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DEPARTMENT OF FISHERIES

ANNUAL REPORT

ON

FISH CULTURE

1940



OTTAWA
EDMOND CLOUTIER
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1941

ANNUAL REPORT ON FISH CULTURE

By J. A. RODD, DIRECTOR OF FISH CULTURE

Fish cultural operations in 1940 were carried on by the Department of Fisheries in those provinces, namely, Nova Scotia, New Brunswick and Prince Edward Island, where the fisheries are entirely, or to a large extent, under federal administration.

The total output from the hatcheries operated by the department in 1940 was 27,931,845, over 78 per cent of which was distributed in the fingerling and older stages. The numbers of each species distributed were:—

STATEMENT BY SPECIES OF THE FISH AND FISH EGGS DISTRIBUTED FROM THE HATCHERIES DURING THE YEAR ENDED DECEMBER 31, 1940

Species.	Eyed Eggs	Fry	Advanced Fry	Fingerlings	Yearlings and Older	Total Distribution
Salmo salar-Atlantic salmon.....		275,000	3,508,600	11,759,474	79,260	15,622,334
Salmo rivularis Kamloops-Kamloops trout.....					125	125
Salmo salar ouananiche-Ouananiche salmon.....					1	1
Salmo salar sebago-Sebago salmon....					13,791	13,791
Salmo irideus-Rainbow trout.....				237,902	10,144	248,046
Oncorhynchus nerka-Sockeye salmon.....	946,494					946,494
Salvelinus fontinalis-Speckled trout...		82,000	1,147,383	9,693,366	115,305	11,038,054
Cristivomer namaycush-Salmon trout.....				63,000		63,000
	946,494	357,000	4,655,983	21,753,742	218,626	27,931,845

The following classification of eggs, fry and fingerlings applies to all statements and references in this report:—

Green Eggs.—Eggs until they are “eyed”.

Eyed Eggs.—Eggs showing the eyes of the developing fish.

Fry.—Fish from date of hatch until free-swimming with the food sac fully absorbed. (No fry are distributed until the sac is fully absorbed.)

Advanced Fry.—Fry that are feeding systematically.

No. 1 Fingerlings.—Fish that are feeding from two to eight weeks.

No. 2 Fingerlings.—Fish that are feeding from eight to fourteen weeks.

No. 3 Fingerlings.—Fish that are feeding from fourteen to twenty weeks.

No. 4 Fingerlings.—Fish that are feeding from twenty to twenty-six weeks.

No. 5 Fingerlings.—Fish that are feeding from twenty-six weeks to one year from date of hatch.

Thirteen main hatcheries, one subsidiary hatchery, six rearing stations, seven salmon retaining ponds and several egg-collecting camps were operated. The output therefrom was as follows:—

THE FOLLOWING TABLE SHOWS THE HATCHERIES OPERATED, THEIR LOCATION, DATE OF ESTABLISHMENT, THE SPECIES AND THE NUMBER OF EACH SPECIES DISTRIBUTED FROM EACH HATCHERY DURING 1940

Established	Hatchery	Location	Species	Eyed eggs	Fry	Advanced fry	Fingerlings					Yearlings and Older	Total distribution by species	Total distribution by hatcheries			
							No. 1	No. 2	No. 3	No. 4	No. 5						
1929	Antigonish	St. Andrews, N.S.	Atlantic salmon				910,400						910,400				
			Rainbow trout				101,522					81	101,603				
			Speckled trout			415,000	2,057,457	80,000	33,500			35,724	2,621,681	3,633,684			
1876	Bedford	Bedford, N.S.	Atlantic salmon			1,000	11,699						12,699				
			Speckled trout			20,000	294,080						314,080	326,779			
1937	Cobequid	Jackson, N.S.	Atlantic salmon		175,000	120,000	585,000	75,550	76,012				1,031,562				
			Speckled trout			38,000	207,597					18,161	263,758	1,295,320			
1938	Coldbrook (f)	Coldbrook, N.S.	Rainbow trout					12,000	27,340				39,340				
			Speckled trout					135,000	205,000				340,000	379,340			
1936	Grand Lake (f)	Wellington Station, N.S.	Atlantic salmon				5,000	188,000	277,000	22,000			79,260	571,260			
			Ouaniche salmon									1	1				
			Sebago salmon									11,138	11,138				
			Speckled trout									19,225	19,225	601,624			
1937	Kejimikujik (f)	New Grafton, N.S.	Atlantic salmon					267,000					267,000				
			Speckled trout				43,186	30,500		9,036			82,722	349,722			
1912	Lindloff	St. Peters, N.S.	Atlantic salmon					360,000	323,863				683,863				
			Speckled trout				523,000	179,276		26,137		2,256	730,669	1,414,532			
1902	Margaree	N. E. Margaree, N.S.	Atlantic salmon		100,000	950,000	825,000	370,000	160,000	99,225			2,504,225				
			Speckled trout				850,604	233,274	195,000	160,000	54,171	2,212	1,495,261	3,999,486			
1935	Mersey River (f)	Liverpool, N.S.	Atlantic salmon						111,600				111,600	111,600			
1913	Middleton	Middleton, Annapolis Co., N.S.	Atlantic salmon					146,000	291,000				437,000				
			Salmon trout					63,000					63,000				
			Speckled trout				399,000	335,900	154,100	4,980			893,980	1,393,980			
1933	Nictaux Falls (f)	Nictaux Falls, N.S.	Atlantic salmon				133,000						133,000	133,000			
1929	Yarmouth	South Ohio, N.S.	Atlantic salmon				100,000	30,000	60,000	24,000	30,000		244,000				
			Kamloops trout									125	125				
			Rainbow trout						15,000			10,000	25,000				
			Speckled trout			430,000	120,000	194,000	145,000	17,600	11,000	442	918,042	1,187,167			
1939	Charlo	River Charlo, N.B.	Atlantic salmon				417,612	1,202,751					1,620,363				
			Speckled trout		20,000				66,000				86,000	1,706,363			
1928	Florenceville	Florenceville, N.B.	Atlantic salmon				700,000	537,809					1,237,809				
			Speckled trout				885,500					36,814	922,314	2,160,123			
1880	Grand Falls	Grand Falls, N.B.	Atlantic salmon			310,000	876,734	518,000	43,300				1,748,034				
			Speckled trout		35,000	73,388	46,866	299,544	329,345				784,143	2,532,177			
1874	Miramichi	South Esk, N.B.	Atlantic salmon			1,902,600	1,267,580						3,170,180				
			Speckled trout				57,000					51	57,051	3,227,231			
1914	St. John	St. John, N.B.	Atlantic salmon			225,000	365,395	32,100			4		622,499				
			Rainbow trout									63	63				
			Sebago salmon									2,653	2,653				
			Speckled trout		26,000	170,995	598,500	28,126				420	824,041	1,449,256			
1938	Cardigan (f)	Cardigan, P.E.I.	Rainbow trout						82,040				82,040				
			Speckled trout					59,500	362,000	115,500			537,000	619,040			
1906	Kelly's Pond	Southport, P.E.I.	Atlantic salmon				316,840						316,840				
			Speckled trout			1,000	95,000	52,087					148,087	464,927			
1911	Anderson Lake (a)	Anderson Lake, Kildonan, Vancouver Island, B.C.	Sockeye salmon	(e) 946,494									946,494	946,494			
							946,494	357,000	4,655,983	12,793,572	5,162,417	3,224,100	478,478	95,175	218,626	27,931,845	27,931,845

(a) Subsidiary hatchery.

(f) Rearing station.

(e) Autumn collection 1940.

The eggs, fry and fingerlings included in this distribution, with the exception indicated, were from collections in the autumn of 1939 and the spring of 1940.

HATCHERY OUTPUT, BY PROVINCES, OF EYED EGGS, FRY, FINGERLINGS, YEARLINGS AND OLDER FISH DURING 1940

	Eyed eggs	Fry	Advanced fry	Fingerlings					Yearlings and Older	Total distribu- tion by species	Total distribu- tion by province
				No. 1	No. 2	No. 3	No. 4	No. 5			
<i>Nova Scotia—</i>											
Atlantic salmon.....		275,000	1,071,000	2,570,099	1,169,550	1,566,475	145,225	30,000	79,260	6,906,609	
Kamloops trout.....									125	125	
Ouananiche salmon.....									1	1	
Rainbow trout.....				101,522	12,000	42,340			10,081	165,943	
Salmon trout.....					63,000					63,000	
Sebago salmon.....									11,138	11,138	
Speckled trout.....			903,000	4,494,924	1,187,950	732,600	217,753	65,171	78,020	7,679,418	
		275,000	1,974,000	7,166,545	2,432,500	2,341,415	362,978	95,171	178,625	14,826,234	14,826,234
<i>New Brunswick—</i>											
Atlantic salmon.....			2,437,600	3,627,321	2,290,660	43,300		4		8,398,885	
Rainbow trout.....									63	63	
Sebago salmon.....									2,653	2,653	
Speckled trout.....		81,000	244,383	1,587,866	327,670	395,345			37,285	2,673,549	
		81,000	2,681,983	5,215,187	2,618,330	438,645		4	40,001	11,075,150	11,075,150
<i>Prince Edward Island—</i>											
Atlantic salmon.....				316,840						316,840	
Rainbow trout.....						82,040				82,040	
Speckled trout.....		1,000		95,000	111,587	362,000	115,500			685,087	
		1,000		411,840	111,587	444,040	115,500			1,083,967	1,083,967
<i>British Columbia—</i>											
Sockeye salmon.....	946,494									946,494	946,494
											27,931,845

Four thousand, eight hundred and ten Atlantic salmon were obtained for fish cultural purposes and retained at the various retaining ponds operated in the Maritime Provinces and include 2,612 purchased from fishermen and 2,198 taken in departmental traps. The approximate average weight of the salmon impounded at each pond, in pounds, was: Margaree 11.4; River Philip 15; Sackville 5.4; Saint John 9.4; Miramichi 8.5; New Mills 15.1; Jaquet River 6 and Morell 9. Some 21,138,600 salmon eggs were secured.

At the Antigonish hatchery the production of speckled trout eggs from pond fish exceeded all previous collections at this point in any one year by 12,577,300 or 133 per cent. This hatchery produced the record total this year of 22,026,000 ova. The previous year's collections of this species were also exceeded at the Cobequid, Lindloff and Yarmouth hatcheries.

Over 56,900 Atlantic salmon fingerlings were marked by removal of the adipose and either the right or the left pectoral or the right or the left ventral fins and distributed from Cobequid, Margaree and Middleton establishments, bringing the total distribution of marked Atlantic salmon at all hatcheries from 1935 to 1940 inclusive to 785,356. The recapture of these marked salmon if reported, will add to present data in regard to the "homing" theory, sea movements or migrations of this species. Unfortunately, the commercial fishermen, anglers and others interested in salmon angling have not co-operated in reporting the recapture of these marked fish to the extent that was hoped and expected, although \$1 is paid for information as to the date, length, weight and place of recapture of each fish accompanied by a number of their scales and the scars due to the removal of the fins. Some 144,743 speckled trout with clipped adipose and one side fin were also distributed in 1940.

The tagging and marking of Atlantic salmon, speckled trout, etc., and the recaptures of tagged and marked fish that were reported in 1940 are summarized in statements given later in this report.

Prophylactic and sanitary measures were taken on an extensive scale to prevent the outbreak of disease at all hatcheries and rearing ponds. Experiments with equipment, methods and foods of various kinds were continued at several hatcheries.

As the price of beef liver, at one time the standard fish food used in fish cultural work, and other meat products has increased to such an extent, with corresponding increases in fish production costs, fish culturists generally have been experimenting for many years with a great variety of foods and combinations with the hope of finding a less costly and equally or more efficient ration for hatchery fish. The feeding tests that were carried on during 1940 and their results are summarized in the reports of the superintendents of the respective hatcheries and rearing ponds appearing later in this report.

A notable advance was made, on behalf of this department, towards the solution of this feeding problem during 1940, inasmuch as Doctor W. D. McFarlane, Professor and Chairman of the Department of Chemistry, Macdonald College, McGill University, undertook an investigation of the composition of some natural foods of Atlantic salmon and speckled trout fry in the Maritime Provinces. From the results of these analyses, rations will be formulated to approximate as closely as possible the composition of the natural food. These rations will be fully tested in a comprehensive series of feeding tests that will be carried on with fry and fingerlings at several hatcheries during 1941.

The management of eight lakes in Charlotte County, New Brunswick, is proceeding as planned. These lakes are being stocked on an acreage basis and with numbers of speckled trout graded according to the age of the fish that are being distributed in them. These lakes with their tributary streams are closed to fishing as they are stocked and will not be re-opened until the fish distributed in them are three years old. A creel census will begin with the re-opening of each lake. In 1939, Bonaparte Lake was stocked with No. 2 fingerlings; Limeburner Lake with No. 5 fingerlings, and Johnson and Kerr Lakes with yearling

speckled trout. In 1940, St. Patrick and Crecy Lakes were stocked with No. 2 fingerlings. Johnson and Kerr Lakes will be re-opened to angling and the creel census will begin April 1, 1941, when the yearlings distributed in them in 1939 will be three years old.

This investigation will add to present knowledge in regard to the effectiveness and the cost of stocking with three grades of speckled trout, in terms of catchable fish, the productivity of certain kinds of lakes, and the general requirements of good speckled trout waters.

The survey which preceded this investigation was made and the distributing ratios were arrived at by the staff of the Atlantic Biological Station.

Encouraging reports of improved angling have been received from many districts where hatcheries are operating.

The interest and co-operation of the general public and local organizations which were referred to in a previous report have been continued. Provincial fish and game protective associations have co-operated, and local fish and game clubs as well as angling and protective associations in many instances have assisted hatchery staffs as opportunity offered in the distribution of the season's output, particularly in waters in which these organizations are interested. Among those that were particularly helpful were the Kings County, N.S., Fish and Game Protective Association, associations in the Middleton and Yarmouth districts, N.S., and the Saint John, Fredericton, Schoodic (St. Stephen), Woodstock, Moncton, McAdam, Madawaska and Grand Falls branches of the N.B. Fish and Game Protective Association.

Valuable and much appreciated advice and co-operation were extended whole-heartedly by the Directors and staffs of the Atlantic Biological Station and the Halifax Fisheries Experimental Station, all of which are referred to in the report of the Fisheries Research Board.

A number of changes in the fish cultural staff took place during the year. Superintendent F. C. Hayley of the Kelly's Pond hatchery, P.E.I., who had reached the "age of retirement," was replaced by Superintendent C. A. Tait of the Cardigan rearing ponds. Superintendent J. D. Nichol of the Saint John hatchery, N.B., was retired for the same reason and replaced temporarily in an acting capacity by Hatchery Assistant P. B. Stratton. Superintendent H. V. Gates, Yarmouth hatchery, was retired late in the year on account of ill health.

Owing to the conditions brought about by the war, operations were not expanded, new construction was not undertaken, and replacements and repairs were confined to essentials. Inspections of possible egg-collecting waters and hatchery and rearing-pond sites were also restricted to what might be done by fish cultural officers in the discharge of their regular duties.

The Canadian National, the Canadian Pacific and the Dominion Atlantic Railway companies continued their generous assistance and co-operation by furnishing free transportation for shipments of game fish and game fish eggs with their attendants. The extent of this co-operation is indicated in the following summary:—

Railway	Total mileage on trip passes	Number of Passages	Mileage baggage car permits			Number of cases or cans			Number of Permits
			Full	Empty	Total	Full	Empty	Total	
C.N.R.....	2,621	8	3,256	3,036	6,292	45	44	89	25
C.P.R.....	62	1	87	137	137	1	9	9	3
D.A.R.....					87			1	1
	2,683	9	3,343	3,173	6,516	46	53	99	29

NOTE.—Number of passages refers to transportation one way—a return trip counting as two passages. Number of permits refers to one way passages for cases or cans.

A few years ago there was a sharp opposition by some people to the distribution of non-native speckled trout in the streams of one of the provinces on the ground that the fish would not have the same characteristics as those raised from native stock. As a consequence the distribution of speckled trout in that province was limited to the fry and fingerlings hatched from the comparatively small number of eggs collected from native wild fish from year to year.

Finally an agreement was reached that there should be an experimental distribution of trout from non-native hatchery-reared parents. Accordingly, speckled trout hatchery reared strain from another province, that had been domesticated for several generations, were marked and distributed in a few streams. The fish were marked by the removal of certain fins from each trout so that a later check could be made as to the growth and appearance of the "strangers" in comparison with the native stock.

These fish were introduced while in the fingerling stage. Quite recently, several specimens of marked non-native speckled trout and unmarked native speckled trout of practically the same size were caught. A careful check revealed that so far as size, usual markings, and general appearance of these fish were concerned there were no differences apparent. Thus confirmation is given to the belief that environment and not heredity is the greater influence in growth and appearance of fish and that trout distributed in their early stages quickly assume the general characteristics of the native fish.

In anticipation of the usual run of sockeye salmon to the Anderson Lake area arrangements were made in the fall of 1940 to collect one million eggs there for the purpose of continuing the distribution of this species in Maggie Lake which drains into Alberni Canal, B.C. The Anderson Lake run of sockeye proved to be the smallest that has been observed for many years. Water levels were above normal during the spawning period and as they would tend to greater-than-normal losses in naturally deposited eggs should low water prevail and the spawning beaches be exposed during the winter, the eggs that had been collected before the size of the run was apparent, 946,500, were planted at safe levels and in good condition at Anderson Lake.

A fish of unusual interest was exhibited at the Department. It was a speckled trout caught on September 12, 1940, in Quebec waters, and had a length of 30½ inches and an estimated weight of 11 pounds. The record speckled trout, so far as known, is the 14½ pound specimen taken in July, 1916, in the Nipigon River, Ontario.

In 1940 there does not seem to have been the same destruction of young fish through drought as occurred in 1939. Only one case is reported where the fisheries inspector had occasion to remove fry and fingerlings, from small brooks where the water was low, to larger streams.

Early run Atlantic salmon do not necessarily spawn before the so-called late run. In fact the opposite was the case in the New Mills district in both 1939 and 1940. In the latter year the early run was impounded May 22 to July 16 and the first eggs secured October 22, whereas the late run was taken in Jacquet River September 2 to October 16 and yielded their first eggs on October 16.

