

XVII.—NOTES ON THE NEW ENGLAND FISHERY FOR SWORD-FISH DURING THE SEASON OF 1884.

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The following brief notes on the swordfish fishery were gathered during a visit to Gloucester, Mass., in September and October, 1884, and are supplementary to the paper by Mr. G. Brown Goode, entitled "Materials for a History of Swordfishes," published in the Fish Commission Report for 1880.

This industry was of unusual importance in 1884; the fish were very abundant and a large number of vessels were engaged in their capture. In previous years the fleet had not exceeded fifty sail, but this year it numbered over one hundred vessels. The catch, including those taken by the regular fleet, by mackerel and cod vessels, and by others, is estimated at 7,000 fish, equal to nearly 2,000,000 pounds weight, and valued at \$60,000.

The season began on the usual grounds off Montauk Point, Long Island, on June 9, when, according to Captain Gooding, the first capture was made by the schooner Emma. On June 15 Captain Warren Ball, of boat Active, made the first capture in the vicinity of Block Island. As the fish became more plentiful the fleet increased in size until it numbered thirty sail from ports between Block Island, New London, and Wellfleet. Some of these vessels continued the fishery south of Cape Cod throughout the summer, but most of them by the latter part of July had changed their cruising grounds to the Gulf of Maine, where the fish were larger and in greater abundance than on the southern grounds. During August the northern fleet was gradually augmented by vessels from Massachusetts and Maine ports, led into this fishery by the scarcity of hake and other species, and the promise of a profitable swordfish season. At the beginning of September nearly a hundred vessels were cruising between Cape Ann and Grand Manan Bank, in the Bay of Fundy.

The best fishing grounds in August were on the inner Jeffries and from 12 to 15 miles off shore from Boon Island and Wood Island, Maine. The nearest inshore that fish were captured was within 3 to 4 miles of the coast. At some seasons many of the fleet cruise on George's Bank, but this year none of them went there except the schooner Emma Clifton. A number of swordfish were taken on George's by the regular cod fishermen, who report the fish very abundant there, particularly on the southeast part of the Bank.

Mr. Edwin A. Leavitt, of schooner Lizzie W. Hunt, of Saco, Me., states that about August 28 he was cruising 12 miles east-southeast of the Isles of Shoals and counted forty-seven swordfish vessels in sight, and he thinks that during that week these vessels captured 1,000 fish. At the same time other vessels were cruising farther to the eastward. The Lizzie W. Hunt took 82 swordfish from July 14 to September 6, and Captain Wallace of that vessel says that in his eight years' experience he never before saw them so abundant.

The farthest eastward that the fish were reported was in latitude 44° 15', and longitude 58°, where they were seen by Capt. E. L. Jerrell, of New Bedford.

The season was at its height during the month of August and until the latter part of September, when the fish began to disappear; by October 10 they had left the coast.

Inquiry was made of more than fifty fishermen regarding the spawning habits of swordfish, and with very few exceptions there was a total ignorance on the subject. In reply to the question whether they had ever seen spawn in the fish, the usual answer was, "No, we never saw any; the fish must all be males." The opinion generally expressed by the fishermen was that very few if any female swordfish visit this coast, and that their spawning ground must be in distant waters. Capt. Horace J. Drew, of schooner Send, belonging at Plymouth, thinks that spawning fish sometimes visit this coast, for in 1883 he saw what he thought was nearly ripe spawn in a medium-sized fish; it had the appearance of cod spawn in shape, though much larger.

The most interesting statement on this subject was by Capt. William T. Gooding, of New London, Conn. He has been swordfishing for twenty-two years and has the points of three swords in the planking of his vessel. In an interview September 8 he said that about August 15, 1884, he caught a female swordfish off Monhegan, Me., that weighed about 450 pounds: "The spawn was running out. On dressing the fish I examined this spawn. It was red and about like a cod roe after spawning; in two bags about 12 inches long and 4 or 5 inches through. The eggs were about the size of small peas. I thought of saving this specimen, but being eager to get to market with my catch I forgot it, and it was thrown overboard by one of the crew."

The principal food of swordfish during the past season, south of Cape Cod, was squid and skipjack; while in the Gulf of Maine they lived chiefly on dogfish, mackerel, and herring. According to statements of fishermen, a swordfish never touches a still bait. They will break into a school of fish, then sink down, and take their prey while it is moving.

