."

#### 170.—MEMORANDA ON LANDLOCKED SALMON.

By CHARLES G. ATKINS.

A.—SYSTEMATIC POSITION.—There have been thought to be several distinct species, or at least several naturalists finding landlocked salmon in this or that district have thought them new species and have called them *Salmo sebago*, *S. gloveri*, &c. Within a few years Dr. Bean and others in Washington have carefully compared them with *S. salar*, and find no specific difference.

The difference in size is commonly very great, landlocked salmon in