That rats may prey on hatchery product is shown by the experience of the superintendent of Cobequid hatchery in the spring of 1940. When the brush for insulation was being removed from around the intake pipe to one of the circular ponds a large rat ran out from under it. Upon examination a nest was found and beside it two piles containing 217 freshly killed specked trout from three to four and one-half inches long. Apparently these fish had been captured while in the shallow water around the margin of the ponds.

Collections, transfers and distributions are given to the nearest hundred in the summaries of operations at the respective establishments.

MARITIME PROVINCES

Senior District Supervisor of Fish Culture, James Catt

Fish Cultural operations in the Eastern Division were on the whole satisfactory and in some of its phases very marked progress was made, particularly in regard to a greatly increased collection of speckled trout ova and to the results obtained by selective breeding.

The co-operation of the Administrative Branch, the Fisheries Research Board, Provincial Governments and Fish and Game Protective Associations was all that could be desired. Through the courtesy of the Telegraph-Journal of Saint John, N.B., publicity was given to a request that anyone recapturing marked salmon or trout should report them to the department's officers.

The value of the course given Supervisors Tingley and Hills by the staff of the Atlantic Biological Station becomes increasingly apparent. The assistance of Doctors A. H. Leim, R. H. M'Gonigle and M. W. Smith in helping to analyze the material collected by the supervisors is much appreciated.

In spite of a reduction in the trained personnel of the hatchery staffs through the superannuation of Superintendents J. D. Nichol, Saint John, F. C. Hayley, Kelly's Pond, and H. V. Gates, Yarmouth, and the absence on military duties of Assistant M. N. Jordan of the Miramichi hatchery, on the whole the plants were operated very well and with very marked progress at some hatcheries and collecting stations.

The annual mortality caused by epidemics was, as usual, investigated by Dr. M'Gonigle. Losses in fry and fingerlings appeared rather unexpectedly at some plants but on the whole were considerably less than usual. Prophylactic and curative treatments were expanded to include the use of formalin at Kejimkujik, Saint John and Margaree. Superintendent Annis at Kejimkujik obtained excellent results with 1:6,000 formalin baths for his speckled trout fingerlings. The formalin treatment in each instance was followed by a salt bath.

At Saint John much stronger solutions were tested. As a therapeutic measure solutions of 1:1,250 and 1:2,500 were used on landlocked salmon yearlings affected with fin rot. The fish were treated for one hour at 59.9° Fht. rising to 63.9° Fht; pH 8.00 and oxygen saturation 96.1 per cent. No losses were incurred before or after the treatment. A similar curative treatment applied to speckled trout indicated they might have less resistance to the solution than landlocked salmon, for with water at 63° Fht. with a pH of 7.9 the fish began to die after fifty minutes in a 1:2,000 solution. This treatment, however, reduced the losses in the subsequent 19 hours to 170 as against 700 in an untreated control. Control and experimental groups each contained approximately 4,500 fingerlings. Subsequently all fingerlings were treated with a 1:4,000 solution with apparently very satisfactory results both from a preventive and curative point of view. At Margaree hatchery formalin was used satisfactorily in combatting Costia.

In the examinations of lakes carried out by the district supervisors in 1940 those waters previously stocked with rainbow trout were given preference with a view to determining what factors are necessary for successful stocking with the above mentioned species. Whilst all data have not yet been correlated it seems at present that exhaustion of oxygen during the winter in such waters as Afton Lake, Prince Edward Island, will prove fatal to trout although certain cyprinids may tolerate it.

Inefficient screening of the outlets appears to be the chief cause of failure to maintain a good number of rainbows in lakes otherwise suitable for the species. Long (Lindloff) Lake with its abundant enemy and predator fish population yet contains a considerable number of rainbows, indicating that, other conditions being favourable, this introduced species is able to establish itself to an unusual degree, predators and competitors notwithstanding.

McRae's Lake, Cape Breton, and Thompson's pond, Prince Edward Island, were also examined. These lakes are outstanding dissimilar "types" of excellent speckled trout waters. Robinson Lake, Saint John, a small pond void of fish other than eels was also investigated as was Burke's Lake, Kings County, Nova Scotia.

Results of stocking indicated by the recapture of marked fish clearly demonstrated the value of the fish culture service. Creel census reports were fairly satisfactory, from the areas near the Cobequid and Antigonish hatcheries. These dealt largely with speckled trout. A fair number of landlocked salmon originally from the Grand Lake ponds were recaptured and in the fall operations at Chamcook Lake Assistant T. K. Lydon reported 32.4 per cent of the total catch of landlocked salmon taken for stripping purposes were marked hatchery product. Similar results were secured in a census taken of the anglers' catches in Chamcook Lake during the year. In all, successful anglers landed 109 sebago salmon and 32.1 per cent proved to be salmon previously marked and distributed in the lakes. Greater co-operation on the part of the angling public in making returns of recaptured marked fish would be much appreciated by the Department.

As the result of a small distribution of speckled trout averaging about 3 ounces in Robinson's Lake, N.B., interesting information was obtained by the investigating officers. In ten months the fish had made a remarkable growth with an average weight of 32 ounces.

The Reardon brook fish previously used in an experiment to determine the effect of improved environment on stunted stock disclosed the fact that the fish had about reached their limit of growth with an average weight of $\frac{3}{4}$ lb. As at maturity they originally weighed only 0.8 ounces (average) the results appear excellent.

Egg collections in 1940 were most satisfactory. The Atlantic salmon ova obtained this year exceeded the collection of 1939 by over 1,000,000 and the number of speckled trout eggs secured was over 13,000,000 more than the previous year, largely owing to operations at Antigonish where twenty-two million eggs, an all time high for this species in federally operated hatcheries in Canada, were obtained. There was also a very satisfactory increase in the collections from the Lindloff plant and adjacent area.

Whilst for a number of reasons, including floods, the Atlantic salmon brood fish retained in the New Brunswick plants was below normal, increases at River Philip and Morell offset this.

Sea trout collections at Tweedie's Meadow brook were much below anticipation owing to very severe spates in the fall and spring. In the latter case high water prevented the establishment of the traps as early as had been expected. In the former case freshets permitting the fish to pass over and around the traps continued for many weeks.

Although late in starting, a satisfactory collection of wild speckled trout eggs was obtained from the Lake Utopia area.

The collection of landlocked salmon eggs was carried out in the Grand Lake area, Nova Scotia and at Chamcook Lakes area and Clinch brook, New Brunswick. Very heavy spates rendered the collection of ova somewhat abortive although the Clinch brook eggs did exceed in number the quantity taken in 1939.

It was of interest to note the improvement in the quality of the rainbow trout eggs obtained during the past year. The rainbow stock now at Saint John is limited to the wild progeny obtained from Crooked creek and this has produced a notable improvement in the quality of the eggs. A good improvement has also been shown in the quality of rainbow eggs secured from the ponds at Antigonish hatchery.

The value of selective breeding was very well demonstrated this year. At Antigonish a group of two year old speckled trout stock selected for productivity yielded an average of 1,773 eggs per female with the phenomenal maximum of 2,520. The average size of two year olds at this plant on November 2 was $14\frac{2}{3}$ ounces as against $16\frac{1}{3}$ ounces for three year olds.

Results from early spawning stock of McRae Lake origin indicated the desired trait capable of development. This season these fish spawned eighteen days earlier than their contemporaries of Antigonish pond stock.

At Margaree the average yield of selected fish of the three year old group was 1,491 eggs as against 1,057 of the general run of three and four year olds. The selected two year olds yielded an average of 1,184 eggs. Average weights of parents in these groups varied from $16\frac{1}{2}$ and $29\frac{3}{4}$ ounces at two and three years of age for selected fish to 19 ounces for the three and four year olds (mixed) and 28 ounces for the four year olds of general stock.

District Supervisor of Fish Culture, F. A. Tingley

The month of January and part of February was spent in the Saint John Office in general office work, perusal of filed correspondence and discussion with Supervisors Catt and Hills of matters pertaining to fish culture. An inspection of Saint John hatchery was made and on February 9 the conference of Fishery Supervisors at Halifax was attended. The period of February 25 to March 13 was spent at the Atlantic Biological Station, St. Andrews, N.B., classifying biological material collected from lakes and streams in the summer of 1939. The assistance of Doctors Leim, M'Gonigle and Smith in this work is greatly appreciated.

Between March 21 and April 1, oxygen determinations were obtained from under the ice in Afton, Glenfinnan, O'Keefes and Verde Lakes, and Weisner's pond in Prince Edward Island. Oxygen concentration under the ice of Neil's Lake near Moncton, N.B., also was determined. On April 26 and 27 a trap for in-running fish was installed in the outlet stream of Neil's Lake. The period of April 28 to July 6 was spent chiefly in inspection of hatcheries and rearing ponds, and examination of the following lakes in Nova Scotia: Boar Back, Tedford and Jesse Lakes were visited for examination of the outlet screens, and Trefry's Lake was examined to determine whether food organisms had returned in sufficient quantity to justify restocking. Clear, Round, Bird, Giant's and Smelt Lakes were examined for rainbow trout. MacRae and Utley Lakes also were examined. A site in Halifax County on St. Margaret Bay for rearing trout fingerlings in tidal water was examined. Some tests were made at Kejimkujik rearing ponds to determine toleration by trout fingerlings of varying proportions of fresh and sea water.

July 7 to 24 was spent in Saint John, chiefly in office duties and in re-hanging and repairing gill nets and a minnow seine.

On July 27 the Department was represented at Sydney in the oral examination of candidates for the position of Assistant at Lindloff hatchery. While in Cape Breton, the feasibility of collecting speckled trout eggs at Trout brook, Lake Ainslie was examined. Examinations of O'Keefes and Glenfinnan Lakes, rainbow trout waters on Prince Edward Island, and also Thompson's pond, a speckled trout water, were made. This work was done in the period July 31 to August 14. Returning to Saint John, a few days were spent at the Office, and fishing tests made in Robinson's Lake on August 20 and 21. On August 23 a fingerling survival test at Lake Mulgrave and more examinations of Nova Scotia lakes were made. Lakes Midway, Brazil, Little Brazil and Pugg were examined on this trip before return was made to Saint John on September 14.

September 16 to 28 was spent chiefly at the Saint John office. During this period assistance was given Supervisor Catt in an attempt to collect Odonata

larvae at Stephenson's pond for Doctor W. S. McFarlane's investigation of trout diets. A fyke net was set in Trout brook, Lake Utopia, on September 27 for the capture of speckled trout. A second net was set at a later date, and 2 fish fences installed at Flaherty springs on Spear's brook. The egg collection was fairly successful, though as a result of freshets it was smaller than in 1939. The camp was closed on November 19.

An inspection was made at Tweedie's Meadow brook on September 28 to ascertain the extent of damage to the fish fences by a heavy freshet in that area, and to determine the feasibility of repairing the damage during the season. A second visit to observe conditions was made on October 21. A visit was made to this camp on November 7 to strip trout and supervise the packing and transfer of eggs to Miramichi hatchery. En route from New Mills pond on November 14, another visit was made to this camp to observe the stripping of the remaining trout. Further fishing tests were made in Robinson's Lake in October. Between November 26 and December 11, the autumn inspections of Kelly's Pond, Cobequid, Bedford, and Yarmouth hatcheries, and Grand Lake rearing ponds were made. The period of December 12 to December 21 was spent at the Saint John office.

District Supervisor of Fish Culture, A. P. Hills

The period from January 2 to 29 was spent at the Saint John office, reading files, submitting reports, inventories, et cetera. On January 30 an examination was made of the Sissiboo River power dam site, located approximately three miles above Weymouth, with a view to determining the possibilities of establishing rearing ponds at that site. In view of the war situation and the decision that no new developments are to be undertaken at this time, further observations such as summer temperatures, pH, et cetera, were not made. At Saint Andrews, N.B., in February analyses of material, collected during the examination of waters in the summer of 1939, was carried out at the Atlantic Biological Station. Dr. Leim kindly offered the use of a laboratory and equipment at the station for this work, and the valuable assistance of Doctors Leim, M'Gonigle and Smith was very much appreciated.

While at Saint Andrews accompanied by Doctor M. W. Smith, attendance was made at the annual conference of Fishery officers, representatives of the Fish and Game Protective Association, et cetera, convened by the District Supervisor of Fisheries at Saint Stephen, N.B.

Spring inspections of the following establishments were made from May 28 to June 23 inclusive: Burpee brook, Florenceville hatchery, Grand Falls hatchery, Three brooks deadwater, Charlo hatchery, Benjamin and Jacquet Rivers, New Mills pond, Miramichi hatchery, Kelly's pond hatchery and local waters, Cardigan rearing ponds, and possible rearing pond sites for Moncton Branch of the Provincial Fish and Game Protective Association.

The following waters were examined and reports thereon submitted from July 13 to October 6, inclusive: Clear Lake, Charlotte County, New Brunswick; Burke's Lake, Kings County, Spectacle Lake, Lunenburg County, Cranberry, Kempt, Nancy, First Tupper and Deep Lakes, Queens County, Nova Scotia; O'Keefe's and Glenfinnan Lakes, and Thompson's pond, Prince Edward Island; Clam Lake, Shelburne County and Lily Lake, Annapolis County, Nova Scotia. Assistance was also given Supervisor Catt in examination of Clear Lake, Saint John County, New Brunswick. Rainbow trout have been distributed in all the waters with the exceptions of Burke's Lake and Thompson's pond.

Traps were again installed in Clinch brook, tributary to Little Magaguadavic Lake, for the purpose of collecting landlocked salmon ova. While the total collection of approximately 41,200 was slightly larger than that of the

previous season, it did not come up to expectations. Better results might have been obtained had the fences been installed some ten days earlier, but this can only be conjecture.

The eggs collected at this point were again laid down at Florenceville hatchery for incubation, and the seasonal operations carried out with the assistance of the Superintendent of Coldbrook rearing ponds.

Autumn inspections were made between October 24 and December 10 of the following establishments: Florenceville, Grand Falls (and Three brooks dead-water), Antigonish, Lindloff, Margaree, Middleton and Yarmouth hatcheries and Margaree salmon pond. The balance of the year was occupied with office work at Saint John.

ANTIGONISH HATCHERY

K. G. Shillington, Superintendent

At this establishment 22,026,000 speckled trout eggs were collected from the hatchery ponds between October 12 and December 21, and laid down in the Antigonish hatchery. This is more than double the quantity taken last year at this plant, and sets a new all-time record for the number of eggs of this species taken from hatchery reared fish at any of the Maritime hatcheries. The local ponds also supplied 280,000 rainbow trout eggs between March 30 and April 26. These collections were supplemented by receipt of 1,000,000 Atlantic salmon eyed eggs from Margaree hatchery on April 12. Outgoing shipments of speckled trout eyed eggs in March were—to Cobequid 1,000,000; Kelly's 800,000; Florenceville 10,000; Middleton 200,000 and Bedford 1,200,000. The following distributions were made—910,400 Atlantic salmon; 101,600 rainbow trout and 2,621,700 speckled trout. These include 81 rainbow trout, 5 year olds, and 35,005 speckled trout yearlings, 2, 3, and 4 year olds marked by the removal of the adipose and right pectoral fins.

Selective breeding of parent speckled trout stock has shown decided progress during the last three years. The average egg yield per female for one year fish in 1938 was 439; in 1939, 751 and in 1940, 910; for 2 year stock in 1938 it was 1,058 and in 1940, 1916; for 3 year stock in the three respective years, 1,148, 1,190, 1,971 and for the 4 year and older trout 1,285, 1,399 and 1,393. Two year old McRae Lake stock yielded only 516 eggs per female as against a 2 year selected stock yield of 1,916. Three, two year trout of the non-selected variety weighed 2½ pounds, whereas, 3 fish of the same age, but of the selected group, weighed 9¼ pounds.

Experiments in feeding speckled trout fingerlings with cod liver residue, September 10 to October 2, both alone and mixed with liver, 50 per cent of each, did not give satisfactory results, as in the former case the fingerlings actually lost weight, and in the latter the gain was only 29 per cent of what it was in the control fed all liver. Another experiment with speckled trout fingerlings, August 22 to October 2 using six diets (1) fish 6 days, liver one day, (2) 50 per cent fish plus 50 per cent liver, (3) 25 per cent fish plus 75 per cent liver, (4) 75 per cent fish plus 25 per cent liver, (5) 100 per cent fish and (6) 100 per cent liver, indicated best growth using Diet 6, but with Diet 3, almost equal to it, and Diet 2 a fairly close third. These first two diets also gave the least (and the same) loss. The most economical food on the basis of cost to produce one pound of trout was the all fish diet.

In last year's report results from feeding tests in 1939 with 3 year and one-year old parent speckled trout were given up to the spawning time. The eggs from each group were kept separately over the winter of 1939-40. The diets as fed parent trout 1939 for 3 year stock were: (1) 100 per cent fish (sardines), (2) 100 per cent sheep plucks, (3) fish and one feed of plucks per week, and (4) fish and one feed of plucks in two weeks. The least percentage

loss in eggs up to March 16, 1940, was in that group whose parents had been fed diet 3; from March 16 to April 20, diet 2; and from April 20 to June 15 diet 4, with diet 3 a close second. The diets as fed one-year stock were: (1) fish and one feed of plucks per week, (2) 50 per cent fish plus 50 per cent plucks. The least percentage loss in eggs up to March 16 was in that group whose parents had been fed diet 1, and from March 16 to April 20 and April 20 to June 15, diet 2.

An experiment was conducted to determine the effect of non-feeding of parent 2 year old speckled trout before spawning. A group was not fed from July 15, 1939, to spawning time in November. Thirty of the females yielded an average of 539 eggs each. The percentage loss to hatch was 40.1. Three hundred and twenty-three eggs per female hatched and the loss in fry to June 1 was 20.9 per cent. In the second group fed as usual, 20 females yielded an average of 1,058 eggs with a percentage loss to hatch of 15.5; 894 eggs per female survived and the loss in fry to June 1 was 12.3 per cent. An experiment was tried in fertilizing eggs from two-year old speckled trout with different amounts of milt. Using heavy milt, the percentage loss in eggs to April 20 was 13.8, and from that date to June 1, 15.4 per cent. Corresponding figures using light milt were 11.5 and 13.1 per cent. Another experiment consisted in fertilizing two-year female speckled trout, with milt from 1 year and 2 year males. In both cases the percentage loss was the same to April 20, but from April 20 to June 1, it was 16.4 per cent using one-year males and 18.1 per cent using two-year males. Machinery was installed in the cold storage building erected last year, and the plant was placed in operation and used successfully this year. Hydro electric power was supplied, grounds improved and minor repairs made around the establishment as necessary.

