

## X.—REPORT ON THE PROPAGATION OF PENOBSCOT SALMON IN 1884-'85.

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The purchase of breeding salmon began this year May 31, a little earlier than usual, and, the catch being rather light through the month of June, it extended into July, closing on the 5th day. There were purchased in all 568 salmon; 46 of them died in the boats in transit, 472 were deposited alive in the usual inclosure in Dead Brook, and 50 were given the range of Eastern River from Orland Village to Orland Falls, which was made into a great inclosure nearly 2 miles long by the erection of grated barriers.

The object of confining a portion of the fish in this large inclosure was to ascertain whether, in the first place, there would be any less mortality among them than among those confined in Dead Brook; and, in the second place, whether they could be recaptured in the autumn with equal facility and certainty. The result was not entirely decisive, but in favor of the large inclosure. Of those that were deposited in the river there were ascertained to have died during the summer 6 (= 14 per cent). Of those sent up to Dead Brook 46, as above stated, died on the way, and 66 more died during the summer, a total of 20 per cent. It is likely that some of those that died in the river escaped discovery, and, if so, the advantage of the large inclosure is less than would be inferred from the above figures. There were recaptured in the autumn 393 in Dead Brook, and 39 in the river, 83 and 78 per cent, respectively, of those deposited alive. If, however, we compare the autumn catch with the number originally dispatched to each inclosure, thus bringing those that died in the boats into the computation, we find that 76 per cent of those dispatched to Dead Brook were finally available, and 78 per cent of those dispatched to the river inclosure.

The recapture of the fish from the river was accomplished by traps of netting at either extremity of the inclosure, and about equal numbers were taken at the two points, 20 at the upper and 19 at the lower end. Under these circumstances, therefore, salmon seem to be quite as likely to descend as to ascend at the spawning season. The manipulation of the fish at the spawning season proceeded without noteworthy incident and resulted in a yield of 1,935,186 eggs as computed from the

data afforded by the record of losses during the development and of the packing and shipment of the residue. The sexes were represented in the proportions of 42 per cent males and 58 per cent females. Both sexes were of much smaller size than in 1883, but not far from the average of other years. The mean weight of 189 males was (at the spawning time) 8.79 pounds, and their mean length 31.85 inches. The gravid females, of whom 240 were measured, had an average weight of 10.72 pounds and an average length of 31.12 inches.

The loss of eggs during development amounted to 119,067, including the unimpregnated, which were calculated at 105,733. Of the good eggs, there were hatched at the station 78,000 on account of the U. S. Commission. The remainder, 1,730,000, were shipped to other points. The transfer was accomplished in January and February with the usual degree of success, as will appear from the subjoined statement.

TABLE I.—Statement of the shipment of Penobscot salmon from Orland, Me., in 1885.

Date of shipment.	Consignee and address.	Final destination.	Number of eggs.			No. of cases.	Condition on unpacking.	Dead on unpacking.
			From share of States.	From share of United States.	Total.			
Jan. 13	F. Mather, Cold Spring Harbor, N. Y.	Cold Spring Harbor, N. Y.		250,000	250,000	4	Good, first-class.	380
20	Same .....	do .....		250,000	250,000	4	Much frost, and eggs good.	2,078
26	E. B. Hodge, Plymouth, N. H.	Plymouth, N. H.	100,000		100,000	2	Good .....	0
26	G. W. Delawder, Druid Hill Park, Baltimore.	Baltimore .....		10,000	10,000	1	Fair, a little indented on one cloth.	51
29	F. Mather, Cold Spring Harbor, N. Y.	London, England.		30,000	30,000	1	Good .....	0
Feb. 11	H. J. Fenton, Windsor, Conn.	Poquonock, Conn.		100,000	100,000	2	Good .....	27
11	E. B. Hodge, Plymouth, N. H.	Plymouth, N. H.	47,000	113,000	160,000	2	Good .....	15
12	A. J. Darling, Enfield, Me.	Enfield, Me. ..	80,000		80,000	1	Good .....	4
12	D. Masterman, Weld, Me.	Weld, Me. ....	120,000		120,000	2	Good .....	22
12	S. F. Baird, Washington, D. C.	Central Station		10,000	10,000	1	First-class ..	10
18	E. B. Hodge, Plymouth, N. H.	Plymouth, N. H.	100,000	120,000	220,000	3	Package considerably frozen.	Very few.
18	Benjamin Lincoln, Dennysville, Me.	Dennysville, Me	40,000		40,000	1	Good .....	15
19	D. Masterman, Weld, Me.	Weld, Me. ....	80,000		80,000	1	Very good ..	30
19	A. J. Darling, Enfield, Me.	Enfield, Me. ....	70,000	50,000	120,000	1	Good .....	12
Mar. 5	Same .....	do .....	37,000	73,000	110,000	1	Good .....	7

The contributors to the expenses, and the number of eggs allotted to each are as follows:

Contributor.	Amount of contribution.	Share of eggs.
United States.....	\$2,100	1,084,000
Maine.....	1,000	517,000
Massachusetts.....	400	207,000
	3,500	1,808,000