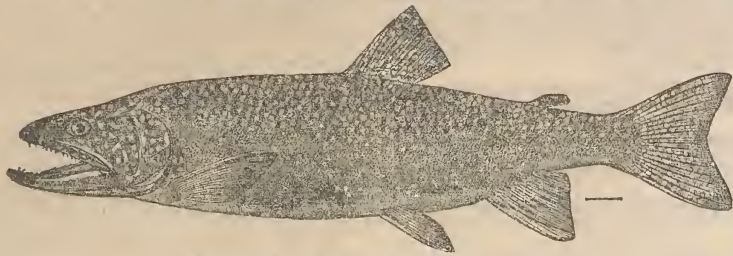


CROSSING OF SALMON AND TROUT.

Editor Forest and Stream:

Will brook and salmon trout cross? There is a pond in Madison county, N. Y., which contained speckled trout, and which some years ago was stocked with salmon. Now many claim that the trout is a cross. Certainly the trout



LAKE AND BROOK TROUT HYBRID.

are lighter than most brook trout and the red spots not so clearly defined.

Not many trout have been taken thus far this spring, but all the followers of Sir Izaak are waiting for a warm rain, and then they expect to have some sport. WING.

[There is no evidence that any of our salmon and trout cross naturally, but many crosses have been produced by artificial fertilization. A cross between the salmon trout (*namaycush*) and the brook trout (*fontinalis*) was described in FOREST AND STREAM Jan. 17, 1889. Since this description was published we have examined specimens of the hybrid in alcohol and are now able to complete the account of the teeth and the pyloric coeca. The teeth on the vomer (middle of roof of mouth) are as in the lake trout, and there is a well developed band of teeth on the roof of the tongue. The stomach is very large, siphon-shaped, and the coeca number about sixty, being more numerous than in the brook trout, but not nearly so abundant as in the lake trout. In all characters of great importance, as in the shape of the tail, size of the scales, and the dentition, the cross has received its impression from the lake trout, while in coloration, general form, and number of coecal appendages the impression came from the brook trout. In other words, in matters most subject to variation, *fontinalis* has left its impress, but in characters of greater permanence *namaycush* has left its unmistakable mark. The figure herewith published will give a perfect knowledge of the proportions of the cross as well as of the distribution of color areas: for a description of the fresh fish the reader is referred to the article above mentioned. The specimen was an undeveloped male about 20in. long.]

SUNAPEE LAKE TROUT.

Editor Forest and Stream:

I began fishing in Sunapee Lake in 1857, at North Point, a ledge on the northwestern shore of Sunapee. We used to catch only the speckled native trout, but they were plenty and we caught hundreds of them weighing from 1 to 6lbs. each. Jacob R. Hutchinson and I have been fishing together all these years. The St. John's River trout have been put into the lake since that time, so have the landlocked salmon and black bass. Trout fishing is now best carried on in depths of 40 to 80ft., black bass are near the shore. Trout fishing is what we old fishermen care most for, and we have pulled out some big ones in deep water. Mr. Amos Woodbury a few years ago caught a trout that weighed down pretty well, but I guess I took the biggest prize last July. I started from home early in the morning and got on to the water before sunrise; it was so foggy that I hardly knew where I went, but rowed for Hedgehog fishing ground. I anchored and put out my line, in a few minutes something nibbled at my bait. I took the line in hand and found a big trout had the hook. For thirty or forty minutes I pulled and he pulled, it was a hard pull and a long pull, but I hauled him in and steered for the nearest cottage to weigh him. Mr. Cheney weighed the fish immediately upon taking it out of the water, and his weight was 15lbs.; after being out of the water a few hours he was somewhat lighter in weight, but was pronounced the largest trout that had ever been taken out of Sunapee Lake. The length of the fish was about 30in. Until this catch, my friend Mr. Woodbury rejoiced in being the champion fisherman of Sunapee Lake; but I understand that the people of Sunapee now record Sullivan Marston as the man who won the day and the biggest trout. I expect to get his mate the coming summer. If I do I will write again. SULLIVAN MARSTON.

NEWPORT, New Hampshire.