BEDFORD HATCHERY AND SACKVILLE RIVER SALMON-RETAINING POND

George Heatley, Superintendent

On March the fourth, 440,000 Atlantic salmon eyed eggs were received from Middleton hatchery, and on the fifteenth of the same month, 1,200,000 speckled trout eyed eggs from Antigonish hatchery. Between November 4 and 16, 635,700 Atlantic salmon ova were laid down from Sackville pond, and between November 9 and 16, 2,165,000 eggs of the same species from River Philip pond. Outgoing shipments consisted of 300,000 Atlantic salmon advanced fry to Kejimikujik, June 8-17; 682,400 fry and fingerlings of the same species to Grand Lake May 8-July 12; and 390,600 speckled trout fry to Coldbrook May 25-June 4. In addition 20,500 Atlantic salmon eggs were supplied Dalhousie University, and 2,000 advanced fry and fingerlings of the same species to the Fisheries Research Board for Moser River. Distributions from Bedford for the season were 12,700 Atlantic salmon and 314,100 speckled trout.

A closed circulating system was operated March 31 to May 11 with five troughs of eggs from yearling, 3 and 4 year old speckled trout. In this system the eggs hatched out 8 to 11 days earlier, but the loss was much heavier than in the regular open system. Bedford staff assisted in all distributions from Grand Lake rearing station and for three days while the Coldbrook rearing establishment was making its distribution. A well was bored for domestic purposes, nine hatching troughs and four foot-tanks were built, and the grounds improved generally.

The largest collection of Atlantic salmon eggs since 1937 was made at Sackville pond this season. Between September 17 and November 10, 223 fish were taken, out of which 150 females, between November 4 and 16, yielded 635,700 eggs, all of which were laid down in Bedford hatchery. The parent salmon impounded were a little larger than last year averaging 5.4 pounds in weight as against 4 pounds in 1939.

COBEQUID HATCHERY AND RIVER PHILIP SALMON-RETAINING POND

J. W. Heatley, Superintendent

On March 12 to supplement the quota then on hand 1,000,000 speckled trout ova were received from Antigonish hatchery. Between November 5 and 13, some 3,019,400 Atlantic salmon eggs were secured from River Philip pond, and from October 17 to December 19, 1,852,100 speckled trout ova were taken from fish in the hatchery ponds. In the fall 5,400 yearling speckled trout were transferred to Grand Lake rearing ponds. Distributions for the season were, Atlantic salmon 1,031,600 and speckled trout 263,700, including 18,036 trout and 22,215 salmon marked by the removal of the adipose and right ventral fins. Twelve new V-type lattice pond shades were made. In selective breeding 45 groups of eggs from selected pairs of two-year old speckled trout were segregated and will be carried through separately from the others. Selection was made on the basis of early spawning, quantity and quality of eggs, etc.

An experiment in feeding Atlantic salmon fingerlings held in troughs was conducted from June 19 to August 15, using the following diets: (1) 100 per cent beef liver, (2) 100 per cent beef hearts, (3) 50 per cent beef liver plus 50 per cent beef hearts, (4) 50 per cent beef liver plus 50 per cent fish meal. The greatest increase in weight and length was on Diet 1. Least loss was on Diet 2, and greatest weight of survivors was on Diet 3. Another experiment with the same species held in rearing tanks from August 16 to October 5 was tried using diets (1) 100 per cent liver, (2) 100 per cent Novascot fishbiox, (3) 25 per cent liver plus 75 per cent fishbiox, (4) 50 per cent liver plus 50 per cent fishbiox, (5) 25 per cent liver plus 25 per cent sheep plucks plus 50 per cent fishbiox. Diet 5 produced the greatest increase in weight and length and in weight of survivors. The least loss with with Diet 4, but this was only slightly less than with Diet 5.

River Philip pond was in charge of Assistant I. A. Mowat from Charlo hatchery. Necessary repairs were made to the dam, retaining pond, buildings, et cetera, and between September 23 and November 16 some 1,175 salmon averaging 15 pounds in weight were captured, which yielded November 5 to 16 over 7,337,700 eggs—the best collection at this pond since it was opened in 1928, and the best yield per female since 1936. Allotments were: 3,019,400 to Cobequid; 2,165,000 Bedford; 1,060,000 Middleton and 1,093,400 Lindloff. Aluminum tags were affixed to 500 of the parent salmon before they were released in River Philip.

COLDBROOK REARING PONDS

E. Barrett, Superintendent

Between May 25 and June 4 some 390,600 speckled trout fry were received from Bedford hatchery and on June 28, forty thousand rainbow trout fingerlings arrived from the establishment at Yarmouth. Middleton and Bedford trucks assisted in making the distributions which amounted to 39,300 rainbow and 340,000 speckled trout. Valuable assistance was also rendered by a number of the members of the King's County Fish and Game Protective Association and by the Fishery Inspector for the district. During the season thirty shades were built for the circular ponds, grounds were improved and the ponds relined with fresh gravel. A hard formation, apparently of algal growth, grew up the slope of the ponds, forming particularly under the shades. It was kept under control by lowering the water frequently, applying salt and exposing the growth to sunlight and air.

GRAND LAKE REARING PONDS

J. M. Butler, Superintendent

Bedford hatchery supplied the Grand Lake rearing ponds with 682,400 Atlantic salmon fry and fingerlings between May 8 and July 12, and in the fall Cobequid transferred thereto, 5,400 speckled trout yearlings, for winter rearing. In November, 43,500 sebago salmon eggs were secured from wild fish taken in Grand Lake and 16,500 were obtained from the stock maintained in the hatchery ponds. Distributions for the season were made with the assistance of the Bedford truck and consisted of 571,300 Atlantic salmon, 11,100 sebago salmon and 19,200 speckled trout. Some 11,138 of the two and three-year old sebagos were marked before being released by clipping their adipose and right ventral fins. Fifty Atlantic salmon fingerlings and 10 sebago parent fish were sent to the University of Toronto to be used in an investigation being conducted there. One hundred Atlantic salmon fingerlings were supplied Dr. A. G. Huntsman for use in temperature resistance test at Halifax, and 6,500 fingerlings of the same species to the Fisheries Research Board for Moser River.

An experiment was made in feeding sebago salmon three-year old parents from June to November. Those fed half the usual quantity of food produced a larger number of egg-bearing females and a greater yield per fish than did those on full or those on one-quarter the regular feed. During the year the grounds were improved and ponds repaired with clay and gravel.

KEJIMKUJIK REARING PONDS

F. F. Annis, Superintendent

The first allotment of advanced fry to arrive at the ponds was 100,000 speckled trout from Yarmouth on May 11. This was followed by 300,000 Atlantic salmon advanced fry from Bedford between June 8 and 17. Good growth in the fingerlings was made during the season and distributions completed October 1. The output amounted to 267,000 Atlantic salmon and 82,700 speckled trout. The growth of algæ which was heavy and a nuisance early in the season was overcome by draining the ponds daily to half full and exposing the algæ therein to the sun's rays so long as the safety and welfare of the fish permitted. For external parasites, fungus and as a general conditioner, formalin was used with good results in the ratio of one part per 6,000. Eleven such treatments followed by brine solution were given during the season. The trout at no time lost their bright colour, they had hardly any white spot, and fed well all summer. Results with salmon were equally satisfactory. Forty-five pond shades of the V type were completed.

LINDLOFF HATCHERY

Wm. T. Owens, Superintendent

The eggs on hand from the 1939 fall collection were supplemented by receipt on February 17 and March 2 of 1,000,000 speckled trout ova from Margaree hatchery. Fall collections of speckled trout eggs were made from the hatchery ponds, Lindloff and McRae Lakes. The ponds, from one-year and two-year stock, produced 518,400 eggs as compared with 17,700 the previous year. Lindloff Lake was a new venture and yielded 15,700 ova. McRae Lake produced 170,000 as compared with 30,000 in 1939 and 126,500 in 1938. The total collection is the best since trout eggs were first taken at Lindloff in 1937. On November 17, River Philip camp supplied 1,093,400 Atlantic salmon eggs. Distributions for the season amounted to 683,900 Atlantic salmon and 730,700 speckled trout of which the following speckled trout were marked by the removal of the adipose and left pectoral fins—7,000 fingerlings, 2,089 yearlings and 167 two-year olds.

An experiment in feeding speckled trout fingerlings June 10 to September 8 was conducted with the following diets:—(1) 100 per cent liver, (2) 50 per cent liver plus 50 per cent hog plucks, (3) 100 per cent hog plucks, (4) 50 per cent liver plus 50 per cent whitefish meal, (5) 50 per cent plucks plus 50 per cent fish meal, (6) 50 per cent liver plus 50 per cent salmon egg meal, (7) 50 per cent salmon egg meal plus 50 per cent hog plucks. The smallest loss during the period was with diet 2, and the greatest increase in length and weight per fish was with diet 5. The least cost of producing a pound of trout was with diet 7. Another experiment with Atlantic salmon fingerlings June 10 to September 8 was carried out using diets:—(1) 100 per cent liver, (2) 50 per cent hog plucks plus 50 per cent liver, (3) 100 per cent hog plucks, (4) 50 per cent hog plucks plus 50 per cent whitefish meal, (5) 50 per cent liver plus 50 per cent whitefish meal. The least loss for the period was with diet 1 and the greatest increase in weight per fish was with diet 5, but with diet 4 a close second. The most economical food from the standpoint of cost of producing 1 pound of salmon was diet 4.

With a view to promoting selective breeding the eggs from eleven individual pairs of the best specimens available in the two-year old speckled trout were segregated. They all averaged over 2,000 eggs per fish. A noticeable improvement in fishing conditions is reported in several waters. Grounds were improved and a garage 12 feet by 20 feet erected.

MARGAREE HATCHERY

W. D. Turnbull, Superintendent

The hatchery ponds produced 3,086,700 speckled trout eggs this season and these were supplemented by receipt of 2,037,800 Atlantic salmon eggs from the Margaree salmon pond. Outgoing shipments in February and March were 1,000,000 speckled trout eggs to Lindloff, and in April 1,000,000 Atlantic salmon ova to Antigonish, 400,000 to Middleton and 300,000 to Yarmouth. Distributions consisted of 2,504,200 Atlantic salmon and 1,495,300 speckled trout including 29,718 salmon fingerlings marked by the removal of the adipose and right pectoral fins, and 12,712 trout fingerlings, 1, 2, 3, 4 and five-year-olds similarly marked.

An experiment to compare results as between parent four-year old speckled trout deprived of food from July 1 to spawning time 1939, and those fed regularly, was conducted. The females not fed averaged 712 eggs, with an egg loss of 19.2 per cent and an egg survival to hatch of 575, as against a corresponding record for those fed regularly of per female yield 1,069, percentage loss 11.3 and egg survival 948. An experiment with Lugol's solution maintaining a control group to compare the growths and losses was started in a pond divided by a double screen of galvanized netting. The experiment, however, was discontinued when holes were found in the screen due to deterioration of the netting. During the winter of 1938-39 one group of yearling speckled trout were not given any artificial food from December 20 to April 15 following. This group lost 16 per cent of their original weight; while another group of the same number and age retained under similar conditions, but fed in the usual way increased their weight by 26 per cent during the same period. All were then fed as usual from April 15, 1939, to May 15, 1940, at which time six of those fed as usual weighed 8 pounds, whereas a similar number of those not fed during the winter of 1938-39 weighed only 5½ pounds. All groups of salmon and trout were given preventive treatments weekly by dipping and the constant flow syphon, using copper sulphate, acetic acid and salt. Formaldehyde treatment was tried out and found very effective for Costia.

MARGAREE SALMON-RETAINING POND

J. P. Chiasson, Superintendent

In accordance with the usual practice, the salmon for the Margaree Salmon Retaining Pond were purchased from the Margaree Harbour Salmon Fisheries Association. The Department endeavours to have the Association's net at Margaree Harbour operated in such a way as to permit of a reasonable distribution of the salmon that enter the river late in the season, between the Association and the anglers, and at the same time to assure of a fairly adequate number of adult salmon being secured for stripping and subsequent stocking of the Margaree River and neighbouring streams.

Preparations for taking fish began September 23, the pond was cleaned, gates repaired and wire enclosure fence erected. The Association's net was put in commission on October 1 and operated continuously until November 20. All the salmon taken during that period, a total of 298 only, averaging 11.4 pounds each, were impounded. Two million, thirty-seven thousand, eight hundred eggs were secured between November 14 and December 3 and laid down in the Margaree hatchery. Only six salmon were lost during operations beginning with the impounding of the first salmon on October 1 and the liberation of the last fish on December 6. The weather conditions were bad during the season with wind, snow and storms and the pond was at one time covered with as much as five inches of ice. Two hundred and ninety-one salmon were marked by attaching numbered aluminum tags to their dorsal fins.

MERSEY RIVER REARING PONDS

T. K. Lydon, Officer-in-Charge

Two hundred thousand Atlantic salmon advanced fry were transferred between June 3 and 8, from Nictaux to the Mersey River rearing ponds, and 111,600 vigorous, healthy fingerlings were distributed in September in the Mersey River below the ponds. The fingerlings grew well during the summer. Fifteen to twenty per cent were five inches or more in length when they were distributed.

MIDDLETON HATCHERY, STEVENS PONDS AND NICTAUX REARING STATION

F. M. Millett, Superintendent

In the early part of the year the following shipments of eyed eggs were received: January 2 to February 8, 800,000 speckled trout, purchased from Gilbert Trout hatchery, Massachusetts, U.S.A.; March 14, 100,000 salmon trout from Glenora hatchery, Ontario (an exchange for Atlantic salmon eggs); March 3, 698,700 Atlantic salmon from Nictaux; March 15, 200,000 speckled trout from Antigonish, and April 3, 400,000 Atlantic salmon from Margaree. In November 1,060,000 Atlantic salmon green eggs were received from River Philip pond. Outgoing shipments of Atlantic salmon eyed eggs were: March 4, 440,000 to Bedford and April 15, 397,000 to Nictaux. The shipment to Bedford was made necessary on account of temporary shortage of water at Middleton.

Distributions for the season were:—Atlantic salmon 437,000; salmon trout 63,000 and speckled trout 894,000, including 5,000 Atlantic salmon and 6,000 speckled trout fingerlings marked by the removal of the adipose and left ventral fins. The concrete headworks built at Stevens ponds in 1939 gave excellent results. A small building was erected at the hatchery to protect the deep well pump. Some very favourable reports were received on improved fishing in the district. The Fish, Forest and Game Associations again were much interested in the waters being stocked from this hatchery and the fishery inspectors, in many cases, have given valuable assistance in liberating the output.

The Nictaux rearing station was opened on February 27 and the first eggs, 700,000 Atlantic salmon from Kelly's pond hatchery were laid down on the twenty-ninth, but these, minus a small loss, were moved to Middleton on March 3 due to the water supply having been cut off, and the plant was closed until April when it was opened again on the fifteenth to receive 397,000 Atlantic salmon eggs from Middleton. Between June 3 and 8, 200,000 Atlantic salmon advanced fry were transferred to Mersey rearing station. The distribution from Nictaux was made on June 17 with an output of 133,000 salmon for the season. The Avon River power company again co-operated by placing the screen at the head of the canal before any smolt had descended the river and it was left in place until the run of smolts had passed.

YARMOUTH HATCHERY

H. V. Gates, Superintendent

The hatchery ponds this year produced 145,000 rainbow trout, 8,000 Kamloops and 49,000 speckled trout eggs. On April 4, 300,000 Atlantic salmon eggs were received from Margaree hatchery. Outgoing shipments for the season were: June 28 to Coldbrook 40,000 rainbow fingerlings and May 11 to Kejimikujik 100,000 speckled trout advanced fry. Distributions consisted of 244,000 Atlantic salmon, 125 Kamloops, 25,000 rainbow and 918,000 speckled trout. Of these 16,600 speckled trout fingerlings were marked by removal of the adipose and right ventral fins. Preliminary tests were made with cod liver residue fed to trout fingerlings and adults, alone and in combination with liver, and indications were that it could be used satisfactorily. High water temperatures prevailed this year again (78 to 81 degrees) and caused considerable loss in the speckled trout fingerlings. Low water conditions also obtained over the whole area served by this hatchery. The trap-net was again operated at Lake Annis for the capture of enemy fish and 1,383 were removed by this method. The officers of the administrative branch rendered much valuable assistance as well as the game associations, sportsmen and private citizens. The dwelling was improved during the year by construction of a new verandah.

CHARLO HATCHERY

R. O. Barrett, Superintendent

In March, 198,200 speckled trout eyed eggs were received from Florenceville hatchery and in April, 11,800 Atlantic salmon eyed eggs from Gaspé hatchery, Quebec, in exchange for a similar number of salmon eggs to compare the growth under similar conditions of fry and fingerlings from the two localities. The New Mills salmon fingerlings averaged 3 inches in length and the Gaspé fingerlings 2½ inches on October 3. Two million, five hundred and twenty-seven thousand, eight hundred Atlantic salmon eggs were received from New Mills salmon retaining pond in October and November and 1,000,500 from the previous autumn collection were transferred (eyed) to the Grand Falls hatchery during April. Distributions for the season amounted to 1,620,400 Atlantic salmon and 86,000 speckled trout.

During the year 64 V type pond shades were made, the grounds and 16 circular and 1 brood pond were improved.

Speaking of the Restigouche River in 1940 an old resident writes "From my many years of observation I have never seen so many grilse in the river as last year. The branches were full of them and I do not remember seeing them come into the river at so early a date as last year. As regards parr, they were also very plentiful." Members of the Restigouche Salmon Club state that they took seven times more grilse during the season than has been known for at least twenty years.