The smallest specimen reported by any of the fishermen weighed 22 pounds, fresh from the water, and was caught off Block Island early in the season. Another weighing 32 pounds, sword and all, was taken by Captain Hammond, of schooner Gracie M. Phillips. The largest one is reported by Mr. D. W. Williamson, of Wellfleet, who says, in a letter

dated October 13, 1884: "There was a swordfish ran ashore here last week, about 12 feet long, 6 feet around, and weighed 700 pounds."

Numerous specimens of peunella, encysted worms, and other swordfish parasites were collected at Gloucester during the season by Capt. S. J. Martin and sent to the National Museum for examination. The pennella were generally imbedded in the flesh of the fish, with the extremities protruding from the surface. In cutting up the fish for salting, several specimens of encysted worms were found in the solid meat. Some large specimens of swordfish suckers, or remoras (*Remoropsis brachyptera*), were also secured by Captain Martin and forwarded to the Museum.

In the capture of the swordfish the ordinary harpoons or darts were commonly employed, though some of the vessels were also supplied with harpoon-guns. These were nothing more than common shotguns, No. 10 bore, with the harpoon-head fitted to the end of a wooden rod fired from the gun. To the harpoon-head was attached a line for holding the fish when struck. Captain Swett, of schooner Alice Norwood, hailing from Biddeford, is said to have introduced this new method of capturing the fish. The lower end of the iron used with the gun is lanceolate-shaped and is connected by a central shank with two movable toggles that fold close to either side of the shank and that spread apart when the harpoon line is drawn taut. A sample of this pattern of iron has been presented to the National Museum by Mr. Leavitt, of Saco, who used it with a pole instead of with a shotgun.

This specimen is about 5 inches long, with a socket or hole in the upper end, in which the ramrod is inserted. Midway of the length of the iron is a hole for fastening the harpoon line.

The most common pattern of dart has two lanceolate blades, each about $1\frac{1}{2}$ inches long and connected by a central shank, making the whole length from 4 to 5 inches. In the middle of the shank, between the blades, is a hole for attaching the harpoon line, and in the head of the shank a socket for the iron at the end of the harpoon pole.

The swordfish is struck either from the pulpit at the end of the bowsprit or from a small rowboat. Mr. Edward Leavitt states that nearly one-fourth of all the fish taken the past season were struck from boats. One vessel carried a whaleboat rigged for striking and holding the fish, but the general custom when fishing with boats was to throw overboard a half-barrel buoy attached to the harpoon line. When the weather is calm the fishermen prefer striking from a boat rather than from the vessel. The fish is then hauled alongside the vessel, killed with an ordinary whale lance, and lifted by purchase-blocks to the vessel's deck.

About midday is said to be the best time to catch these fish, especially if there has been a breeze and it dies away calm. Very few can be taken in rough water, but in calm sunshiny days in August they are to be seen in all directions on the fishing grounds, sometimes thirty or forty appearing in a few hours.

6 Captain Gooding says: "In regard to swordfish being in deep water, if you strike a swordfish and he goes directly down in anything over 90 fathoms, the moment he touches bottom he will be dead, and will come to the surface very easy. Whenever bottom fish are found in swordfish, and they are in deep water, I always notice that there is a shoal bank very near; and we always find better fishing close to some bank, with the deep water around it."

Many fishermen have thrilling experiences of narrow escapes from being pierced by the blades of swordfish, and some of the vessels have blades fastened in their planking. Mr. Edward Leavitt, of Saco, Me., says that during the past summer a swordfish attacked the dory in which he was seated and thrust its sword through the bottom of the dory within a few inches of himself. The captain of the schooner Ranger, of Harpswell, showed a half-barrel buoy with a blade broken off across the grain of one of the staves, without materially injuring the buoy. The New Orleans Times-Democrat publishes an account of damage done by a swordfish to the three-masted schooner Themis, of Boston, on the 5th of last August, while on a voyage from Mobile to Tampico. The vessel was found to be leaking badly, and as soon as the harbor was reached an examination showed that the blade of a swordfish had pierced "the copper sheathing of the schooner; then the outer timbers of the hull, four inches in thickness; next a vacant space of nine inches between the outer and inner timbers, or 'ceiling;' and lastly four and one-half inches more of solid wood constituting the ceiling; altogether nearly nine inches of plank and copper, with eleven inches of vacant space, including the two inches of the blade end broken off when the cause of the leak was discovered."

Concerning the pugnacity of swordfish, Captain Gooding says:

"I have caught a great many swordfish, and my vessel has the points of three swords in her planking, and it was all our own fault in getting them there. All the swordfish I ever saw struck or have struck myself, if fastened close to the head, would always act more or less crazy and run with no particular object; just as apt to run into the vessel as anywhere; sometimes keeping a taut line and at other times the line lying all in slack bights. If fastened well abreast the large fin they always run from the boat or vessel to the windward, keeping a very taut line, and when hauled close up to the vessel their struggles to keep clear of her are more rapid, never turning on the vessel to show any signs of fight.