THE FIRST STRIPED BASS.—Editor Forest and Stream: I caught two striped bass in the surf yesterday, fishing with rod and reel and using white worms for bait. These are the first taken on this coast this season in the above manner, and, as far as I have been able to learn, the earliest on record. My eldest boy caught a Southern sculpin (*Cottus octodecim spinosus*) to-day. Are they common so far north or at this early date?—BIG REEL (Ocean Beach, N. J., May 1). [Mr. V. N. Edwards, of Woods Holl, Mass., has obtained striped bass in his vicinity on the following early dates: April 24, 1877, Falmouth, Mass., 1; April 23, 1880, Martha's Vineyard, 1; April 27, 1880, Martha's Vineyard, 156; April 25, 1883, New Bedford, Mass., 1. The eighteen-spined sculpin is a winter resident on the New Jersey coast, seldom arriving there before the month of November; it is much more abundant northward, extending at least to Labrador.]

FISHING PROSPECTS IN NEW BRUNSWICK.—The present season in New Brunswick is one of the earliest on record, and no one can remember ever having seen nature arrayed so soon in its garb of green. Mr. Robert Orr, fishery warden for the Upper Miramichi, informs me that upward of 125 salmon (spent fish) have lately been taken with the fly in that river at distances varying from six to eight miles above Boiestown, a circumstance never before known.—EDWARD JACK (Fredericton, N. B., May 1).

MACKEREL AT PROVINCETOWN.—A mackerel was caught at Provincetown, Mass., May 1.

FINED FOR ILLEGAL FISHING.—Editor Forest and Stream: Our fish are enjoying a rest, the first in many years. This rest, unexpected alike to both fish and fishermen, was brought about by the sudden appearance of our fish warden, John W. Hague, Esq., of Pittsburgh, who has been hard at work for months gathering evidence against our illegal fishers. On Monday, the 15th

inst., he exploded his bomb, and shocked our quiet community by arresting Bernard (better known as "Ike") Lazarus, Rochester's Chief of Police and county detective, taking him before A. R. Moore, J. P., who fined him \$50 and costs for fishing with a seine within a quarter of a mile of the dam, at Bridgewater. Then came Thomas Lukens, who plead guilty and was fined \$50 and costs for like offense. He was followed by Jacob Stahl, a professional fisherman, in whose possession the warden found a complete outfit, which he ordered the sheriff to destroy. Stahl's fish box contained many fine fish, which were at once returned to the Big Beaver, from whence they had been forced. Stahl said "Guilty," and the Justice of the Peace said "\$50 and costs." Geo. B. Hoyt, "for seining," etc., \$50 and costs, followed by "Col." Joseph Reed, Sr., fined \$25 and costs for having nets in possession; and the last to date, Joseph Reed, Jr., \$10 and costs for taking black bass with rod and line. Mr. Hague says the work has only commenced, and that he is determined that illegal fishing shall be stopped in his district.—G. A. SCROGGS (Beaver, Pa., April 29).

A GREAT CATCH OF BASS.—On April 1 Mr. C. A. Hamlet, of this city, took 56 black bass, running from 1 to 4 1/2 lbs., the total catch weighing 85lbs. He used a 6oz. fly-rod and "chub" minnows. This is the largest catch of bass on record here. Last season Mr. G. H. Asper, of Chicago, Ill., captured the largest black bass ever taken in our waters with a rod; the gamy fellow weighed 6lbs.—MAC (Glasgow, Ky., April 30).

PRICE OF SHAD.—In the markets of Washington, D. C., shad were sold at retail, May 4, for five cents per pound. Roe shad are offered at an equally low price.

Fishculture.

FISHCULTURE IN OHIO.

DAYTON, Ohio, May 6. The protection that the State has given the fish in the rivers, and the regular planting of fry in the streams has given Ohio as fine fishing waters as can be found anywhere. The close season begins May 1 and continues until June 15, and the bass are now spawning. The rivers are full of bass, goggle eyes, rock bass and channel catfish, and anglers will have greater sport this summer than ever before, if there is a good stage of water.

President Osborn, of the Ohio Fish Commission, reports that the 150 jars of pickerel spawn in the State establishment at Sandusky are hatching out rapidly, and that already a large quantity of the fry have been planted in the streams of Michigan, and that within the next ten days many millions will be deposited in the inland rivers of Ohio. One half acre of land on Peach Point, Put-in-Bay Island, in Lake Erie, has been deeded to the Government as a site for the fish hatchery, and John Brown, Jr., a son of old Ossawatimie Brown, is making the survey. The shores of Peach Point are a wild stone bluff, and very picturesque, niched and caverned. The heavy growths of cedar and forest trees, wild vines and shrubbery must be cleared away before the building can begin.