FLORENCEVILLE HATCHERY

George Sutherland, Superintendent

Movements of eyed eggs in March and April consisted of 1,300,000 Atlantic salmon from Miramichi and 10,000 speckled trout from Antigonish hatchery with 189,200 speckled trout sent to Charlo and 697,500 of the same species to Grand Falls hatchery. In the fall 41,200 sebago salmon eggs were secured from Clinch brook and 2,077,900 speckled trout from the hatchery ponds. Distribution of output for the year was 1,237,800 Atlantic salmon and 922,300 speckled trout, of which 36,714 speckled trout 1, 2, 3, 4 and 5 years old were marked by removal of the adipose and left pectoral fins.

An experiment was conducted in feeding speckled trout fingerlings from July 1 to August 31 as follows: Diet (1) 100 per cent liver, (2) 90 per cent liver plus 10 per cent fish meal, (3) 80 per cent liver plus 20 per cent fish meal. The least loss was with diet 2 but the greatest increase in weight per fish was with diet 1. Another experiment was started in 1939 to compare results as between parent three-year old speckled trout deprived of food from July 15 to spawning time and those fed regularly. In those not fed the yield per female was 438, the per cent loss in eggs until hatched in 1940 was 14.8 and eggs per female that survived to hatch 373; in those parents fed regularly, the corresponding figures were 689, 14.5 per cent and 589. The Fredericton branch of the New Brunswick Fish and Game Association as usual rendered valuable assistance with the distribution of fish in their district.

Repairs were made to the supply dam and a new gate installed in it. The hatchery was given a new roofing.

GRAND FALLS HATCHERY

W. A. McCluskey, Superintendent

This establishment received the following eggs: In March and April 697,500 speckled trout from Florenceville and 1,000,500 Atlantic salmon from Charlo hatchery, and in the autumn 890,400 speckled trout from Fraser's pond, Three Brooks. Distributions for the season were, Atlantic salmon 1,748,000 and speckled trout 784,100. Four hundred and ninety-six speckled trout yearlings reared at Florenceville hatchery were marked by removal of the adipose and both ventral fins before being distributed from the Grand Falls establishment.

The Grand Falls, St. Leonard, St. Anne de Madawaska and Madawaska Fish and Game Clubs gave good assistance in the planting of output from this hatchery. Nine V type screens were made for the circular ponds.

MIRAMICHI SALMON-RETAINING POND AND HATCHERY

Frank Burgess, Superintendent

As usual the adult fish for the retaining pond were secured by public tender and contract. One thousand five hundred and twenty-four salmon, averaging 8.5 pounds each, were captured in trap or pound nets which were fished continuously from September 9 to 15 and September 21 to October 15. All fish taken, however, were not available for stripping as some 423 escaped when the fences were flooded due to a severe freshet in September. The eggs, 5,513,500 in number, were secured between October 19 and November 12, and all were laid down for incubation in Miramichi hatchery. One marked fish (Newfoundland) was taken in the pond and released again after stripping with the same tag attached. It weighed 17½ pounds before and 14½ pounds after stripping.

On November 7 and 14 some 40,800 sea-run speckled trout eggs were laid down in this hatchery from Tweedie's Meadow brook. In March and April 1,800,000 Atlantic salmon eggs were shipped out, 500,000 to Saint John and 1,300,000 to Florenceville hatchery. Distributions for the season were, Atlantic salmon 3,170,200 and speckled trout 57,000.

Maple trees were planted, swamp land filled in and the grounds improved generally.

NEW MILLS SALMON-RETAINING POND

William White, Superintendent

Between May 22 and July 16, 500 salmon of the early run were purchased from the commercial fishermen of the district. They averaged 15.1 pounds in weight and yielded at stripping time, October 22 to November 13, 1,931,000 ova, all of which were laid down in Charlo hatchery. A further collection of late run salmon was made from a trap operated at Jacquet River. Here 237 salmon averaging 6 pounds in weight were taken, September 2 to October 16, and towed to New Mills pond where they yielded 596,800 eggs. All eggs were transferred to the Charlo hatchery.

SAINT JOHN HATCHERY, SAINT JOHN SALMON-RETAINING POND AND CHAMCOOK LAKES EGG-COLLECTING STATION

J. D. Nichol, Superintendent

P. B. Stratton, Hatchery Assistant

Eggs secured from fish retained in the hatchery ponds amounted to 113,900 rainbow trout and 1,575,800 speckled trout. On March 8, some 500,000 Atlantic salmon eggs were received from Miramichi hatchery and in the fall the following eggs, 974,400 salmon from the Saint John pond, 54,200 sebago from Chamcook Lakes camp, 256,300 speckled trout from Spears brook and 36,600 of the same species from Trout brook. In March, 25,000 Atlantic salmon eggs were shipped to Sault Sainte Marie hatchery and a similar quantity to Glenora hatchery, Ontario. These two shipments were on account of an exchange with the Provincial Department of Game and Fisheries, Toronto, for salmon trout eggs. On May 22 rainbow trout ova amounting to 101,300 were sent to Kelly's pond hatchery. Distributions for the season were, Atlantic salmon 622,500, speckled trout 824,000, rainbow trout 63 and sebago salmon 2,653. All the rainbow, sebago and 420 of the speckled trout were marked before being planted by removal of the adipose and one other fin. These marked fish were 1, 3, 4 and 6 years of age. Allotments for experimental study included 7,100 Atlantic salmon and speckled trout eggs to Doctor K. C. Fisher, Toronto, and 100 speckled trout in different stages of development from eggs to five-year old fish to the Atlantic Biological Station at Saint Andrews, N.B. Some 2,400 Atlantic salmon eyed eggs were also supplied at the request of the New Brunswick Government Bureau of Information and Tourist Travel in connection with the Sportsmen's show in New York in February.

Superintendent J. D. Nichol reached the superannuation age on March 17 and was replaced, pending a permanent appointment by Hatchery Assistant P. B. Stratton.

Several experiments were tried with satisfactory results using formalin as a disinfectant and curative for fin and gill rot in concentrations of 1:1,250, 1:2,000, 1:2,500, and 1:4,000. An experiment was conducted to compare the yield in the second year as between speckled trout stripped and not stripped as yearlings. Those not stripped when one year old yielded 469 eggs per female and showed a percentage loss in eggs to hatch of 23.3. Those stripped at one

year and again at two years of age yielded in the second year 607 eggs per female and showed a percentage loss to hatch of 24.4. In another experiment results were compared as between two-year parent speckled trout deprived of food from August 31, 1939, to stripping time and those fed regularly up to two weeks before stripping. Those not fed yielded 490 eggs per female, had a percentage loss in eggs to hatch of 42.2 and showed the eggs per female survival to hatch of 283. Those fed normally showed corresponding figures of 624, 28.5 per cent and 446. When the brood stock was being sorted early in the spring goitre appeared to be quite prevalent. Lugol's solution incorporated in the food was resorted to throughout the early summer, but later on when these fish were being fed largely on a fish diet which was thought to contain a sufficient iodine content the solution was discontinued. When handling these fish for stripping in the fall thyroid growth appeared to be absent except in one or two cases.

The road leading from the highway to the hatchery was gravelled and several improvements to grounds and buildings effected. Members of the New Brunswick Fish and Game Protective Association gave valuable assistance with distributions in their respective localities and this was particularly the case with the Saint John branch.

The Saint John salmon-retaining pond was fitted up in May, repairs made where necessary and everything placed in readiness for the 259 salmon which were received from the commercial fishermen between June 15 and August 16. They averaged 9.4 pounds each and between October 28 and November 7 supplied 978,600 eggs, all of which were laid down in the Saint John hatchery, except 4,255 sent Doctor K. C. Fisher, of Toronto, for experimental study.

Conditions at this pond are far from satisfactory. The fishermen are not supplying the numbers of fish expected. These numbers have dropped gradually from 1,334 in 1936, to 259 this year. Overhead expenses are costly, losses of parent fish during retention are heavy and the temperature rise is high. This year a dredge was working out in the bay and whenever the tide did come into the pond it usually brought in a heavy deposit of silt which cannot be considered beneficial to the fish. Taking everything into consideration it would appear that this pond has about outlived its usefulness and steps are being taken to close it and to secure the Saint John hatchery allotment of eggs in future from other points.

The collection of sebago salmon eggs at Chamcook Lakes was under the direction of Assistant T. K. Lydon of Saint John hatchery. He operated a trap net from October 23 to November 19 and secured 105 fish, averaging 2.4 lbs., from which from November 9 to 21 were obtained 54,600 eggs, all of which were laid down in the Saint John hatchery except a small shipment for the Saint Andrews Biological Station. Difficulty was experienced in trapping in that fairly low water obtained until the week ended November 16 and extremely high water thereafter. Males predominated over the females in number as shown by the catch, 62 males and only 43 females. This condition is directly opposite to what it was last year when females exceeded the males in number. Thirty-four of the 105 fish handled in 1940 or 32.4 per cent, had clipped fins, having been marked in this way before they were distributed.

CARDIGAN REARING PONDS

C. A. Tait, Superintendent

Preparatory work in connection with the ponds was commenced on May 13 to have them in readiness for 598,500 speckled trout and 85,800 rainbow trout advanced fry which arrived between May 23 and June 24 from Kelly's pond

hatchery. The output for the season was 82,000 rainbow and 537,000 speckled trout, which included 10,000 speckled trout No. 4 fingerlings marked by removal of the adipose and left pectoral fins. A nutritional test with speckled trout fingerlings was conducted in troughs from August 27 to October 19, feeding the following diets: (1) One hundred per cent liver, (2) sixty per cent liver plus forty per cent Silver Fur Food. Diet 2 produced the least loss for the period, but diet 1 afforded the greatest increase in weight and length per fish.

Twenty-four V type shades were made for the ponds and the grounds improved generally during the year.

KELLY'S POND HATCHERY AND MORELL RIVER SALMON-RETAINING POND

F. C. Hayley and C. A. Tait, Superintendents

As Superintendent F. C. Hayley had reached the superannuation age on March 29, he was replaced by Superintendent C. A. Tait of the Cardigan rearing station.

Local collections of speckled trout eggs made in the fall amounted to 24,700 from the hatchery pond and 3,700 of the sea-run variety from Fortune River. These collections were supplemented by 2,107,300 Atlantic salmon eggs from Morell pond and 191,900 speckled trout ova from Andrews and York ponds. Transfers from February to June were 101,300 rainbow trout from Saint John, 800,000 speckled trout from Antigonish, 700,000 Atlantic salmon to Nictaux, 85,800 rainbow and 598,500 speckled trout to Cardigan rearing ponds. Distributions for the year were Atlantic salmon 316,800 and speckled trout 148,000.

A cement foundation was placed under the hatchery dwelling, the cellar considerably enlarged and a furnace and electric pump installed. Six new troughs were built, repairs made to trough supports and to the inside wall at the east end of the hatchery. A new ramp to the upper floor was built, new floor laid upstairs in the hatchery and stay rods placed to strengthen the walls of the building.

At Morell salmon pond, Assistant C. Sayer was in charge. Between October 12 and November 18, 563 salmon were caught in the trap-net. They averaged nine pounds and when stripped November 12 to December 2 yielded 2,107,300 eggs, all of which were laid down in Kelly's Pond hatchery. This is the largest collection at Morell since 1937.

The run of salmon was reported better than the average for the last three years. The 1940 season was very stormy, with blizzards and very cold weather. A new pile-driver frame was built.

STATEMENT BY SPECIES, OF LOCAL COLLECTION AND DISPOSAL OF EGGS DURING 1940

Species	Collection area	First and last eggs	Number collected	Disposal—Establishment at	Number	Totals	
Atlantic salmon.....	Margaree pond, N.S.....	Nov. 14-Dec. 3...	2,037,800	Margaree.....	2,037,800		
	River Philip, N.S.....	Nov. 5-16.....	7,337,790	Cobequid.....	3,019,390		
				Bedford.....	2,165,000		
				Lindloff.....	1,093,400		
				Middleton.....	1,060,000		
		Sackville River, N.S.....	Nov. 4-16.....	635,700	Bedford.....	635,700	
		Miramichi pond, N.B.....	Oct. 19-Nov. 12..	5,513,521	Miramichi.....	5,513,521	
		New Mills pond (Chaleur Bay) N.B.....	Oct. 22-Nov. 13..	1,931,023	Charlo.....	1,931,023	
		New Mills pond (Jacquet River) N.B.....	Oct. 16-Nov. 13..	596,799	Charlo.....	596,799	
		St. John pond, N.B.....	Oct. 28-Nov. 7...	978,650	St. John.....	974,395	
					Dr. K. C. Fisher, University of To- ronto, Toronto, Ontario.....	4,255	
		Morell River, P.E.I.....	Nov. 12-Dec. 2...	2,107,300	Kelly's pond.....	2,107,300	21,138,583
	Kamloops trout.....	Yarmouth hatchery ponds, N.S.....	Apr. 25.....	8,000	Yarmouth.....	8,000	8,000
Sebago salmon.....	Grand Lake, N.S.....	Nov. 10-25.....	43,500	Grand Lake.....	43,500		
	Grand Lake rearing ponds, N.S.....	Nov. 18.....	16,500	Grand Lake.....	16,500		
	Chamcook Lakes, N.B.....	Nov. 9-21.....	54,610	St. John.....	54,250		
				Atlantic Biological Station, St. An- drews, N.B.....	360		
	Clinch brook, York County, N.B.....	Nov. 8-15.....	41,194	Florenceville.....	41,194	155,804	
Rainbow trout.....	Antigonish hatchery ponds, N.S.....	Mar. 30-Apr. 26..	280,000	Antigonish.....	280,000		
	Yarmouth hatchery ponds, N.S.....	Apr. 2-May 2.....	145,000	Yarmouth.....	145,000		
	St. John hatchery ponds, N.B.....	Apr. 26-May 9...	113,875	St. John.....	113,875	538,875	
	Anderson Lake, B.C.....	Oct. 24-31.....	980,000	Anderson Lake.....	980,000	980,000	
Sockeye salmon.....	Antigonish hatchery ponds, N.S.....	Oct. 12-Dec. 21..	9,196,730				
			(a) 12,829,290	Antigonish.....	22,026,020		
	Cobequid hatchery ponds, N.S.....	Oct. 17-Dec. 19..	1,516,794				
			(a) 335,301	Cobequid.....	1,852,095		
	Lindloff hatchery ponds, N.S.....	Oct. 15-Dec. 16..	81,509				
			(a) 436,883	Lindloff.....	518,392		
	Lindloff Lake, N.S.....	Oct. 13-19.....	15,709	Lindloff.....	15,709		
	McRae Lake, Richmond County, N.S.....	Oct. 3-11.....	169,974	Lindloff.....	169,974		
	Margaree hatchery ponds, N.S.....	Oct. 18-Dec. 21..	2,347,945				
			(a) 738,720	Margaree.....	3,086,665		
	Yarmouth hatchery ponds, N.S.....	Oct. 25-Nov. 8...	40,000				
			(a) 9,000	Yarmouth.....	49,000		

Florenceville hatchery ponds, N.B.....	Oct. 8-Dec. 18....	1,904,818			
		(a) 173,068	Florenceville.....	2,077,886	
St. John hatchery ponds, N.B.....	Oct. 17-Dec. 11..	1,470,333			
		(a) 105,463	St. John.....	1,575,796	
Spears brook, Charlotte County, N.B.....	Oct. 12-Nov. 12..	256,260	St. John.....	256,260	
Trout brook, Charlotte County, N.B.....	Oct. 12-Nov. 12..	36,624	St. John.....	36,624	
Tweedie's Meadow brook, Kent County, N.B....	Nov. 7,14.....	(b) 40,782	Miramichi.....	40,782	
Fortune River, P.E.I.....	Nov. 25.....	(a) 3,740	Kelly's pond.....	3,740	
Kelly's pond hatchery pond, P.E.I.....	Nov. 23-Dec. 26..	24,660	Kelly's pond.....	24,660	
					31,733,603
					54,554,865

(a) Eggs from yearling fish.

(b) Sea run variety.

EYED EGGS PURCHASED IN 1940

Species	Month laid down	Purchased from	Laid down in hatchery	Number paid for	Total by species
Speckled trout.....	January, February.....	Gilbert Trout Hatchery, Plymouth, Mass.....	Middleton.....	786,200	1,614,555
	October, November.....	Donald Fraser Estate, Plaster Rock, N.B.....	Grand Falls.....	657,000	
	November, December.....	Harold Watts, York, P.E.I.....	Kelly's Pond.....	171,355	

Summary of eggs received: Eggs collected 54,554,865; Eggs purchased 1,614,555; Total 56,169,420.