"The accidents to vessels are very few compared with the craft that are sailing on their cruising grounds. I don't think any craft was ever pierced by swordfish intentionally. I have seen swordfish a great many times rise within a few feet of our craft when we were hove to, both night and day. They could have hit her easy enough. I have also been on the bowsprit and have seen them coming up close under the bow, but they would always turn one side if the vessel went over them;

so I think they strike a vessel more by accident. When they do get their sword fastened into a boat they hold very still and seem to be afraid they will break their sword off. I have known them several times to pierce a dory and remain perfectly still until the dory was rowed to the vessel, and as soon as liberated they would commence their struggles; but, as I said before, this always happened when fastened close to the head."

Mr. Leavitt says he never saw two or more swordfish swim in company, but has often noticed two of them approach one another from opposite directions, when they would immediately move off as if shy or afraid of each other. During the past summer he saw a piece of sword broken off in the tail of a swordfish, giving evidence of fighting.

The regular Southern New England swordfish vessel carries four men—the captain, cook, striker, and mastheader. The proceeds of the voyage, after deducting "big generals," or expenses for provisions and wharfage, are divided into four equal parts or shares. One share belongs to the vessel, one share to the captain, and one to the mastheader. The cook receives about \$25 per month, his wages being paid in equal shares by the other three men. The vessels, belonging in Northern Massachusetts and Maine, "share the fourths or fifths," that is, one-fourth or one-fifth of the proceeds belongs to the vessel, and the balance is divided among the men, who share equally the expenses for provisions during the voyage.

The vessels employed were generally sloops or small schooners, ranging from fifteen to twenty-five tons, and some were of smaller size, particularly those belonging at Block Island.

Portland, Me., is the headquarters for the fishery in Eastern New England. There were landed at that port during the past season, according to John Lovitt & Co., about 1,500 swordfish, averaging 275 pounds each. Mr. O. B. Whitten, secretary of Portland Fish Exchange, estimates the number landed there at 2,000, averaging 300 pounds each, dressed for market. At Portsmouth and Newburyport about 150 swordfish were landed.

The following record of fresh swordfish landed at Gloucester during the season is furnished by Capt. Stephen J. Martin, of the United States Fish Commission :

| Date. | Number of fish. | Total weight. | Date. | Number of fish. | Total weight. |
|--------------|-----------------|---------------|---------------|-----------------|---------------|
| Aug. 11..... | 9 | 2,780 | Sept. 17..... | 4 | 1,280 |
| 13..... | 1 | 400 | 18..... | 6 | 1,870 |
| 14..... | 50 | 15,400 | 19..... | 22 | 9,380 |
| 21..... | 1 | 830 | 20..... | 7 | 2,200 |
| 28..... | 24 | 7,420 | 21..... | 5 | 1,580 |
| Sept. 2..... | 8 | 950 | 23..... | 15 | 4,002 |
| 4..... | 85 | 10,000 | 26..... | 1 | 500 |
| 5..... | 86 | 10,922 | 29..... | 4 | 1,200 |
| 6..... | 100 | 30,000 | Oct. 2..... | 1 | 588 |
| 7..... | 40 | 12,694 | 6..... | 7 | 2,150 |
| 12..... | 42 | 12,780 | 8..... | 1 | 300 |
| 18..... | 22 | 6,845 | | | |
| 15..... | 8 | 2,600 | Total..... | 444 | 137,981 |

Captain Martin states that there were also landed at various times during the season a total of 100 barrels of salted swordfish, taken principally by the mackerel catchers. At Rockport 150 fresh swordfish and 30 barrels salted swordfish were landed. Allowing one swordfish to each barrel salted, the total number represented by receipts at Cape Ann was 724, which is far in excess of the capture of any previous year of which there is any record.

At Boston the receipts were 663,167 pounds, which includes about 350,000 pounds landed there by the swordfish vessels and the quantity arriving by rail or steamer from Portland, Gloucester, and other ports.