CANADIAN FISHERIES.*

THE report on the fisheries of Canada for the year 1888 is made up of the following elements: A brief introduction containing a general survey of the whole subject by the Deputy Minister of Fisheries, a series of eight appendices giving a statement of fishing bounties and the fishery statistics of the inspectors and overseers of the various provinces, a report on fish breeding, and a report on the fisheries protection service.

The yield of the fisheries in 1888 was as follows:

Nova Scotia.....	\$7,817,030.42
New Brunswick.....	2,941,803.05
British Columbia.....	1,902,195.50
Quebec.....	1,900,012.96
Ontario.....	1,839,869.09
Prince Edward Island.....	876,892.74
Manitoba and Northwest Territories.....	180,677.00
Total.....	\$17,418,510.76

There has been a decrease of \$967,592.90 as compared with the returns for 1887. The greatest falling off has occurred in New Brunswick and Nova Scotia, while Ontario has shown a large increase. The fisheries that have declined most markedly are mackerel, sardines, lobsters, smelts, cod and salmon, named in the order of their diminution. A notable improvement is recorded in the catch of whitefish, hake, eels and "pickerel" (wall-eyed pike). The cod yields nearly one-fourth of the whole catch of the fisheries of Canada. The decline in the mackerel fishery amounted to nearly half a million dollars, or about one-third of the yield of this species in 1887. In Nova Scotia "herring were plentiful and prices fair. Shad and alewives appear to be on the increase, while a slight shortage is noticeable in cod, undoubtedly due to stormy and unfavorable weather for boat-fishing. Herring fishing was, on the whole, remunerative, while mackerel utterly failed. The assistant inspector lays great stress on the damage occasioned to this fishery by the use of purse seines, and he urgently recommends the utter prohibition of this mode of fishing." In New Brunswick the returns show a decrease of over

*Annual Report of the Department of Fisheries, Dominion of Canada, for the year 1888. Ottawa, 1889. Pp. xxx+255+69+24.

a half million dollars from the yield in 1887, and of more than a million dollars from the catch of 1886. The decline was almost entirely in salmon, smelt and lobsters, and is attributed to over-fishing.

The fisheries of British Columbia show a decrease of \$76,691.50, due chiefly to the failure of the Fraser River salmon fishing. By an order in Council, passed Nov. 26, 1888, certain regulations were established for the protection of this fishery. Nets, boats and other apparatus cannot be used without a license from the Minister of Marine and Fisheries. The minimum size of the meshes of salmon nets is fixed at 6in. Drift nets are confined to tidal waters and must not obstruct more than one-third of any river. No salmon nets of any kind shall be used for salmon in fresh waters. Fishing for salmon and the use of apparatus shall be discontinued from 6 o'clock on Saturday morning to 6 o'clock on the following Monday morning.

The value of the fisheries of Ontario was \$1,839,869, being an increase of \$305,019 over the amount of 1887. This result arose from judicious protection and a strict enforcement of the fishery laws.

In Prince Edward Island there was a decided falling off in the catch of mackerel and lobsters. The decline of the lobster fishery is attributed to over-fishing and constant opposition to all restrictive measures. It is found also that the oyster industry is being ruined for the want of an adequate close time. The present close season of three months and a half is insufficient to protect the oyster.

In Manitoba and the Northwest Territories the value of the fisheries showed a considerable increase, the catch of whitefish being nearly double what it was in 1887. Great destruction of fish during the breeding season is wrought by Indians, who, under pretense of fishing for their own use, catch large quantities of fish at a time when others are prohibited from doing so, conceal them and afterward sell them to traders.

Six new fishways of the Rogers model were built in streams in New Brunswick and Nova Scotia. Eleven hatcheries were operated by the Dominion Government. These are located at Newcastle and Sandwich in the Province of Ontario; Miramichi and St. John River, New Brunswick; Fraser River, British Columbia; Magog, Tadoussac, Gaspé and Bistigouche, Quebec; and at Bedford and Sydney in Nova Scotia. 98,214,000 eggs were placed in the hatching houses, and the number of young fish distributed during the season of 1888 was 88,109,000. The kinds of fish deposited were Atlantic salmon, two species of Pacific salmon—the quinnat and the blueback—lake trout, brook trout, whitefish, wall-eyed pike and small-mouthed black bass.