EXCHANGED EYED EGGS RECEIVED 1940

From Department of Game and Fisheries, Toronto, Ontario, in exchange for Atlantic salmon:—

Salmon trout from Glenora fish hatchery, laid down at Middleton hatchery..... 100,000

From Department of Lands and Forests, Game and Fisheries, Quebec, in exchange for Atlantic salmon:—

Atlantic salmon from Gaspé hatchery, laid down at Charlo hatchery..... 11,840

In the interest of economy and convenience in distribution the following transfers were made in 1940:—

Species	Stage	From	To	Number	Date received	
Atlantic salmon..	(d)	(a) Bedford.....	Grand Lake.....	181,700	May 8-June 14	
	(e)	(a) Bedford.....	Grand Lake.....	500,711	June 21-July 12	
	(d)	(a) Bedford.....	Kejimikujik.....	300,000	June 8-17	
	(c)	(a) Margaree.....	Antigonish.....	1,000,000	April 12	
	(c)	(a) Margaree.....	Middleton.....	400,000	April 3	
	(c)	(a) Margaree.....	Yarmouth.....	300,000	April 4	
	(e)	(a) Middleton.....	Bedford.....	440,000	March 4	
	(c)	(a) Middleton.....	Nictaux.....	397,000	April 15	
	(d)	(a) Nictaux.....	Mersey.....	200,000	June 3-8	
	(c)	(a) Nictaux.....	Middleton.....	698,700	March 3	
	(c)	(a) Charlo.....	Grand Falls.....	1,000,456	April 26	
	(c)	(a) Miramichi.....	Florenceville.....	1,300,000	April 5	
	(c)	(a) Miramichi.....	St. John.....	500,000	March 8	
	(c)	(a) Kelly's Pond.....	Nictaux.....	700,000	February 29	
	(e)	(b) Yarmouth.....	Coldbrook.....	40,000	June 28	
	Rainbow trout....	(c)	(b) St. John.....	Kelly's Pond.....	101,276	May 23
		(d)	(b) Kelly's Pond.....	Cardigan.....	85,845	June 22, 24
Speckled trout....	(c)	(a) Antigonish.....	Bedford.....	1,200,000	March 15	
	(c)	(a) Antigonish.....	Cobequid.....	1,000,000	March 12	
	(c)	(a) Antigonish.....	Middleton.....	200,000	March 15	
	(c)	(a) Antigonish.....	Florenceville.....	10,000	March 13	
	(c)	(a) Antigonish.....	Kelly's Pond.....	800,000	March 12	
	(d)	(a) Bedford.....	Coldbrook.....	390,586	May 25-June 4	
	(f)	(a) Cobequid.....	Grand Lake.....	5,400	Oct. 2-Dec. 9	
	(c)	(a) Margaree.....	Lindloff.....	1,000,000	Feb. 17-March 2	
	(d)	(a) Yarmouth.....	Kejimikujik.....	100,000	May 11	
	(c)	(a) Florenceville.....	Charlo.....	198,240	March 15	
(c)	(a) Florenceville.....	Grand Falls.....	697,500	March 13		
(d)	(a) Kelly's Pond.....	Cardigan.....	598,516	May 23-June 3		

(a) 1939 fall collection. (b) 1940 collection. (c) eyed eggs. (d) fry. (e) fingerlings.
(f) yearlings.

TAGGING AND MARKING OF FISH

The tagging of Atlantic salmon, which was commenced in 1913, was continued in 1940, as shown in table No. 1, in the St. Mary River by Mr. Albert E. S. Whittaker and at the Margaree and River Philip salmon retaining ponds by the department. The adipose and one of the side fins were removed from 215,612 Atlantic and landlocked salmon, rainbow and speckled trout before they were distributed. The object of the tagging is to add to existing information in regard to the movements of the fish, frequency in spawning and the extent to which "early" salmon of any year may return to fresh water as "early" fish or as "late" fish. The marking or fin clipping is for the purpose of gaining further information in regard to the movements, growth and survival of hatchery product.

The recaptures of clean salmon (tagged in most cases as kelt after they were stripped and had spent one or more seasons in the sea) that were reported up to December 31, 1938, were summarized in the Annual Report on Fish Culture for that year. Eighty-eight more were reported in 1939 and 1940. Recaptures reported up to December 31, 1940, constituted 2.71 per cent of the total number tagged from 1913 to 1939 inclusive. The recaptures in 1940 are shown in table No. 2. The recaptures of salmon tagged at different points, that have been reported, range from nil from the Tabusintac River to 5.63 per cent from the Margaree River tagging. The respective percentages are shown in table No. 3. One hundred and eighty-two or 37.5 per cent of the total recaptures were taken within one year; 295 or 60.7 per cent within two years; 4 or .8 per cent

within three years; 4 or .8 per cent within four years and one salmon or .2 per cent within five years of the date on which they were tagged and liberated. The fifth year fish was tagged at the Margaree Harbour pond and recaptured at La Pointe, Inverness County, N.S.

The extent of the fin clipping and the recaptures of fin clipped fish that were reported in 1940 are shown in tables No. 4 and 5, respectively. The percentage of these marked fish that have been reported from the different districts varies greatly in relation to the number that were marked in this way. Apparently the anglers and residents of some districts are not prepared to co-operate to the extent of reporting the taking of marked fish by postcards provided by the Department or by reporting verbally to the nearest fishery officer, although at the same time they do not hesitate to complain if the angling is not as good as it used to be when the fishing effort was only a fraction of what it is at the present time.

TABLE No. 1.—ADULT ATLANTIC SALMON, TAGGED BY AFFIXING ALUMINUM TAGS TO THE DORSAL FIN, 1940

	Number tagged	Period of tagging	Where liberated
<i>Nova Scotia</i> —			
St. Mary River, Guysborough Co.	3(a)	July 16, 17, 19.....	St. Mary River.
Margaree pond.....	291	Nov. 19-Dec. 5.....	Margaree Harbour.
River Philip pond.....	500	Dec. 6-14.....	River Philip.

(a) These 3 grilse were tagged by Mr. Albert E. S. Whittaker at Stillwater pool.

TABLE No. 2.—RECAPTURES, 1940—ATLANTIC SALMON

MARGAREE RIVER, N.S.

Number	Weight (pounds)	Length (inches)	Condition	Sex	Date	1. Where liberated 2. Where caught
K153	(d)	.....	.....	.....	Oct. 3, 1938	Margaree Salmon Fisheries Association net, Margaree Harbour, N.S.
	22	36	Clean.....	.....	July 5, 1940	La Pointe, Inverness County, N.S.
K218	(d)	.....	.....	.....	Oct. 3, 1938	Margaree Salmon Fisheries Association net, Margaree Harbour, N.S.
	19	36 1/6	Clean.....	.....	July 15, 1940	Margaree River, at Black Rock, N.S.
K220	(d)	.....	.....	.....	Oct. 3, 1938	Margaree Salmon Fisheries Association net, Margaree Harbour, N.S.
	(v) 20	.....	Clean.....	.....	Aug. 26, 1940	Ross Pool, Margaree River, N.S.
K305	(d)	.....	.....	.....	Oct. 4, 1938	Margaree Salmon Fisheries Association net, Margaree Harbour, N.S.
	(w)(aa) 15	.....	Clean.....	.....	Summer 1939	Charge Du Lac Point, La Tabatiere, Que.
K1756	(d)	.....	.....	M	Sept. 28, 1939	Margaree Salmon Fisheries Association net, Margaree Harbour, N.S.
	(w)	.....	Clean.....	M	Oct. 1939	Margaree River, at Margaree Forks, N.S.
K1770	(d)	.....	.....	F	Sept. 29, 1939	Margaree Salmon Fisheries Association net, Margaree Harbour, N.S.
	(z) (u) 11	35	Clean.....	F	1940	(a) Margaree Pond, N.S.

TABLE No. 2.—RECAPTURES, 1940—ATLANTIC SALMON—Continued

MARGAREE RIVER, N.S.—Concluded

Number	Weight (pounds)	Length (inches)	Condition	Sex	Date	1. Where liberated 2. Where caught
K1792	(d)	.....	.....	F	Sept. 30, 1939	Margaree Salmon Fisheries Association net, Margaree Harbour, N.S.
	(w)	.....	Clean.....	F	Oct. 1939	Margaree River, at Margaree Forks, N.S.
K1816	(d)	.....	.....	F	Oct. 3, 1939	Margaree Salmon Fisheries Association net, Margaree Harbour, N.S.
	15	29	Kelt.....	F	May 15, 1940	Margaree Harbour, N.S.
K1854	(d)	.....	.....	M	Oct. 8, 1939	Margaree Salmon Fisheries Association net, Margaree Harbour, N.S.
	(v) 8	31	Kelt.....	M	May 11, 1940	Hart Pool, Margaree River, N.S.

RIVER PHILIP, N.S.

K1117	7	30	Kelt.....	F	Nov. 13, 1939	River Philip Pond, N.S.
	9	.....	Clean.....	F	July 22, 1940	Fishing Ships Harbour, Labrador.
K1174	13	34	Kelt.....	F	Nov. 15, 1939	River Philip Pond, N.S.
	.....	.....	Kelt.....	F	June 20, 1940	Friar Head, Inverness County, N.S.
K1361	13½	33	Kelt.....	F	Nov. 10, 1938	River Philip Pond, N.S.
	(z) (u) 14	36	Clean.....	F	1940	(c) River Philip Pond, N.S.
K1368	16½	36	Kelt.....	F	Nov. 10, 1938	River Philip Pond, N.S.
	26	41½	Clean.....	F	June 22, 1940	George Bay, at Morristown, Antigonish County, N.S.
K1635	14	34	Kelt.....	F	Nov. 13, 1938	River Philip Pond, N.S.
	(z) (u) 13	37	Clean.....	F	1940	(c) River Philip Pond, N.S.
K2491	7	29½	Kelt.....	M	Nov. 17, 1939	River Philip Pond, N.S.
	.....	.....	Kelt.....	M	April 16, 1940	River Philip District, N.S.

MIRAMICHI RIVER, N.B.

105	9½	31	Kelt.....	F	Oct. 27, 1937	Miramichi Pond, N.B.
	14½	39½	Kelt.....	F	May 22, 1940	Northwest Miramichi River, above Redbank Bridge, N.B.
618	10	29½	Kelt.....	F	Nov. 2, 1937	Miramichi Pond, N.B.
	11½	36	Kelt.....	F	May 27, 1940	Miramichi River (north side) opposite Loggieville, N.B.

NEW MILLS POND, N.B.

K2642	6½	28	Kelt.....	M	Nov. 1, 1939	New Mills Pond, N.B.
	11½	.....	Clean.....	M	July 22, 1940	At Cooper Head, near south entrance to Squash's Run, Tub Harbour (near Venison Islands) Labrador.
K2688	6½	30½	Kelt.....	M	Nov. 1, 1939	New Mills Pond, N.B.
	.....	.....	Clean.....	M	June 4, 1940	Chaleur Bay, at Miguasha West, Que.

TABLE No. 2.—RECAPTURES, 1940—ATLANTIC SALMON—*Concluded*

ST. JOHN RIVER, N.B.

Number	Weight (pounds)	Length (inches)	Condition	Sex	Date	1. Where liberated 2. Where caught
K423	9½	32½	Kelt.....	F	Nov. 7, 1938	St. John Pond, N.B. Bay of Fundy, three miles south of Negro Head, N.B.
	17	.....	Clean.....	F	June 23, 1940	
K582	10	32	Kelt.....	F	Nov. 11, 1938	St. John Pond, N.B. Bay of Fundy, two miles off Musquash, N.B.
	19	38	Clean.....	F	1940	
K640	9	32	Kelt.....	F	Nov. 11, 1938	St. John Pond, N.B. Bay of Fundy, seven miles south by southeast of Dipper Har- bour, N.B.
	17	37½	Clean.....	F	June 10, 1940	
K784	12	32	Kelt.....	F	Nov. 12, 1938	St. John Pond, N.B. Nashwaak River, at Clark's Island, above Marysville, N.B.
	.....	35	Clean.....	F	April 28, 1940	
K834	12	33	Kelt.....	F	Nov. 12, 1938	St. John Pond, N.B. St. John Harbour, near Navy Island, N.B.
	20½	.....	Clean.....	F	June 27, 1940	

(aa) Estimated dressed weight.

(a) Caught for second time for fish cultural purposes, Oct. 1-Nov. 14, 1940.

(c) Caught for second time for fish cultural purposes, Sept. 23-Nov. 6, 1940.

(d) Tagged and liberated without weighing or measuring, etc.

(u) Liberated with same tag attached.

(v) Weight estimated.

(w) Reported in 1940.

(z) Weight after stripped.

TABLE No. 3.—PERCENTAGE RECAPTURES OF CLEAN SALMON TAGGED AND LIBERATED FROM THE SEVERAL POINTS, FROM 1913 TO 1939, INCLUSIVE

	Per Cent
Allen's Lake and Port Maitland, N.S.	1.89
Margaree River, N.S.	5.63
Nictaux River, N.S.	3.91
River Philip and Wallace River, N.S.	0.76
Sackville River, N.S.	4.23
Miramichi and Cains Rivers, N.B.	1.60
Tabusintac River, N.B.	Nil
Restigouche River and tributaries and New Mills, N.B.	1.27
Nipisiguit River, N.B.	1.37
St. John River, N.B.	2.18
Morell River, P.E.I.	2.80
Saguenay River, Tadoussac, P.Q.	2.34
York River, P.Q.	0.61

TABLE No. 4—FISH MARKED BY FIN CLIPPING, 1940

	Number marked fish distributed	Species	Age	Distributed	Nature of mark: Removal of
<i>Nova Scotia—</i>					
Antigonish hatchery.....	81	Rainbow trout.....	Five years..	Apr. 27, 30—Giant Lake.....	Adipose and right pectoral
	3,500	Speckled trout.....	Yearlings...	May 16, Nov. 23, Dec. 13—Calder Lake.....	" "
	1,300	" "	" "	May 9, Nov. 27—Coece Coffre Lake.....	" "
	2,000	" "	" "	May 4, Nov. 7—Copper Lake, Antigonish County.....	" "
	2,000	" "	" "	May 10, Dec. 17—Cutler Lake.....	" "
	900	" "	" "	May 20, Nov. 7—Dewar dam, Barney River.....	" "
	2,100	" "	" "	May 6, Nov. 21—Dobson Lake.....	" "
	3,327	" "	" "	May 8, Nov. 22, Dec. 10—Donahue Lake.....	" "
	555	" "	" "	May 21—Gaspereaux Lake.....	" "
	1,200	" "	" "	Dec. 18—Hazel Hill Lake.....	" "
	1,868	" "	" "	Dec. 10, 23—Jellow Lake.....	" "
	1,600	" "	" "	May 4, Nov. 16—McLean or James River Lake.....	" "
	1,200	" "	" "	Dec. 24—McMillan Lake.....	" "
	500	" "	" "	May 21—North Lake.....	" "
	1,300	" "	" "	Dec. 24—Pinevale Lake.....	" "
	3,600	" "	" "	May 7, Dec. 11, 23—Sherbrook Lake.....	" "
	3,000	" "	" "	May 11, Nov. 9, Dec. 13—Stewart dam, tributary to Little Harbour.....	" "
	1,000	" "	" "	Dec. 16—Three Mile Lake.....	" "
	898	" "	" "	Dec. 11—West River, Pictou County.....	" "
	305	" "	Two years..	Dec. 10—Jellow Lake.....	" "
	1,101	" "	" "	Dec. 10—West River, Antigonish County.....	" "
	900	" "	Three years.	Nov. 27—Gaspereaux Lake.....	" "
	399	" "	" "	Dec. 10—West River, Antigonish County.....	" "
	123	" "	Four years..	Dec. 10—Donahue Lake.....	" "
	27	" "	" "	Dec. 10—Jellow Lake.....	" "
	302	" "	" "	Dec. 11—West River, Pictou County.....	" "
Cobequid hatchery.....	22,215	Atlantic salmon.....	Fingerlings..	Sept. 3—Oct. 8—River Philip.....	Adipose and right ventral
	3,500	Speckled trout.....	Yearlings...	June 27—Folly Lake.....	" "
	1,000	" "	" "	Aug. 5—Gilbert Lake.....	" "
	600	" "	" "	Aug. 25—Irving Lake.....	" "
	500	" "	" "	July 30—Leak Lake.....	" "
	1,500	" "	" "	July 16—Long Lake—Tantramar River.....	" "
	1,000	" "	" "	Aug. 6—McAloney Lake.....	" "
	300	" "	" "	June 14—McLeod Lake.....	" "
	600	" "	" "	Aug. 25—Rocky Lake.....	" "
	1,695	" "	" "	July 9—Silver Lake or Morice Pond.....	" "
	3,241	" "	" "	May 29, July 2—Simpson Lake.....	" "
	3,500	" "	" "	May 30, June 28—Sutherland Lake.....	" "
	600	" "	" "	Sept. 30—Truro Reservoir, Leper brook.....	" "

Grand Lake rearing ponds.	1	Ouananiche.....	Four years..	Mar. 16—Grand Lake.....	Adipose and left ventral
	9,609	Sebago salmon..	Two years..	June 27 to Oct. 2—Grand Lake.....	Adipose and right ventral
	1,529	" "	Three years..	Mar. 16 to Aug. 14—Grand Lake.....	
Lindloff hatchery.....	1,000	Speckled trout..	Fingerlings..	Nov. 2—Mary Ann's Lake.....	Adipose and left pectoral
	5,000	" "	" "	Oct. 30—Potties Lake (Madame Island).....	" "
	1,000	" "	" "	Nov. 2—Thompson Lake.....	" "
	2,089	" "	Yearlings....	May 8, Dec. 7—McIntyre Lake.....	" "
	167	" "	Two years..	May 8, Dec. 7—McIntyre Lake.....	" "
Margaree hatchery.....	29,718	Atlantic salmon..	Fingerlings..	Sept. and Oct.—Northeast Margaree River.....	Adipose and right pectoral
	8,000	Speckled trout..	" "	Dec. 10—Lake O'Law.....	" "
	2,500	" "	" "	Dec. 10—Lake O'Law, upper.....	" "
	800	" "	Yearlings....	Dec. 27—Lake O'Law.....	" "
	308	" "	Two years..	Dec. 18—Lake O'Law.....	" "
	211	" "	Three years..	Dec. 18—Lake O'Law.....	" "
	124	" "	Three and		
		" "	Four years..	Dec. 18—Lake O'Law.....	" "
	114	" "	Four years..	Dec. 3—Plaster pond.....	" "
	655	" "	Five years..	Dec. 3—Lake O'Law.....	" "
Middleton hatchery.....	5,000	Atlantic salmon..	Fingerlings..	Sept. 26—Gaspereau River.....	Adipose and left ventral
	3,000	Speckled trout..	" "	Sept. 20—Serag Lake.....	" "
	3,000	" "	" "	Sept. 3—Spectacle Lake—Maligeak Lake.....	" "
Yarmouth hatchery.....	6,000	" "	" "	Nov. 13—Granite Lake.....	Adipose and right ventral
	2,000	" "	" "	Nov. 6—Granite Village brook.....	" "
	5,600	" "	" "	Oct. 31—Harris Lake.....	" "
	3,000	" "	" "	Nov. 6—Tigney brook.....	" "
New Brunswick—					
Florenceville hatchery....	1,200	Speckled trout..	Yearlings....	Aug. 5, 8—Brown Lake.....	Adipose and left pectoral
	2,000	" "	" "	Aug. 14, 15, 17—Bulls creek—St. John River.....	" "
	1,600	" "	" "	Sept. 21, 23—Bull creek—Eel River.....	" "
	1,300	" "	" "	Aug. 15, 17—Cranberry Lake.....	" "
	1,200	" "	" "	Aug. 2, 6—Cross creek—Nashwaak River.....	" "
	1,500	" "	" "	Aug. 14, Sept. 17—Davidson Lake.....	" "
	2,400	" "	" "	Sept. 18, 24, 27—Second Eel Lake.....	" "
	1,200	" "	" "	July 29, Aug. 1—Gibson Mill brook, north branch.....	" "
	1,900	" "	" "	Aug. 29, Sept. 28—Big Guisiguit River.....	" "
	2,753	" "	" "	Aug. 30, Sept. 18, 28—Little Guisiguit River.....	" "
	600	" "	" "	Aug. 8—Hagerman brook—St. John River.....	" "
	600	" "	" "	Sept. 19—Lanes creek—St. John River.....	" "
	600	" "	" "	Aug. 13—Limekiln brook—Nashwaak River.....	" "
	600	" "	" "	Sept. 17—McLeary brook—Lakeville pond.....	" "
	900	" "	" "	Sept. 17—Maynes brook—Little Presquile River.....	" "
	1,200	" "	" "	Aug. 9, 16—Mill brook—Mactaquac River.....	" "
	1,200	" "	" "	Aug. 3, 7—Nashwaakis River.....	" "
	2,400	" "	" "	Aug. 1, Sept. 16, 25—Pokiok River.....	" "
(c)	496	" "	" "	Nov. 25—Private pond, Power creek, Mr. Zeno Martin.....	Adipose and both ventrals
	1,600	" "	" "	Sept. 23, 28—River de Chute.....	Adipose and left pectoral
	3,000	" "	" "	Aug. 10, Sept. 20, 21—Shogomoc River.....	" "
	800	" "	" "	Sept. 20—Tafia Lake.....	" "