The number landed at New Bedford is stated by Willard Nye, jr., to have been 150. A large number were landed at Newport, at Block Island, and other places in Southern New England, also at Provincetown, and ports north of Cape Cod not previously mentioned. A considerable number were consumed locally at various places along the coast. The schooner Julietta, of Harpswell, Me., was probably the "high line" of the fleet. Between July 6 and September 15 this vessel had taken 126 swordfish. The Millie Florence had captured 106 swordfish between July 15 and September 14. Captures by vessels belonging at Cape Cod and farther south, from the beginning of the season until the latter part of September, were reported as follows:

| Name of vessel. | Home port. | Number of swordfish captured. | Fishing grounds east or south of Cape Cod. |
|----------------------|--------------------|-------------------------------|--|
| Scud | Plymouth | 67 | East and south. |
| Active | Wellfleet | 49 | Do. |
| John L. Cole | do | 2 | |
| Nellie Rich | do | 2 | |
| Sarah C. Smith | do | 11 | |
| L. O. Foster | Dennis | 43 | Do. |
| Ellen R. | do | 13 | Do. |
| Olive A. Lewis | do | 83 | Do. |
| Black Swan | New Bedford | 51 | Do. |
| Spy | do | 60 | South. |
| Quilp | do | 45 | East and south. |
| Emma Clifton | do | 21 | Do. |
| Mariner | do | 12 | South. |
| Wasp | do | 4 | Do. |
| J. W. Flanders | do | 7 | Do. |
| Sarah Smith | do | 1 | Do. |
| Lydia | Nantucket | 2 | Do. |
| Grace Phillips | Westport | 99 | East and south. |
| Village Belle | Newport | 74 | 61 south, 13 east. |
| White Cloud | New London | 35 | South. |
| Conquest | do | 60 | Do. |
| Emma | do | 75 | Caught 36 south and 39 east. |
| E. C. Berry | do | 35 | |
| Hattie Rebecca | Block Island | | |
| Laura Louise | do | | |
| Wanita | do | | |
| Annie Godfrey | do | | |
| Mystery | do | | |
| Laura Gammage | do | | |
| Pacific | do | | |
| Yankee Bride | do | | |
| Roso Brothers | do | | |

South; average about 35 fish each.

The three vessels belonging in Dennis salted their catch before selling it. All the other vessels marketed their catch fresh. The names of some of the other swordfish vessels belonging north of Cape Cod, which

landed fares at Gloucester are: Carrie S. Allen, Black Hawk, Hattie J. Hamblin, Village Maid, Eddie A. Minot, Flying Cloud, Flora Temple, Lizzie W. Hunt, Julietta, Vim, Dreadnaught, Mary H. Lewis, Millie Florence, Fannie T., Helena, Carrie L. Payson, Flying Dart, Carrie E., Charles A. Dyer, A. B. Littlejohn, Eva, W. B. Keene, Mary Hagan, Lizzie Hagan, Ambrose, Lizzie May, Fleur-de-lis, and Frank Clark.

In 1882 the Scud, of Plymouth, captured 128 swordfish. The schooner Florida during the past summer took 10 fish in one day; the Ranger, of Harpswell, 11 in one day, about eight miles off Thatcher's Island.

The wholesale price of fresh swordfish in 1884 averaged 5 cents per pound. The highest price paid was 20 cents per pound, at the beginning of the season; and the lowest, $2\frac{3}{4}$ cents, when they were most abundant. At Gloucester, August 11, the fishermen were paid 5 cents a pound; August 29, $4\frac{1}{2}$ cents; September 7, $3\frac{1}{2}$ cents; September 19, 7 cents; September 29, 10 cents; October 2, $10\frac{1}{2}$ cents; October 6, $10\frac{1}{2}$ cents. At Portland the lowest price was $2\frac{3}{4}$ cents, and the highest 10 cents. At Block Island 20 cents a pound was paid for the first fish caught.

As received from the fishermen, the heads, tails, fins, and entrails are removed; a deduction of 10 pounds is then made in the weight of each fish, and the men paid for only the net weight. The heads are sold to oil-makers at 20 cents each. The swords have no commercial value.

Pickled swordfish, as prepared on the mackerel schooners, or by the few swordfish vessels that salted their catch before landing, was sold to dealers at from \$10 to \$15 per barrel. September 12, at Gloucester, 20 barrels of salt swordfish sold at \$12.50 per barrel.

The greater part of the catch is marketed in fresh condition; whenever, however, there is an overstock, the surplus is brine-salted in the ordinary manner. Swordfish are frequently captured by the mackerel vessels, and are salted, unless the vessel is about making a port, when the fish can be sold fresh. Three hundred pounds of round fish make one barrel or two hundred pounds of the barreled product.

The principal markets for the consumption of this fish are Boston, Providence, New Bedford, New London, and other places in eastern Massachusetts, Rhode Island, and Connecticut. Very little is sold outside of New England.