

VIII.—THE SALMONIDÆ OF EASTERN MAINE, NEW BRUNSWICK, AND NOVA SCOTIA.

BY CHARLES LANMAN.

NOTE.—I am indebted to Mr. Charles Lanman, the well-known artist, traveler, and sportsman, for accounts of the habits of the salmon, trout, togue, white-fish, capeton, smelt, shad, and gaspereau, or alewife, of Eastern Maine, New Brunswick, and Nova Scotia, based partly on the inquiries of Mr. Moses H. Perley, but supplemented and verified by his own experience. Having spent many summers in the region referred to, and always with his attention directed to the habits of the species, the present article, hitherto unpublished, will be found to embody some interesting additions to our knowledge. It is proper to state that it was written many years ago, and therefore cannot include the more recent additions to our knowledge of the same species.

Notices by Mr. Lanman of the white-fish and the shad will be found in their appropriate places.

S. F. BAIRD.

1.—THE BROOK-TROUT, (*Salmo fontinalis*.)

Nearly every lake and stream in New Brunswick and Nova Scotia is furnished with a greater or less number of this species of the salmon family. It is taken of all sizes, from six to twenty inches, and is so well known as scarcely to need a description. Its principal characteristics are the vermilion dots and larger yellow spots in the vicinity of the lateral line, and the tri-colored fins, these being blackish on their edges, broadly bordered with white, and the rest scarlet.

The brook-trout is a migratory fish; when in its power, it invariably descends to the sea, and returns to perpetuate its species by depositing its spawn in the clearest, coolest, and most limpid waters it can find. During the last thirty years, the writer has caught many thousands of these trout, in numerous rivers, lakes, streams and estuaries, in the lower provinces and in Maine, and can safely say, after close and attentive examination, that he has never seen but one species of the brook-trout, whatever naturalists may say to the contrary.

Various causes have been assigned for the great variety in the color of the brook-trout. One great cause is the difference of food; such as live upon fresh-water shrimps and other crustacea, are the brightest; those which feed upon May-flies and other common aquatic insects are the next; and those which feed upon worms are the duller and darkest of all.

The color and brilliancy of the water has, also, a very material effect upon the color and appearance of *Salmo fontinalis*. Professor Agassiz has made some very curious experiments with respect to the colors of fishes, especially the *Salmonidae*; and he has ascertained beyond a doubt not only that trout of different neighboring waters are affected by the color and quality of the water, but that trout of the same river vary in color, accordingly as they haunt the shady or sunny side of the stream.

The fish of streams rushing rapidly over pebbly beds are superior, both in appearance and quality, to those of ponds, or semi-stagnant brooks. But this may arise, not so much from any particular components of the waters themselves, as from the fact that rapidly running and falling water is more highly aerated, the atmosphere being more freely intermingled with it, and therefore more conducive to the health and condition of all that inhabit it.

There is no sportsman actuated by the true animus of the pursuit, who would not prefer basketing a few brace of good trout, to taking a cart-load of the coarser and less game denizens of the water. His wariness, his timidity, his extreme cunning, the impossibility of taking him in clear and much-fished waters, except with the slenderest and most delicate tackle; his boldness and vigor after being hooked, and his excellence on the table, place him, without dispute, next to the salmon alone, as the first of fresh-water fishes. The pursuit of him leads into the loveliest scenery of the land; and the season at which he is fished for is the most delightful portion of the year.

The brook-trout rarely exceeds three pounds in weight, and no well-authenticated case is on record of one of the species having reached the weight of six pounds, in these lower provinces.

2.—THE GREAT GRAY-TROUT OR TOGUE, (*Salmo toma*.)

This fish is found in all the large lakes of New Brunswick, and in very many of those in Maine, but it is believed not to exist in the lakes of Nova Scotia. It is called by the lumbermen the *togue*; the Indians designate it by a name equivalent to "fresh-water cod." It is found in great numbers and of large size in the Eagle Lakes, at the head of Fish River; in the St. Francis Lakes, from which flows the river of that name; and in the Matapediac Lake, which discharges itself into the Restigouche, and in the Mirimichi Lake, at the head of that river. In Lake Temiscouata, this fish has been taken of the weight of 21 pounds. It is there called the *tuladi*. It is often taken of the weight of 12 pounds, and upward, in the Cheputnecticook Lakes, at the head of the eastern branch of the Saint Croix. One sporting friend informs the writer that he caught two of these fish on the Saint Croix Grand Lake, one of which weighed 8 pounds, and the other 13 pounds, but that he saw one taken by a night-line which weighed 25 pounds. Another sporting friend, a resident of New York, informs the writer that he has visited the lakes on the western branch of the Saint Croix,

where he caught several togue, weighing from 4 pounds upward. The largest he caught measured 29 inches in length, but weighed 8 pounds only, not being in good condition.