TABLE No. 4—FISH MARKED BY FIN CLIPPING, 1940—*Concluded*

	Number marked fish distributed	Species	Age	Distributed	Nature of mark: Removal of
<i>New Brunswick—Concluded</i>					
Florenceville hatchery (concluded)....	200	Speckled trout.....	Two years..	July 30—Manzer Mill stream—Nashwaak River.....	Adipose and left pectoral
	400	“ “.....	“ ..	July 24, 26—Middle brook—Nashwaak River.....	“ “
	300	“ “.....	“ ..	July 31—Northeast Nackawic River.....	“ “
	300	“ “.....	“ ..	July 27—Rusagonis River.....	“ “
	250	“ “.....	Three years..	July 8, 9—Brown Lake.....	“ “
	335	“ “.....	“ ..	June 8, 28—Cross creek—Nashwaak River.....	“ “
	335	“ “.....	“ ..	May 30, July 5—Davidson Lake.....	“ “
	175	“ “.....	“ ..	June 29—Limekiln brook—Nashwaak River.....	“ “
	445	“ “.....	“ ..	May 29, 31, July 16—Nashwaakis River.....	“ “
	250	“ “.....	“ ..	May 28, July 9—Pokiok River.....	“ “
	200	“ “.....	“ ..	July 12, 15—River de Chute.....	“ “
	200	“ “.....	“ ..	June 24—Shogomoc River.....	“ “
	175	“ “.....	“ ..	June 25—Tay creek.....	“ “
	175	“ “.....	“ ..	June 22—Tinkettle brook—Nashwaak River.....	“ “
	350	“ “.....	Four years..	June 7, 19—Cranberry Lake.....	“ “
	350	“ “.....	“ ..	June 17, July 6—Second Eel Lake.....	“ “
	100	“ “.....	“ ..	May 27—Hagerman brook—St. John River.....	“ “
	250	“ “.....	“ ..	July 12, 15—McLeary brook—Lakeville pond.....	“ “
	75	“ “.....	“ ..	July 9—Pokiok River.....	“ “
	300	“ “.....	Five years..	May 25, June 3—Bulls creek—St. John River.....	“ “
	200	“ “.....	“ ..	May 25, 27—Big Guisiguit River.....	“ “
	200	“ “.....	“ ..	May 25, 27—Little Guisiguit River.....	“ “
	100	“ “.....	“ ..	May 28—Hardwood brook—St. John River.....	“ “
St. John hatchery.....	63	Rainbow trout.....	Four years..	Aug. 15—Crooked creek.....	Adipose and right ventral
	2,653	Sebago salmon.....	Yearlings..	Aug. 29—Chamcook Lake.....	Adipose and left ventral
	175	Speckled trout.....	Three years..	May 14—Douglas Lake.....	“ “
	89	“ “.....	“ ..	May 14—Loch Lomond.....	“ “
	152	“ “.....	Four years..	May 14—Loch Lomond.....	“ “
	4	“ “.....	Six years....	May 14—Loch Lomond.....	“ “
<i>Prince Edward Island—</i>					
Cardigan rearing ponds....	(d) 2,000	Speckled trout.....	Fingerlings..	Oct. 25—Cardigan River, below Fishery dam.....	Adipose and left pectoral
	(d) 8,000	“ “.....	“ ..	Oct. 26—Watt’s stream, between Hardy’s and Thom- son’s ponds.....	“ “
Total.....	215,612				

(c) Marked by Grand Falls hatchery staff.

(d) Antigonish stock.

The 30 rainbow trout caught in Giant Lake were returns from 81 rainbow five-year olds distributed from the Antigonish hatchery spring 1940.

The recaptures of marked speckled trout reported from the Antigonish area up to the close of the angling season in 1940 represents 20.8 per cent of the number marked and distributed from the hatchery from 1935 to the end of 1939. The respective percentage recaptures of the marked fish distributed in the several lakes and streams in this district vary considerably, as shown in the following summary:

Water	Number marked fish distributed	Number recaptured	Percentage recaptured
Calder Lake.....	1,008	60	5.9
Campbell Lake-River John.....	900	24	2.7
Coocoe Coffre Lake.....	1,800	519	28.8
Copper Lake (Antigonish County).....	1,800	590	32.8
Cutler Lake.....	3,313	900	27.2
Dewar dam-Barney River.....	550	194	35.3
Dobson Lake.....	1,468	272	18.5
Donahue Lake.....	3,000	852	28.4
Grant Lake.....	200	36	18.0
James River Lake or McLean Lake.....	1,800	644	35.8
Long Lake-East River St. Mary.....	3,504	77	2.2
McDonald dam-East River.....	200	54	27.0
McKeen Lake.....	200	24	12.0
Mountain Meadow pond-West River (Pictou County).....	150	41	27.3
Sherbrook Lake.....	3,163	860	27.2
Simon Lake.....	690	213	30.8
South River Lake.....	1,816	69	3.8
Stewart dam on tributary to Little Harbour.....	3,425	1,243	36.3
Trout Lake.....	200	64	32.0
West River (Antigonish County).....	3,875	53	1.4

The marked trout taken from Sherbrook Lake and tributaries were caught at widely scattered points although distributions were made in the lake proper.

Many marked sebage salmon under the size limit were taken in Grand Lake, N.S., and returned to the water, and during the collecting work approximately sixty were taken and liberated.

The thirty-four marked sebage salmon that were taken during egg collecting operations along with those reported by anglers represent 32.2 per cent of the total catch in the Chamcook Lakes for the angling season of 1940.

NOVA SCOTIA
ANTIGONISH HATCHERY

	Atlantic salmon fingerlings No. 1	Rainbow trout		Speckled trout								
		Fingerlings No. 1	Five years	Advanced fry	Fingerlings			Yearlings	Two years	Three years	Four years	
					No. 1	No. 2	No. 3					
Antigonish Co.—												
Beaver Meadow River.....					147,457							
Black River.....					60,000	4,000						
Brierly brook.....					20,000							
Copper Lake.....				20,000	15,000			2,000				
Gaspereaux Lake.....								555			900	
Glenroy River.....				50,000	40,000							
James River.....	50,000											
McLean or James River Lake.....					15,000			1,600				
McMillan Lake.....								1,200				
Maryvale or Malignant brook.....					20,000							
Meadow Green River.....				50,000	40,000							
North Lake.....				35,000				500				
Pinevale Lake.....								1,300				
Polson brook-South River.....				20,000	15,000							
Pomquet River.....						4,000						
Rights River.....	70,000											
South Lake.....				35,000								
South River.....	50,400					15,000		380	174	44	121	
South River Lake.....				45,000	20,000							
Springfield brook-Glenroy River.....					15,000							
West River.....					145,000				1,101	399		
Guysborough Co.—												
Canter Lake.....					10,000							
Cole Harbour Lakes.....					65,000		3,500					
Coose Coffre Lake.....					30,000			1,300				
Country Harbour River.....	50,000											
Cudahys Lake.....					10,000							
Cutler Lake.....								2,000				
Dobson Lake.....					70,000		3,500	2,100				
Donahue Lake.....					80,000		2,500	3,327				
Doyle Lake.....					20,000							
Ecumsecum River.....				65,000								
Eight Island Lake.....				15,000								
Fitzgerald Lake.....							2,500					
Giant Lake.....												

ANTIGONISH HATCHERY—Concluded

	Atlantic salmon fingerlings No. 1	Rainbow trout		Speckled trout							
		Fingerlings No. 1	Five years	Advanced fry	Fingerlings			Yearlings	Two years	Three years	Four years
					No. 1	No. 2	No. 3				
Guysborough Co.—Concluded											
Goldboro or Goldbrook Lake.....					25,000						
Guysborough River.....	10,000				50,000						
Hazel Hill Lake.....					65,000			1,200			
Hydro dam, Havre Bouche brook.....					30,000			3,500			
Indian Harbour Lake.....				40,000							
Jellow Lake.....					50,000			1,868	305		27
Lawlor Lake.....						3,000					
Long Lake-Salmon River.....					40,000						
McPherson Lake (Port Shoreham).....					40,000						
Morrison Lake.....					25,000						
Narrow Lake.....					25,000						
Nickerson Lake.....						12,000					
Round Lake (North Ogden).....						5,000					
East River St. Mary.....	222,000										
West River St. Mary.....	150,000										
Salmon River.....	60,000				50,000	7,000					
Seal Harbour Lake.....					25,000						
Sherbrook Lake.....				40,000			7,000	3,600			
Smelt Lake.....		101,522									
Square Lake-Salmon River.....					40,000						
Three Mile Lake.....								1,000			
Tracadie River.....	50,000										
Trout Lake-East River St. Mary.....						15,000					
Pictou Co.—											
Barney River.....	108,000										
Big brook-East River.....					30,000						
Blue Mountain dam, French River.....					12,000						
Brora Lake.....					40,000						
Calder Lake.....					50,000			3,500			
Campbell Lake-French River.....					24,000						
Big Caribou River.....					15,000						
Little Caribou River.....					15,000						
Chisholm Lake-East River.....					70,000						
Cummings dam, Brown brook.....					15,000						
Dewar dam, Barney River.....								900			
East River.....	60,000				25,000						
East River, west branch.....					15,000						

French River.....	30,000										
French River branch (French River Settlement).....					25,000						
Lansdowne Lake.....					42,000		3,500				
McLellan brook.....					62,000						
McLellan Lake.....					20,000						
McPherson Lake.....					50,000		4,000				
Maple brook.....					10,000						
Sawmill brook.....					15,000						
Six Mile brook.....					60,000						
Stewart dam, tributary to Little Harbour.....								3,000			
West River.....					160,000	15,000		898			302
	910,400	101,522	81	415,000	2,057,457	80,000	33,500	32,228	1,580	1,343	573

Total distribution..... 3,633,684

BEDFORD HATCHERY

	Atlantic salmon		Speckled trout	
	Advanced fry	Fingerlings No. 1	Advanced fry	Fingerlings No. 1
<i>Colchester Co.—</i>				
Hamilton Lake.....				35,000
<i>Halifax Co.—</i>				
Conrod Lake.....				20,000
Drain Lake.....				22,000
Fish brook-West River Sheet Harbour.....				27,500
Halfway brook.....			20,000	
Little Sackville River.....		10,699		
Moser River.....	1,000	1,000		
Moores Lake.....				27,500
Otter Lake (Musquodoboit Harbour).....				25,000
Oyster pond.....				20,000
Quilliam Lake.....				18,000
Sheldrake Lake.....				18,000
Velie Lake.....				3,080
<i>Hants Co.—</i>				
Coxcomb Lake.....				20,000
Pigot Lake.....				18,000
<i>Lunenburg Co.—</i>				
Corkum Lake.....				20,000
Spectacle Lake (Chester).....				20,000
	1,000	11,699	20,000	294,080

Total distribution..... 326,779

COBEQUID HATCHERY

	Atlantic salmon					Speckled trout			
	Fry	Advanced fry	Fingerlings			Advanced fry	Fingerlings No. 1	Year-lings	Old fish
			No. 1	No. 2	No. 3				
<i>Colchester County—</i>									
Bass River, at Five Islands.....							5,000		
Debert River.....			50,000				5,000		
East River, at Five Islands.....									
Economy River.....			50,000						
Folly River.....			50,000						
Folly Lake.....							10,000	3,500	
French River.....							10,000		
Great Village River.....	35,000		15,000						
Irving Lake.....								600	
North River, near Truro.....			60,000						
Portapique River.....			50,000						
Rocky Lake.....								600	
Salmon River.....		40,000		25,000					
Silica Lake or Bass River Lake.....							10,000		
Simpson Lake.....							10,368	3,241	
Truro Reservoir, Leper brook.....								600	
Waugh's River.....							10,000		
<i>Cumberland County—</i>									
Apple River.....			50,000						
Fox River (Greville Bay).....							6,000		
Gilbert Lake.....								1,000	
Gleason brook—Portapique River.....							5,000		
Isaac Lake.....							10,000		
Leak Lake.....								500	
Little Lake—Newfound Lake.....							5,000		
McAloney Lake.....								1,000	
McLeod Lake.....							5,000	300	
Maccan River.....	40,000		20,000						
Maccan River, south branch.....						10,000			
Maccan River, west branch.....						10,000			
Mountain brook.....							10,000		
Newfound Lake.....							10,000		
Polly brook.....							5,000		
Pugwash River.....						10,000			
Ramshead River.....							6,000		
River Philip.....		45,000	180,000	50,550	76,012		10,000		
River Philip, east branch.....							15,229	57	68
River Philip, west branch.....							15,000		
Shinimikas River.....	35,000								
Sugarloaf brook.....							8,000		
Sutherland Lake.....								3,500	
Tidnish River.....	25,000								
Tillies creek.....						8,000			
Wallace River.....	40,000	35,000	25,000				10,000		
Wallace River, west branch.....							10,000		
Webb Lake.....							5,000		
<i>Westmorland County—</i>									
Long Lake—Tantramar River.....								1,500	
Long Lake stream—Tantramar River.....							4,000		
North brook—Tantramar River.....							8,000		
Robinson brook—Tantramar River.....			35,000						
Silver Lake or Morice Pond.....								1,695	
	175,000	120,000	585,000	75,550	76,012	38,000	207,597	18,093	68

Total distribution 1,295,320

COLDBROOK PONDS

	Rainbow trout fingerlings		Speckled trout fingerlings	
	No. 2	No. 3	No. 2	No. 3
<i>Kings County—</i>				
Annapolis river.....			20,000	
Armstrong Lake.....			10,000	
Aylesford Lake.....				60,000
Burke Lake.....			20,000	
Canard River.....			10,000	
Cornwallis River.....			20,000	
Crooked Lake.....			10,000	
Gaspereau Lake.....				30,000
Habitant River.....			5,000	
Hardwood Lake.....				15,000
Lake Paul.....				30,000
Lake Torment.....			15,000	20,000
McGee Lake.....			5,000	
Mack Lake.....				5,000
Mud Lake.....				10,000
Murphy Lake.....				20,000
Nimchin Page Lake.....				5,000
Sunken Lake.....	12,000	27,340		
Trout River.....			10,000	
Turbett Lake.....				10,000
Upper Sixty Lake.....			10,000	
	12,000	27,340	135,000	205,000

Total distribution..... 379,340

GRAND LAKE PONDS

	Atlantic salmon					Speckled trout Yearlings	Sebago salmon		Ouananiche four years
	Fingerlings				Yearlings		Two years	Three years	
	No. 1	No. 2	No. 3	No. 4					
<i>Colchester County—</i>									
Pembroke River.....					2,000				
Stewiacke River.....		12,500							
Stewiacke River, south branch....		12,500							
<i>Halifax County—</i>									
Abrahams Lake.....						900			
Black Point Lake.....						700			
Chezetcook River.....			25,000		5,000				
Eagle Lake (Mineville).....						650			
First pond (Ketch Harbour).....						700			
Five Island Lake.....						1,900			
Governor Lake.....						700			
Grand Lake.....							9,609	1,529	1
Hatchet Lake.....						1,000			
Higgins Lake.....						825			
Ingram River.....			12,500		5,000				
Long Lake—Lake Major.....						650			
Long or Bennery Lake.....						500			
Loon Lake—Scraggy Lake.....						1,200			
Moody Lake.....						700			
Moose River—Ship Harbour River.....		12,500	12,500						
Moser River.....	2,000	500	2,000	2,000					
Musquodoboit River.....		25,000	25,000		5,000				
Ninemile River.....			25,000		5,000				
Pace Lake.....						1,000			
Partridge run—Echo Lake.....			12,500						
Upper Petpeswick, Long Bridge or Bridge End Lake.....						1,500			
Quoddy River.....			12,500	10,000					
Ragged Lake—Prospect River.....						700			
Rawdon River.....			12,500		5,000				
Sackville River.....			25,000	10,000	9,000				
Big Salmon River—Echo Lake.....			25,000		5,000				
Little Salmon River (Cole Harbour).....			12,500		5,000				
Salmon River (Port Dufferin).....		50,000							
Sawlor Lake.....						1,000			
Ship Harbour River.....					5,000				
Smith brook (Necumteuch).....	3,000								
Tangier River.....			25,000		8,260				
West River Sheet Harbour.....		12,500	12,500						
William or First Lake.....						700			
<i>Hants County—</i>									
Cameron Lake.....						700			
Kennetcook River.....		25,000			10,000				
Pentz Lake.....						700			
Valley or McLellan Lake.....						600			
<i>Lunenburg County—</i>									
East River.....			25,000						
Gold River.....		12,500	12,500		5,000				
Hennigar Lake.....						1,000			
Middle River.....		25,000			5,000				
Spondo Lake.....						900			
	5,000	188,000	277,000	22,000	79,260	19,225	9,609	1,529	1