In the following table are shown the values of the fisheries exceeding \$200,000 in amount, arranged in the order of their importance:

Cod.....	\$4,203,508.00
Herring.....	2,354,284.90
Salmon.....	1,907,400.00
Lobsters.....	1,483,388.55
Mackerel.....	981,659.01
Haddock.....	948,732.00
Whitefish.....	702,324.28
Trout.....	510,061.00
Hake.....	486,540.00
Pollock.....	484,284.00
Fish oils.....	390,650.90
Eels.....	321,348.70
Fur seal skins.....	279,830.00
Fish for bait.....	231,536.50
Smelt.....	222,674.66
Coarse and mixed fish.....	208,851.63

The number of persons engaged in the fishery service of Canada was 910, of whom twenty-five were special fishery guardians employed for short periods during the close seasons.

In the Province of Ontario, Parry Sound and Muskoka divisions, Overseer A. H. Smith, in charge of Lakes Joseph, Rosseau, Muskoka and other waters in the District of Parry Sound, reported as follows: The season opened early. With the exception of bass, which were scarce, fishing proved highly successful to anglers and trollers. Pickerel were clean, bright and of a good size. The species referred to under this name is evidently our wall-eyed pike. At the head of Lake Rosseau 10 to 10lbs. pickerel were common; while a 20lb. lunge [lake trout] was landed from Sparrow Lake. Tourists were not quite so numerous during last summer, but the influx of hunters, including foreigners, was larger. Game is more attractive than fish. Spearing is almost completely stamped out. A most difficult question to manage is the sawdust nuisance. Mill owners seem well disposed to comply with the statute, but the burners erect to dispose of the sawdust proved defective.

Overseer J. G. Rumsey, of Huntsville, who has charge of the inland waters of twelve townships in Parry Sound and Muskoka, reports that speckled trout appear to be getting scarcer, notwithstanding the fact that the only fishing is done by sportsmen and a few settlers for local use. The decline of fish is accompanied by a falling off in the number of tourists. The overseer attributes the scarcity of trout to the want of fishways in the dam at Burk's Falls.

Overseer Fred Webber reports a steady improvement in all kinds of fish, except speckled trout, in Lake Couchiching and the Severn River. This is especially true of the black bass, and is due to the extension of the close season and the more general observance of the fishing laws. Muskellunge are scarce in Lake Couchiching, but it is believed that the prevention of spearing in the spring will soon restore their numbers. The Severn River is reported by anglers and tourists from the States to be better than ever. Scarcity of speckled trout is ascribed to extreme low water during the winter, causing the death of many young fish. A number of trout fry were placed in Coldwater River by a gentleman last year, and other parties have promised to continue the work. A large school of whitefish was seen last summer in Lake Couchiching as the result, it is believed, of fishculture, some fry having been sent to this lake a few years ago from the Newcastle hatchery. The principal fish of Lake Couchiching and the Severn River are bass, pickerel (wall-eyed pike) and muskellunge. At Moose Deer Point, Georgian Bay, whitefish and lake trout began spawning Oct. 14. Capt. Alfred F. Holmes, commanding the steamer Cruiser, reports the spawning time for whitefish and lake trout to extend from Oct. 15 to Dec. 1, and for black bass from April 1 to June 15, with slight variations due to temperature.

Mr. F. C. Gilchrist, fishery overseer of the Qu'Appelle River and adjoining lakes, in his very interesting report for the year 1888 gives notes on several of the important species of his district. His comparison of the two kinds of black bass deserves the careful attention of the readers of FOREST AND STREAM. "It has been recommended that the large-mouthed black bass be used for stocking our waters. There are many lakes where they would be a valuable addition to the list of fishes. * * * I would, however, protest against putting them into waters that are connected with lakes where there are whitefish or which are suited to stocking with the *Coregoni*. In shallow lakes with muddy bottoms and weeds, and where there are only the predaceous varieties, they would do well, but my examination of the stomachs of hundreds I have caught in the Otouabee, Trent and other rivers in Ontario, led me to the conclusion that they were almost entirely piscivorous, preying very largely upon the young of other fish that had taken to the weeds for shelter. Unlike the small-mouthed black bass, which appears to hibernate in the winter, they are voracious the entire year. * * * The large-mouth are much inferior to the small-mouth in thepan, and infinitely so upon the hook,