It has been found of late years that this species of fish exists in considerable numbers in Loch Lomond, twelve miles from the city of Saint John; and they have, in consequence, been sought after by sportsmen, who take them from a boat, by trolling over the deepest portions of the loch.

A specimen of this fish, taken in Loch Lomond in 1848, was said to correspond exactly with the fish described by Mr. Yarrell as *Salmo ferox*, the great gray-trout of Loch Awe.

This fish is taken from a boat rowed gently through the water; the bait, a small fish guarded by several good-sized hooks. They are extremely voracious, and having seized the bait, will allow themselves to be dragged by the teeth for forty or fifty yards, and when accidentally freed, will again immediately seize it. The young fish, up to 3 pounds weight, rise freely at the usual trout-flies; the writer has often taken them up to that weight by fly-fishing, but never larger.

When in perfect season and full-grown, it is a handsome fish, though the head is too large and long to be in accordance with perfect ideas of symmetry in a trout. The colors are deep purplish-brown on the upper parts, changing into reddish-gray, and thence into fine orange-yellow on the breast and belly. The body is covered with markings of different sizes, varying in number in different individuals. Each spot is surrounded by a pale ring, which sometimes assumes a reddish hue; the spots become more distant from each other as they descend below the lateral line, and the lower parts of the fish are spotless. The fins are of a rich yellowish-green color, darker toward their extremities. The tail is remarkable for its breadth and consequent power. The flavor of this fish is coarse and indifferent; the flesh is of an orange-yellow, not the rich salmon-color of the common-trout, in good condition. The stomach is very capacious, and generally found gorged with fish; it is very voracious.

3.—THE WHITE SEA-TROUT, (*Salmo immaculatus*.)

This beautiful trout abounds in the Gulf of St. Lawrence; it is found on the northern shores of New Brunswick and in the estuaries of those rivers of New Brunswick and Nova Scotia which flow into the gulf and the Strait of Canso, early in June. It is caught in nets at the Magdalen Islands in summer, and salted for export. Many sportsmen resort annually to river Philip in Nova Scotia, during the month of June, to fish for these sea-trout, which enter the estuary of the river at that season. No specimen of this fish has yet been seen in the Bay of Fundy, which it is supposed not to frequent.

The flesh of the salmon-trout is of a brilliant pink-color, and most excellent; its exceeding fatness early in the season, when it first enters

the mixed water of the estuaries, is such, that it can be preserved fresh but a very short time. The body of the fish is rather deep for its length; the lateral line is very nearly straight, passing along the middle of the body, the scales adhering closely. The upper part of the head and body, a rich sea-green color; the lower part of the sides and belly, a brilliant silvery-white; the fins white, except the dorsal, which is nearly the color of the back.

Sir William Jardine, in speaking of this fish, accurately describes its habits, as observed in New Brunswick. He says: "In approaching the entrance of rivers, or in seeking out as it were some one they preferred, shoals of these fish may be seen coasting the bays and harbors, leaping and sporting in great numbers, from about one pound to three or four pounds in weight; and in some of the smaller bays, the shoal could be traced several times circling it, and apparently feeding."

Mr. H. Robinson Storer, during his visit to Labrador in 1849, met with a single specimen of the salmon-trout of the gulf at Red Bay, in the Straits of Belle Isle, and designated it *Salmo immaculatus*. The scientific description he gives is accurately that of the present, and is as follows:

"*Color*.—Silvery on sides and abdomen; darker on back; no spots.