Total distribution..... 601,624

KEJIMKUIK PONDS

	Atlantic salmon fingerlings No. 3	Speckled trout fingerlings		
		No. 1	No. 2	No. 4
<i>Annapolis County—</i>				
Fairy Lake.....		2,500		
Little River.....		5,000	5,000	
Maitland River.....			10,000	
Mount Tom brook.....		2,740		
Pretty Mary Lake.....				2,500
West River.....			10,000	
<i>Queens County—</i>				
Christopher brook.....				1,500
Fifteen Mile brook.....				2,500
Grafton Lake.....				514
High Lake.....		2,500		
Kejimkujik Lake.....		30,446	5,500	
Medway River.....	267,000			
Newts Lake.....				2,022
	267,000	43,186	30,500	9,036

Total distribution..... 349,722

LINDLOFF HATCHERY

	Atlantic salmon fingerlings		Speckled trout				
	No. 2	No. 3	Fingerlings			Yearlings	Two years
			No. 1	No. 2	No. 4		
<i>Cape Breton Co.—</i>							
Canoe Lake.....			15,000				
Chain or String Lakes-Mira River.....			15,000				
Cochran Lake.....				15,000			
Gaspereaux River.....	25,000	20,000					
Gillies Lake (East bay).....				15,000			
Hardy Lake.....				15,000			
Kelvin Lake.....				15,000			
Loon Lake (Mira bay).....				15,000			
McCormick Lake.....				20,000			
Meadow brook-Sydney river.....			15,000	10,000			
Otter Lake.....				5,000			
Salmon River.....	95,000	140,000					
<i>Inverness Co.—</i>							
McIntyre Lake.....						2,089	167
<i>Richmond Co.—</i>							
Black River.....			40,000				
Breen Lake.....			20,000				
Buchanan Lake.....			20,000				
Chain Lakes (Madame Island).....			20,000				
Ferguson Lake.....			30,000				
Ferguson brook.....			10,000				
Grand Lake (Madame Island).....			30,000	15,000	9,000		
Grand River.....	75,000	20,000					
Loch Lomond.....	165,000	143,863					
MacLeod brook.....			10,000				
McIsaac Lake.....			15,000	15,000			
McKenzie Lake.....			35,000				
Mary Ann's Lake.....			20,000		1,000		
Mill Lake-East River Tillard.....				24,276	5,000		
Potties Lake (Madame Island).....				15,000	5,000		
St. Esprit Lake.....			25,000				
Seaview Lake.....			20,000				
Scott brook.....			25,000				
Shaw Lake (Madame Island).....			18,000		5,137		
Stratton brook.....			10,000				
River Tillard, east.....			30,000				
River Tillard, west.....			60,000				
Thompson Lake.....			20,000		1,000		
River Tom.....			20,000				
	360,000	323,863	523,000	179,276	26,137	2,089	167

Total distribution..... 1,414,532

MARGAREE HATCHERY

	Atlantic salmon					Speckled trout									
	Fry	Ad- vanced fry	Fingerlings				Fingerlings					Year- lings	Two years	Three years	Old fish
			No. 1	No. 2	No. 3	No. 4	No. 1	No. 2	No. 3	No. 4	No. 5				
<i>Cape Breton Co.—</i>															
Belle Lake								10,000							
Black brook-Mira River								7,500							
Browns Lake-Indian Bay									10,000						
Catalogne Lake									20,000						
Ferguson Lake (New Boston)								5,000							
Forester Lake										10,000					
Giovanetti Lake									10,000						
Grand Lake-Indian Bay									20,000						
Grand Lake, near Louisburg									10,000						
Jackson or Johnson Lake										10,000					
Keeffe Lake										10,000					
Lily pond										10,000					
McDonald pond										10,000					
McDonald or Widow Lake (New Boston)								5,000							
McInnes Lake										10,000					
McIntyre Lake (New Boston)										10,000					
McMillan Lake										10,000					
McPherson Lake (New Boston)										10,000					
Stewart Lake										10,000					
Trout brook-Mira River									7,500						
Dalem Lake (Boularderie Island)									15,000						
<i>Inverness Co.—</i>															
Big brook-River Denys									10,000						
Captain John's brook								5,000							
Cheticamp River			175,000												
Farm brook								20,000							
Flat brook										2,000					
Galant River							50,000								
Gillis brook							20,000								
Glen brook-River Denys								15,000							
Graham River								5,000							
Grand Etang brook								20,000							
Horton Lake									15,000						
Little Judique River								5,000							
Northeast Mabou River									20,000						
Southwest Mabou River									21,124						
<i>Northeast Margaree River—</i>															
Big brook							50,000								
Big Intervale bridge		100,000		50,000	60,000										
Black Rock pool					40,000										
Crantou bridge		200,000		20,000											
Doyle's bridge		100,000													
Egypt brook							50,000								
Ethridge pool		50,000													

MARGAREE HATCHERY—*Concluded*

	Atlantic salmon						Speckled trout									
	Fry	Ad- vanced fry	Fingerlings				Fingerlings					Year- lings	Two years	Three years	Old fish	
			No. 1	No. 2	No. 3	No. 4	No. 1	No. 2	No. 3	No. 4	No. 5					
Forest Glen brook.....							60,000									
Garden pool.....		50,000														
Hart pool.....			75,000	20,000												
Ingraham bridge.....		100,000				5,000										
Island brooks.....		50,000														
Lake O'Law brook.....								10,000	10,000							
Lake O'Law.....							25,000				23,000	800	308	211	779	
Fortune brook.....							25,000									
McKinnon brook.....										10,000	9,171					
Lake O'Law, upper.....					20,000	12,000										
Long Intervale pool.....							40,000									
Levis brook.....			75,000			8,225										
McDermid pool.....							25,000									
McDonald brook.....							15,000									
McLeod brook.....							40,000									
Murphy brook.....							16,801									
Murray brook.....																
Murray pool.....						20,000										
Old Bridge pool.....					20,000											
Ross bridge.....				30,000		20,000										
Salt brook.....						7,000										
Slide pool.....			50,000	40,000												
Stewart brook.....						6,000										
Stewart pool.....					20,000	21,000										
Ward's pool.....				90,000												
Watson brook.....							20,000									
McColl brook.....								15,000								
McPherson brook—River Denys.....									15,000							
Mull River.....			125,000													
Pembroke Lake.....										10,000						
Plaster pond.....																114
Plateau brook.....								20,000								
Skye brook.....								20,000								
Southwest Margaree River.....	100,000	200,000														
Captain Allan's brook.....							50,000									
McDonnell brook.....							50,000									
Matheson Glen brook.....							50,000									
Strathlorne brook.....							30,000									
Victoria Co.—																
North Aspy River.....				30,000												
Middle Aspy River.....				30,000												
Baddeck Bay brook.....								6,000								
Baddeck River—																
Farquar Angus or McDonald brook.....								20,000								
Forks.....			50,000													

Gillis brook.....							50,000								
North branch.....			75,000												
Peter brook.....							50,000								
Barasois brook.....									15,000						
Big Harbour brook.....								6,000							
Giffin Lake.....									7,500						
Ingonish River.....				30,000											
McKinnon Harbour brook-Bras d'Or Lakes.....									5,000						
McNeil brook-Bras d'Or Lakes.....									5,000						
McPhies brook-Bras d'Or Lakes.....								6,000							
Morrison Lake.....									7,500						
Middle River.....		100,000													
Beaver brook.....							30,000								
Black brook.....							18,803								
Cold brook.....									19,150						
Indian brook.....							60,000								
McDonald brook.....							25,000								
McLennan's bridge.....			75,000												
North River.....			125,000	30,000											
Church brook.....										15,000					
Tarbot Lake.....										10,000					
Washabuck River.....										20,000					
	100,000	950,000	825,000	370,000	160,000	99,225	850,604	233,274	195,000	160,000	54,171	800	308	211	893

Total distribution..... 3,989,486

MERSEY RIVER PONDS

Atlantic salmon
fingerlings
No. 3

Queens Co.—

Mersey River (below No. 3 development)	111,600
Total distribution	111,600

MIDDLETON HATCHERY

	Atlantic salmon fingerlings		Salmon trout fingerlings No. 2	Speckled trout fingerlings			
	No. 2	No. 3		No. 1	No. 2	No. 3	No. 4
<i>Annapolis Co.—</i>							
Annapolis River.....		20,000					
Barnes Lake.....					10,000		
Boot Lake.....					20,000		
Crisp brook.....				10,000			
Durland Lake.....						6,000	
Durling Lake.....				10,000			
Elliott Lake.....				12,000			
Fed Lake.....				8,000			
Fishers Lake.....						10,000	
Gibson Lake.....				10,000			
Grand Lake.....				6,000			
Lake Jolly.....					20,000		
Katy or Cady Lake.....					10,000		
Lamb brook.....				6,000			
Lake LaRose.....				12,000			
Lequille River.....	25,000						
Lily Lake.....					10,100		
Little River-Annapolis River.....				10,000			
McGill Lake.....				15,000			
McKewon Lake.....						8,000	
Medicraft Lake.....				15,000			
Millbury Lake.....					10,000		
Mink brook.....				8,000			
Morton brook.....				5,000			
Mulgrave Lake.....						3,100	
Nictaux River.....		87,000			10,800	3,800	
Paradise Lake.....				20,000			
Lake Pleasant.....				20,000			
Power Lot brook-Annapolis River.....					6,000		
Round Hill River.....		25,000					
Rumsey Lake.....						8,000	
Sand Lake.....						2,000	
Sandy Bottom Lake.....						10,000	
Scrag Lake.....						5,000	
Shannon Lake.....				15,000			
Simpson Lake.....						10,000	
Sixty Lake.....						10,000	
Slocomb brook.....				8,000		2,200	
Thirty Lake.....				20,000			
Trout Lake.....						8,000	
Walker brook.....					10,000		
Waterloo Lake.....					10,000		
Wiswell brook.....					5,000		
Wright Lake.....				10,000			
Zwicker Lake.....				15,000			
<i>Digby Co.—</i>							
Haines Lake.....					10,000		
Harris Lake.....						8,000	
Mallett Lake.....					10,000		
Porter or Mistake Lake.....					14,000		
Round Lake.....					10,000		
<i>Hants Co.—</i>							
Avon River, west branch.....	25,000	13,000					
Falls Lake stillwater.....						10,000	
Halfway River.....					8,000		
Lebreau brook.....					10,000		
Maple brook.....					8,000		
Mockingigh Lake.....				20,000			
Murphy Lake.....				10,000			
Panuke Lake.....					15,000	15,000	
Lake Pleasant.....							4,980
Zwicker Lake.....				10,000			
<i>Kings Co.—</i>							
Gaspereau River.....		6,000					
<i>Lunenburg Co.—</i>							
Butler Lake.....				10,000			
Canoe Lake, north.....					10,000		
Card Lake.....				20,000			
Feener Lake.....						5,000	
Franey Lake.....				10,000			
Gold River.....	64,000	20,000					
Harris Lake.....					10,000		

MIDDLETON HATCHERY—Concluded

	Atlantic salmon fingerlings		Salmon trout fingerlings No. 2	Speckled trout fingerlings			
	No. 2	No. 3		No. 1	No. 2	No. 3	No. 4
Lunenburg Co.—Concluded							
Holbert Lake.....				12,000			
Indian Lake-Gold River.....					10,000		
Lahave River.....	32,000	45,000			10,000		
Lewis Lake.....						12,000	
Maligeak Lake.....		50,000					
Middle River.....				15,000			
New Germany Lake.....					15,000		
Ninevah Lake.....					12,000		
Peruette Lake.....		25,000					
Petite River.....			68,000				
Sherbrooke Lake.....				10,000			
Smith Lake.....						6,000	
Spectacle Lake-Maligeak Lake.....				7,000			
Veinot brook.....						5,000	
Wentzell Lake.....					12,000		
West or Rocky Lake-Ohio River.....					10,000		
Whalen Lake.....					15,000		
Whetstone Lake.....				10,000			
Wiles stillwater-Lahave River.....						7,000	
Wild Cat River.....				20,000			
Lake William.....							
Queens Co.—							
Christopher Lake.....					8,000		
Harmony brook.....				5,000			
Medway River.....					10,000		
Redwater Lake.....						7,000	
Westfield River.....				5,000			
	146,000	291,000	63,000	399,000	335,900	154,100	4,980

Total distribution..... 1,393,980

NICTAUX FALLS REARING STATION

Atlantic salmon fingerlings No. 1

Annapolis Co.—

Annapolis River.....	30,000
Shannon River.....	35,000
Nictaux River.....	68,000

133,000

Total distribution..... 133,000

YARMOUTH HATCHERY

	Atlantic salmon fingerlings					Kam- loops trout four years	Rainbow trout		Speckled trout								
	No. 1	No. 2	No. 3	No. 4	No. 5		Finger- lings No. 3	Year- lings	Advanc- ed fry	Fingerlings					Two years	Three years	Four years
										No. 1	No. 2	No. 3	No. 4	No. 5			
<i>Digby County—</i>																	
Babine Meadows								25,000									
Belliveau River								40,000									
Bonaventure Lake										3,000			5,000				
Carrying Road Lake																	
Dean brook								25,000				5,000					
Doctor's Lake										3,000							
Doucette brook—Salmon River								20,000									
Grosses Coques River								20,000									
Meadow brook—Carleton River										8,000							
Meteghan River								40,000									
Meteghan River, north branch								19,000									
Payson's Meadow								30,000		10,000							
Salmon River	50,000	30,000	35,000	24,000						20,000		20,000					
Salmon River Lake												10,000					
Silver River												15,000					
Sullivan brook										4,000							
Wentworth Lake										10,000		15,000					
<i>Queens County—</i>																	
Tupper Lake								5,000									
<i>Lunenburg County—</i>																	
Wiles Lake							15,000										
<i>Shelburne County—</i>																	
Barrington River										10,000							
Big brook										5,000							
Birchtown brook										5,000							
Bloody creek—Clyde River													2,000				
Clyde River	50,000		25,000		30,000												
Deception brook										10,000							
Downey brook										7,000							
East River												10,000					
Granite Village brook														2,000			
Lake George												5,000					
Jordan River												15,000					
Pugg Lake								5,000									
Ogden creek												5,000					
Roseway River											15,000						
Tigney River														3,000			
<i>Yarmouth County—</i>																	
Argyle River								20,000									
Burrell brook										10,000							
Carleton River								100,000		30,000			15,000				
Coldstream River								25,000				26,000					
Ellenwood Lake												6,000					
Gardener brook																	
Granite Lake														6,000	290	130	22

Harris Lake.....																				
Kegeshook Lake.....																				
Mood brook—Salmon River.....										20,000										
Randal brook.....										10,000										
Reynard bridge—Carleton River.....											3,000									
Ryerson brook.....									10,000											
Solomon Lake.....										50,000	50,000	30,000	15,000	5,000						
Tusket River.....									50,000	25,000										
Tusket River, east branch.....																				
Lake Utley.....						125														
	100,000	30,000	60,000	24,000	30,000	125	15,000	10,000	430,000	120,000	194,000	145,000	17,600	11,000	290	130	22			

Total distribution..... 1,187,167

NEW BRUNSWICK

CHARLO HATCHERY

	Atlantic salmon fingerlings		Speckled trout	
	No. 1	No. 2	Fry	Fingerlings No. 3
Antinori Lake.....				29,000
Charlo River, north branch.....				10,000
Christopher brook.....				7,000
Black brook.....				4,000
Eel River.....				7,000
Jacquet River.....		90,000		
Lamontagne Lake.....			20,000	
Louison creek.....				7,000
Middle River.....	45,000			
Nipisiguit River.....	162,612	30,000		
Restigouche River.....	90,000	600,000		
Kedgwick River.....		110,000		
Little Main River.....	30,000			
Matapedia River.....	30,000	235,374		
Upsalquitch River.....	60,000	137,377		
Walker brook.....				2,000
	417,612	1,202,751	20,000	66,000

Total distribution..... 1,706,363

FLORENCEVILLE HATCHERY

	Atlantic salmon fingerlings		Speckled trout					
	No. 1	No. 2	Fingerlings No. 1	Yearlings	Two years	Three years	Four years	Five years
Atlantic Biological Station, St. Andrews, N.B.				100				
<i>Carleton County—</i>								
Becaguimec River	100,000	52,000						
Bogan brook—Southwest Miramichi River		10,000						
Bubby brook—St. John River			3,000					
Bulls creek—St. John River			50,000	2,000				300
Bull creek—Eel River			20,000	1,600				
Burpee brook—Presquile River			10,000					
Burntland brook—Becaguimec River			6,000					
Buttermilk brook—St. John River			1,000					
Clearwater brook—Southwest Miramichi River		10,000						
Colton brook—Shiktahawk River			5,000					
Debec brook—St. John River			10,000					
Dingee brook—St. John River			1,500					
Elliot brook—Southwest Miramichi River		15,000						
Gallivan brook—St. John River			7,000					
Gibson Mill brook, north branch—St. John River				1,200				
Big GUISIGUIT River			25,000	1,900				200
Little GUISIGUIT River			25,000	2,753				200
Hagerman brook—St. John River			15,000	600			100	
Hardwood brook—St. John River			4,000					100
Lanes creek—St. John River				600				
McLeary brook—Lakeville pond			15,000	600			250	
McLeod brook—St. John River			10,000					
Mallory brook—St. John River			6,000					
Maynes brook—Little Presquile River			15,000	900				
Medunnekeag River	100,000	30,000						
Mile brook—St. John River			1,000					
Southwest Miramichi River, north branch	50,000	35,000						
Southwest Miramichi River, south branch	100,000	60,000						
Monquart River			35,000					
Big Presquile River	50,000	50,809						
Little Presquile River	40,000							
Priest brook—Monquart River			5,000					
River de Chute			30,000	1,600		200		
Big Shiktahawk River		20,000						
Little Shiktahawk River		20,000						
Smith brook—Becaguimec River			5,000					
Smith pond—Southwest Miramichi River			10,000					
Teague brook—Southwest Miramichi River		10,000						
Tweedie brook—St. John River			3,000					
<i>Madawaska County—</i>								
Private pond, Power creek, Mr. Zeno Martin				496				
<i>York County—</i>								
Brown Lake				1,200		250		
Conn brook—Shogomoc River			5,000					
Cranberry Lake				1,300			350	
Cross creek—Nashwaak River			40,000	1,200		335		
Davidson Lake			60,000	1,500		335		
Dunbar brook—Nashwaak River			10,000					
Second Eel Lake			40,000	2,400			350	
Indian Lake			30,000					
Kelly creek—St. John River			10,000					
Keswick River	40,000	35,000						
Kingsley brook—Nashwaakis River			10,000					
Limekiln brook—Nashwaak River			15,000	600		175		
Longs creek—St. John River			10,000					
McBean brook—Nashwaak River			10,000					
McCallums brook—Nashwaak River			10,000					
McIntosh brook—St. John River			10,000					
Maetaquac River		35,000						
Manzer Mill stream—Nashwaak River			10,000		200			
Middle brook—Nashwaak River			15,000		400			
Mill brook—Maetaquac River				1,200				
Nackawic River	50,000							
Northeast Nackawic River					300			
Nashwaak River	120,000	60,000						
Nashwaakis River			85,000	1,200		445		
Pidgeon brook—Nashwaak River			10,000					
Pokiook River			60,000	2,400		250	75	
Risteen Lake			20,000					
Rusagonis River			30,000		300			
Shogomoc River			60,000	3,000		200		
Skiff Lake	50,000	60,000						
Taffa Lake			30,000	800				
Tay River			20,000				175	
Tinkettle brook—Nashwaak River			3,000				175	
	700,000	537,809	885,500	31,149	1,200	2,540	1,125	800