"*Description*.—Length of head about one-sixth length of body; depth of head, two-thirds its length; greatest depth of body directly in front of dorsal fin, equal to length of head. Upper jaw the longer. Jaws with numerous sharp incurved teeth. Eyes laterally elongated; their diameter one-third the distance between them. Opercles rounded posteriorly; lower portion of operculum naked, marked with concentric striæ; preopercle larger than in the *fontinalis*; scales larger than those of the *fontinalis*. Lateral line commences back of superior angle of opercle, and, assuming the curve of the body, is lost at the commencement of the caudal rays. The first dorsal fin commences just anterior to median line; is nearly quadrangular. Adipose fin situated at a distance back of the first dorsal, little less than one-half the length of the fish. Pectorals just beneath posterior angle of operculum; their length three-fifths that of the head. Ventrals just beneath posterior portion of first dorsal; the plates at their base very large. The anal is situated at a distance back of the ventrals just equal to length of head, and terminates directly beneath the adipose fin; of the form of first dorsal. Caudal deeply forked; its length equal to greater depth of body. Dorsal, 9; pectorals, 13; ventrals, 9; anal, 11; caudal, 30; length, $13\frac{1}{2}$ inches."

To the epicure a fresh-caught salmon-trout of the Gulf of Saint Lawrence, especially early in the season, will always afford a rich treat. The sportsman will find it a thoroughly game-fish, rising well at a brilliant fly of scarlet ibis and gold, and affording sport second only to salmon-fishing. The writer has caught this fish with the scarlet ibis fly in the break of the surf, at the entrance of Saint Peter's Bay, on the north side of Prince Edward Island, of the weight of 5 pounds; but

the most sporting fishing is from a boat, under easy sail, with a "mackerel breeze," and oftentimes a heavy "ground-swell." The fly skips from wave to wave, at the end of thirty yards of line, and there should be at least seventy yards more on the reel. It is truly splendid sport, as strong fish will oftentimes make a long run, and give a sharp chase down the wind.

At Gaysboro' and Crow Harbor, in the Strait of Canso, there is excellent sea-trout fishing at the end of June, as also in the great Bras d'Or Lake, within the island of Cape Breton. The largest sea-trout rarely exceed seven pounds' weight; these are taken around the Magdalen Islands, and in the estuaries of all the rivers of the Labrador coast, from Mingan to the northern end of the Straits of Belle Isle.

4.—THE SALMON, (*Salmo satar*.)

The noble salmon, which honest Isaac Walton justly calls "the king of fresh-water fish," is so well known in the North American colonies as to need no description.

As in Western Europe, so in Eastern America, it is generally believed that there is but one species—*Salmo salar*—the salmon; and that they are the same in both countries.

The salmon enters the rivers of Nova Scotia during the latter part of April. Those rivers of New Brunswick which fall into the Bay of Fundy, the salmon enters at the latter part of May, while it seldom enters those falling into the Gulf of Saint Lawrence until the month of June.

The female salmon first enters the rivers; the male fish follows about a month later than the female; and lastly, come the grilse, or young salmon, which continue to ascend the rivers during July and August.

Salmon swim with great rapidity—shoot up the most oblique and glancing rapids with the velocity of an arrow, and frequently leap falls ten and twelve feet in height. It is believed that the utmost limit of perpendicular height which a salmon can attain in leaping is fourteen feet; but their perseverance is remarkable, for, although they may fail, time after time, yet, after remaining quiescent for a few moments to recruit their strength, they renew their efforts and generally succeed; but, it is said, they sometimes kill themselves by the violence of those efforts.

In New Brunswick the salmon seldom deposits its spawn until the middle of October. The fish that have spawned generally return to the sea before the rivers become ice-bound in December, but many remain in the fresh water all winter, and go down to the sea at the breaking up of the ice in spring.

Before entering the rivers, they live awhile in the brackish water of the tide-ways, as they do also when they descend to the sea, to render the change from one to the other less abrupt, and to rid themselves of

certain parasitical animals which attach to them when they remain long either in fresh water or in salt, as the case may be.

The spawn is not deposited until the water is greatly below its summer temperature. Professor Agassiz stated personally to the writer, that 42° of Fahrenheit's thermometer, or 10° above the freezing-point, was the temperature at which salmon usually cast their ova. It is absolutely necessary that the water should be aerated, or highly supplied with oxygen; hence the salmon resort to shallow, pure water, and swiftly-running streams, the rapidity and frequent falls in which impart purity and vitality, by mingling their waters with the atmosphere.