Total distribution 2,160,123

GRAND FALLS HATCHERY

	Atlantic salmon			Speckled trout					
	Advanced fry	Fingerlings			Fry	Advanced fry	Fingerlings		
		No. 1	No. 2	No. 3			No. 1	No. 2	No. 3
<i>Charlotte County—</i>									
St. Patrick Lake								10,535	
<i>Salmon River—Victoria County—</i>									
Salmon River flats		35,000							
Salmon River headwaters			68,000	13,300					
Salmon River, at Estey camp		20,000							
Salmon River, at Guimont lodge		40,000							
Salmon River, at Mignault lodge		40,000							
Aubin crossing		35,000							
Big bogan		40,000							
Boat Landing	10,000	35,000							
Cote Mill	25,000	35,000							
Covered bridge	25,000	35,000							
Cyr flats		35,000							
Davis Mill		35,000							
Iron Bridge		35,000							
Little Salmon River		35,000	40,000						
Mooney brook					12,000				
Sutherland brook						15,000	35,000		20,000
<i>St. John River—Victoria County—</i>									
Andover			40,000						
Andover bar		40,000							
Argosy	25,000								
Aroostook bar		40,000							
Boutout brook						8,388			
Cliffordvale	25,000								
Coronation	25,000								
Costigan point	25,000								
Dee point		40,000							
Falls brook							3,866		
Four Falls brook						10,000			5,000
Hatchery brook, above falls							8,000	9,000	
Hatchery brook, below falls		6,734							
Hitchcock flats		40,000							
Inman flats	25,000	45,000	40,000						
Kilburn ferry	25,000	45,000							
Limestone		35,000							
McLaughlin flats	25,000								
Morrill	25,000		35,000						
Muniac River, mouth of		60,000							
Ortonville	25,000	35,000							
Perth			40,000						
Perth, lower		35,000							
Pokiok stream									30,000
Pokiok stream, headwaters									30,000
Tobique River, mouth of	25,000		40,000	30,000					
Arthurette bridge			80,000						
Millers			80,000						
Millers bogan			40,000						
Sadlers			15,000						
Three brooks, below dam									5,000
<i>Madavaska County—</i>									
Baker brook									20,000
Baker Lake									20,000
Caron Lake								120,000	40,000
Grand River								80,000	
Green River									20,000
Iroquois River									20,000
Ledges pond									10,000
Little River							20,000		29,345
Headwaters									5,000
Big Brook									10,000
Deadwater or Dead brook							10,000		
Poiaras brook					11,000				
Ryan brook						10,000			
Six Mile brook					12,000				
Quisibis River								10,000	
Arsenault brook								5,000	
Baisley brook								5,000	
Deep brook								5,000	
Little brook								5,000	
McCoil brook								5,000	
Morneault brook								5,000	
Siegas River								15,000	
Black brook								5,000	
Clark's forks								5,000	
Martial brook								5,000	
Soucy brook								5,000	
Siegas Lake, outlet								5,000	
Thibodeau brook—Green River									20,000
Trout River									20,000
Unique Lake									20,000
<i>Pohenagamooke Lake, Temiscouata County, Quebec</i>									5,000
	310,000	876,734	518,000	43,300	35,000	73,388	46,866	299,544	329,345

Total distribution 2,532,177

MIRAMICHI HATCHERY

—	Atlantic salmon		Speckled trout	
	Advanced Fry	Fingerlings No. 1	Fingerlings No. 1	Yearlings
Little Southwest Miramichi River.....	180,000	449,780	.....	.....
Middle River.....	39,000	.....	.....	.....
Northwest Miramichi River.....	810,000	82,800	.....	.....
Millstream.....	105,600	.....	.....	.....
Sevogle River.....	.....	320,000	.....	.....
Salmon River.....	.....	.....	.....	51
Southwest Miramichi River.....	.....	186,600	.....	.....
Barnaby River.....	163,200	.....	.....	.....
Cain River.....	163,200	40,000	.....	.....
Renous River.....	220,800	40,000	.....	.....
Dungarvon River.....	115,200	.....	.....	.....
Taxis River.....	48,000	81,200	.....	.....
Tabusintac River.....	57,600	.....	.....	.....
Eskedelloc River.....	.....	.....	3,900	.....
Tetagouche River.....	.....	67,200	.....	.....
Tweedie's Meadow brook.....	.....	.....	53,100	.....
	1,902,600	1,267,580	57,000	51

Total distribution..... 3,227,231

ST. JOHN HATCHERY

	Atlantic salmon				Rainbow trout four years	Sebago salmon yearlings	Speckled trout						
	Ad- vanced fry	Fingerlings					Fry	Ad- vanced fry	Fingerlings		Three years	Four years	Six years
		No. 1	No. 2	No. 5					No. 1	No. 2			
Atlantic Biological Station, St. Andrews, New Brunswick.....							500						
<i>Albert Co.—</i>													
Crooked creek.....					63								
Little River.....							10,000						
McFadden Lake.....							5,000						
Pollett River.....							10,000						
Prosser brook-Little River.....							5,000						
Stannard Lake.....							5,000						
Turtle creek.....							10,000						
West River.....							10,000						
<i>Charlotte Co.—</i>													
Bartlett brook.....							10,000						
Birch Lake.....							5,000						
Chamcook Lake.....						2,653							
Craig brook-Digdeguash River.....							10,000						
Crecy Lake.....								6,976					
Digdeguash River.....							15,000						
Disappointment or Mistake Lake.....							20,000						
Doak brook-St. Croix River.....							10,000						
Gilbert Lake.....							5,000						
Green Brown brook-Canoose River.....							10,000						
Half Moon Lake.....								5,000					
Lake Utopia.....							30,000						
Linton stream-Magaguadavic River.....	50,000												
Magaguadavic River.....		100,000	16,000										
McClary brook-St. Croix River.....							10,000						
McDougall Lake.....							15,000						
Murchie brook-St. Croix River.....							15,000						
New River.....							20,000						
Piskahegan River.....			16,100										
Potter's Lake.....							15,000						
Stein Lake.....							10,000						
<i>Kings Co.—</i>													
Cassidy Lake.....							10,000						
Cedar camp stream-Trout creek.....							5,000						
Hammond River.....							20,000						
Jacks Lake.....								4,150					
Kennebecasis River.....		100,395											
Kennebecasis River, headwaters.....							10,000						
Kennebecasis River, south branch.....							10,000						
Little Salmon River.....							10,000						
McGregor brook-Smith creek.....							5,000						
Prices brook.....							5,000						
Sally brook-Smith creek.....							5,000						

Salmon River-Kennebecasis River.....	15,000																		
Smith creek-Kennebecasis River.....																			
Studholm brook or Millstream.....																			
Trout creek-Kennebecasis River.....	50,000																		
<i>Queens Co.—</i>																			
Canaan River, Forks stream.....																			
Lake George, or Long Lake.....																			
Lake Stream-Salmon River.....																			
Murphy Lake.....																			
Otnabog River.....																			
Salmon River.....	30,000																		
Snowshoe Lake.....																			
Wadderburn Lake.....																			
<i>St. John Co.—</i>																			
Back Dam-St. John River.....																			
Beaver Lake.....																			
Beaver stream-Mispek River.....																			
Big Salmon River.....	50,000																		
Blacks Lake-Moose creek.....																			
Black River.....																			
Boaz Lake.....																			
Brandy brook-Mispek River.....																			
Clear Lake.....	10,000																		
Dolan Lake.....																			
Douglas Lake.....																			
Duffy Lake.....																			
Elderly brook-Little River.....																			
Germain brook-Hammond River.....																			
Graham Lake.....																			
Grassy Lake.....																			
Hanford brook.....																			
Hanson River.....																			
Haynes Lake.....																			
Henry Lake.....																			
Hohey Lake.....																			
Kelly Lake.....																			
Lake Retreat.....																			
Lands Lake.....																			
Little River.....																			
Loch Lomond.....																			
Milligan Lake.....																			
Southern Lake.....																			
Stoker Lake stream.....																			
Tyne Mouth or Ten Mile creek.....	50,000																		
Treadwell Lake.....																			
Wilmot stream-Loch Lomond.....																			
<i>Sunbury Co.—</i>																			
Murphys pond.....																			
Newcastle creek.....																			
Oromocto River.....	25,000																		
Oromocto tributaries (Shin, Otter and Three Tree creeks).....																			
<i>Westmorland Co.—</i>																			
Anagance River.....																			
Hayward brook-Anagance River.....																			
Jonathon River.....																			
North River.....																			
Petitcodiac River.....	100,000																		

ST. JOHN HATCHERY—*Concluded*

	Atlantic salmon			Rainbow trout four years	Sebago salmon yearlings	Speckled trout							
	Ad- vanced fry	Fingerlings				Fry	Ad- vanced fry	Fingerlings		Three years	Four years	Six years	
		No. 1	No. 2					No. 5	No. 1				No. 2
<i>York Co.—</i>													
Big Cranberry or Harvey Lake.....								20,000					
Lake George.....								45,000					
Mink Lake.....								10,000					
Oromocto Lake.....								5,000					
Spring brook (James Vail)-Magaguadavic River.....	10,000												
Weasel Lake.....								5,000					
	225,000	365,395	32,100	4	63	2,653	26,000	170,995	598,500	28,126	264	152	4

Total distribution..... 1,449,256

PRINCE EDWARD ISLAND

CARDIGAN PONDS

	Rainbow trout fingerlings No. 3	Speckled trout fingerlings		
		No. 2	No. 3	No. 4
<i>Kings County—</i>				
Bear River.....			6,000	
Big brook—Fortune River.....			15,000	
Big pond (Hermanville).....				10,000
Brudenell River.....			10,000	
Buell's brook—(Murray Harbour).....	4,000			
Burge's pond—St. Peter bay.....				1,000
Cardigan River.....				6,000
Compton's stream—Sturgeon River.....			6,000	
Crane's pond—Morell River.....			6,000	
Creed's pond—Sturgeon River.....			6,000	
East or Hillsborough River.....			6,000	
Finlayson's pond—Greek River.....				8,000
Fox River.....	3,000			
Goose River.....			6,000	
Hay River.....			6,000	
Hooper's pond—St. Peter's Lake.....			6,000	
Jenkin's pond—Greek River.....				2,000
Leard's pond—Morell River.....				8,000
MacLeod's pond—Murray River.....	8,000			
McAulay's brook—Morell River.....				3,000
McCaskil River.....			3,000	
McDonald's pond—North Lake.....			5,000	
McKinnon stream—Morell River.....				6,000
McLeod's pond—Midgell River.....			6,000	
McPherson's pond—Montague River.....			6,000	
McRae's pond—Montague River.....	4,000		4,000	
Montague River.....				10,000
Montague pond.....			6,000	
Mooney's pond—Morell River.....				5,000
Munn's brook—Brudenell River.....				3,000
Naufrage River.....			9,000	
Poole's pond—Montague River.....			3,000	
Priest pond (Bayfield).....			6,000	
Sturgeon River.....			4,000	
Webster's pond—Marie River.....			6,000	
<i>Prince County—</i>				
Barbara Weit River.....			5,000	
Bell's stream (Cape Traverse).....			3,000	
Brae River.....			4,000	
Cain's stream—Mill River.....			8,000	
Cannon's pond—Smelt River.....			3,000	
Carr's brook (Malpeque bay).....			3,000	
Clark's pond—Wilmot River.....			8,000	
Currie's pond—Little Pierre Jacques River.....			6,000	
Dunk River.....			15,000	
Enmore River.....			6,000	
Fitzgerald's pond—Grand River.....			3,000	
Green's stream—Miminegash pond.....			6,000	
Harper's pond—Tignish River.....			8,000	
Haywood's pond—Little Tignish River.....			5,000	
Hunter's pond (Baltic).....				4,000
McArthur's pond—Foxley River.....			3,000	
McWilliam's pond—Pierre Jacques River.....			6,000	
Old Wool Mill pond—Tryon River.....			4,000	
St. Nicholas pond (Sunbury Cove).....				6,000
Scales pond—Dunk River.....			10,000	
Sheep River.....			6,000	
Tuplin's pond—Indian River.....			6,000	
Waddell's pond (Traverse Cove).....			3,000	
Webster's pond (Augustine Cove).....			3,000	
Wright Leard's pond—Dunk River.....			8,000	
<i>Queens County—</i>				
Andrew's pond—Hunter River.....			3,000	
Ballem's stream—(Pownall bay).....			3,000	
Belle River.....				8,000
Black River—Covehead bay.....				5,500
Clark's stream—East River.....	6,000			

CARDIGAN PONDS—Concluded

	Rainbow trout fingerlings No. 3	Speckled trout fingerlings		
		No. 2	No. 3	No. 4
<i>Queens County—Concluded</i>				
Coles' pond—North River.....			6,000	
Cook's pond—Newton River.....			3,000	
Crooked creek—Wheatley River.....			4,000	
Dixon's pond—DeSable River.....		6,000		
Found's pond—Stanley River.....			3,000	
Gates' pond—North River.....			3,000	
Glenfinnan Lake.....	41,040			
Hardy's pond—Winter River.....		4,000	4,000	
Holmes' pond—DeSable River.....		3,000		
Hope River.....				9,000
Lane's brook—Vernon River.....				3,000
Leard's pond—Crapaud River.....			6,000	
Leard's pond—Pisquid River.....			8,000	
McAulay's brook (Tracadie bay).....		5,000		
McLeod's pond—Belle River.....		1,500		
McMillan's pond—Vernon River.....				4,000
McPherson's pond—Flat River.....		5,000		
McPherson's pond—Pinette River.....			6,000	
Parson's pond—Glynde River.....			8,000	
Pisquid or O'Keefe's Lake.....	41,000			
Rackham's pond—Wheatley River.....			8,000	
Ross' pond—Vernon River.....				6,000
Simpson's pond—Hope River.....			5,000	
Southwest River.....			4,000	
Stevenson's pond (Rustico Harbour).....			5,000	
Stordy's pond—Crapaud River.....			6,000	
Watt's stream—Winter River.....				8,000
West River.....			9,000	
Winter River.....		5,000	5,000	
Winter River, north branch.....		4,000		
Wisner's pond—Clark's stream.....		1,000		
	82,040	59,500	362,000	115,500

Total distribution..... 619,040

KELLY'S POND HATCHERY

	Atlantic salmon fingerlings No. 1	Speckled trout		
		Fry	Fingerlings	
			No. 1	No. 2
<i>Kings County—</i>				
Dingwell stream—Fortune River.....				6,000
Fitzpatrick's pond—Seal River.....				4,367
Larkin's pond—Naufrage River.....				6,000
Leard's, below Mill—Morell River.....	40,000			
MacDonald's pond—Fortune River.....				5,000
McInnis' pond—Souris River.....				5,000
Mallard's pond—Souris River.....				5,000
Marie River.....	20,000			
Midgell river.....	25,000			
Mooney's bridge—Morell River.....	32,000			
Morell River.....	174,840			
Quigley's pond.....				6,000
Head of St. Peter Bay.....	25,000			
Warren's pond—Head of East or Hillsborough River.....				6,000
<i>Prince County—</i>				
Bain creek.....			4,000	
Barlow pond—Grand River.....			4,000	
Bell's stream—Mill River.....			6,000	
Conroy's pond.....			5,000	
Gard's pond—Mill River.....			6,000	
Gordon's pond—Kildare River.....			8,000	
Leard's pond—Trout River tributary to Lot 10 river.....			6,000	
McAusland's pond—Mill River.....			4,000	
McNally's pond—Jacques River.....			5,000	
Marchbank's pond—Trout River (Tyne valley).....			5,000	
Rix's pond—Kildare River.....			6,000	
Round pond.....			5,000	
<i>Queens County—</i>				
Andrews' pond—East River.....			6,000	
Bagnall's pond—Hunter River.....				4,360
Black River—Tracadie Bay.....			5,000	
Brander's pond.....			4,000	
Cousins pond.....			4,000	
Craswell's pond—Hunter River.....				4,360
Howatt's pond.....		1,000		
McLean's Brothers pond—West River.....			6,000	
Scott's pond—Clyde River.....			6,000	
	316,840	1,000	95,000	52,087

Total distribution..... 464,927

BRITISH COLUMBIA

ANDERSON LAKE HATCHERY

	Socketeye salmon eyed eggs
Anderson Lake—	
Clemens creek.....	724,968
Ternan creek.....	221,526
	<hr/>
Total distribution.....	946,494

Total distribution..... 946,494