The food of the salmon, previous to its quitting the salt water, consists of the eggs of *Echinodermata* and *Crustacea*, this rich aliment giving the color and flavor for which its flesh is so highly prized. This is sustained by the observations of Professor Agassiz, who states that the most beautiful salmon-trout are found in waters which abound in *Crustacea*, direct experiments having shown to his satisfaction that the intensity of the red colors of their flesh depends upon the quantity of *Gammaridæ* which they have devoured.

Fly-fishing for salmon in Nova Scotia and New Brunswick increases annually, as the various rivers become known, and the proper localities and seasons are ascertained. The two most noted rivers in Nova Scotia are the Gold River, which flows into the Atlantic west of Halifax, and Saint Mary's River, to the eastward of that port. In New Brunswick the best rivers are the Southwest Miramichi, from Boiestown upward, and the Nepisiguit River, which flows into the Bay of Chaleur, at Bathurst. It is known, however, that there is good salmon-fishing in several other rivers of both provinces, while it is believed that there are many rivers, especially in the northern part of New Brunswick, yet untried, which, if visited by experienced sportsmen, not afraid of rough work at the outset, would afford good sport and heavy fish during the whole of every season.

5.—THE AMERICAN SMELT, (*Osmerus mordax*.)

This beautiful and savory fish abounds in New Brunswick and Nova Scotia; it is sometimes taken a foot in length, but its average size is about 5 or 6 inches. Very soon after the rivers are freed in spring from their icy fetters, the smelts rush in to the smaller streams, in countless thousands, and are then taken with the most wasteful profusion. The popular name of smelt is given to this fish from its peculiar smell, which resembles that of cucumbers; this is strongest when the fish is first taken, but it may be perceived by raising the gill-covers, after the fish has been some time out of the water.

On the gulf coast of New Brunswick large quantities of the smelt are used every season as manure. At Miscou and other fishing stations in the Bay of Chaleur it is taken in great numbers, with the seine, and

used as bait for cod. The endless abundance of the smelt causes it to be less valued as food than it really deserves.

The smelt feed largely on the shrimp. They bite readily at the hook, baited with a piece of any of the crustaceous animals, and affords endless sport to young anglers. They are also caught in thousands by fishing through holes cut in the ice, during winter, and are then greatly prized. The writer has frequently taken the smelt with a small scarlet fly, while fishing for sea-trout in the Gulf of Saint Lawrence, and they would undoubtedly furnish very pretty light sport, if other and nobler game did not exist in the same locality.

6.—THE CAPELIN, (*Mallotus villosus*.)

This, the smallest species of the salmon family, inhabits the northern seas only, never ranging farther south than the shores of New Brunswick. It is very nearly allied to the genus *Osmerus*. The capelin is from 4 to 7 inches in length, the back and top of the head a dull leek-green, with bright green and yellow reflections, when moved in the light; sides and belly covered with delicate and very bright silvery scales, which are dotted on the margins with black specks; the back covered with small, smooth grains, like shagreen. The manner in which the capelin deposits its spawn is one of the most curious circumstances attending its natural history. The male fishes are somewhat larger than the female, and are provided with a sort of ridge projecting on each side of their back-bones, similar to the eaves of a house, in which the female capelin is deficient. The latter, on approaching the beach to deposit its spawn, is attended by two male fishes, who huddle the female between them, until the whole body is concealed under the projecting ridges, and her head only is visible. In this position all three run together, with great swiftness, upon the sands, when the males, by some inherent imperceptible power, compress the body of the female, between their own, so as to expel the spawn from the orifice and the tail. Having thus accomplished its delivery, the three capelins separate, and paddling with their whole force through the shallow water of the beach, generally succeed in regaining once more the bosom of the deep; although many fail to do so, and are cast upon the shore, especially if the surf be at all heavy. Like the common smelt, the capelin possesses the cucumber smell; but it differs from the smelt in never entering fresh-water streams.

As an article of bait for cod, and other fish of that class, the capelin is of much importance; wherever abundant, the cod-fishing is excellent. It has been found as far north in the Arctic regions as man has yet penetrated; and it forms so important an article of food in Greenland, that it has been termed the daily bread of the natives. In New Foundland, it is dried in large quantities, and exported to London, where it is sold principally in the oyster-shops.