

DEPARTMENT OF FISHERIES

ANNUAL REPORT

ON

FISH CULTURE

1933



OTTAWA  
J. O. PATENAUDE  
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY  
1934

*Index*  
*Reprint*





# FISH CULTURE

ANNUAL REPORT BY J. A. RODD, DIRECTOR

The Department of Fisheries confines its fish cultural operations to those provinces in which it is administering the fisheries, viz., Nova Scotia, New Brunswick, Prince Edward Island, and British Columbia. The operation of the hatcheries located in the National Parks in Alberta is also directed by the Department of Fisheries but at the expense of the National Parks branch, Department of the Interior. Operations by the Department of Fisheries include the propagation of the more important fresh-water and anadromous food and game fishes.

The total distribution from the hatcheries operated by this department in 1933 was 109,560,039. The numbers of each species which were distributed were:—

STATEMENT BY SPECIES, OF THE FISH AND FISH EGGS DISTRIBUTED FROM THE HATCHERIES DURING THE YEAR ENDED DECEMBER 31, 1933

Species	Green eggs	Eyed eggs	Fry	Advanced fry	Fingerlings	Yearlings and Older	Total distribution
<i>Salmo salar</i> —Atlantic salmon	50,300	500	3,046,111	1,600,400	15,086,083	20,188	19,803,582
<i>Salmo salar</i> —Hybrid Atlantic salmon (Atlantic—Landlocked)						134	134
<i>Salmo salar sebago</i> —Landlocked salmon	2,000			40,000	44,470		86,470
<i>Salmo salar sebago</i> —Hybrid landlocked salmon (Landlocked—Atlantic)						155	155
<i>Salmo tridens</i> —Rainbow trout			339,068	247,070	907,219	35,922	1,529,279
<i>Salmo clarki</i> —Cutthroat trout		373,790	242,724	622,000	1,158,920	553	2,397,987
<i>Salmo gairdneri</i> —Steelhead salmon			40,000	32,587	88,465		161,398
<i>Salmo gairdneri kamloops</i> —Kamloops trout		2,115,975	1,526,786		1,200	1,000	3,644,961
<i>Salmo leisenensis</i> —Loch Leven trout			253,786	20,000	350,921		624,707
<i>Salmo fario</i> —Brown trout				75,000	203,818	31,478	310,296
<i>Salmo fario</i> —Hybrid brown trout (Brown trout—Atlantic salmon)					48,056	282	48,341
<i>Salmo fario</i> —Albino brown trout					751	34	785
<i>Oncorhynchus nerka</i> —Sockeye salmon	13,372,068		47,748,775	4,081,000	4,589,191	354	69,791,388
<i>Oncorhynchus tshawytscha</i> —Spring salmon	418,015		1,317,270		458,328		2,193,613
<i>Oncorhynchus kennerlyi</i> —Kennerly's salmon	525,000		451,157				976,157
<i>Oncorhynchus kisutch</i> —Coho salmon	204,000		293,227			489	497,716
<i>Oncorhynchus gorbuscha</i> —Pink salmon	695,246						695,246
<i>Salvelinus fontinalis</i> —Speckled trout	60,000	36,000	155,456	787,815	5,298,866	169,533	6,507,670
<i>Cristivomer namaycush</i> —Salmon trout				174,810	115,344		290,154
	807,546	17,045,348	55,414,360	7,680,682	28,351,635	260,468	109,560,039

Inspections were continued with a view to locating waters where fish eggs might be obtained in sufficient quantities to warrant the establishing of collecting camps and also with a view to locating sites where the Fish Culture Service might be extended advantageously to districts that are not readily accessible from existing hatcheries.

Continued progress was made in experiments with equipment, methods and foods of various kinds at several hatcheries. The experiments and the investigations in relation to fish cultural problems that were made by the Biological Board of Canada are referred to in Appendix No. 2 of the Report of the Department of Fisheries for 1933-34.

The Fish Cultural Branch participated with units showing hatchery products and equipment in an exhibit that was made at Yarmouth, Nova Scotia.

Some 13,843 suckers, over seven and one-half tons in weight, were destroyed in Wilmot stream, which flows into Loch Lomond near Saint John, New Brunswick. Some 586 coarse fish were also destroyed in Blue and McKenzie lakes in the Princeton area, British Columbia.

Twenty-four main hatcheries, nine subsidiary hatcheries, eight salmon-retaining ponds and several egg-collecting stations were operated during 1933. The output from these establishments 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 1933

Established	Hatchery	Location	Species	Green eggs	Eyed eggs	Fry	Advanced fry	Fingerlings	Yearlings and older	Total distribution by species	Total distribution by hatcheries
1929	Antigonish.....	Fraser's Mills, N.S.....	Atlantic salmon.....				80,000	1,402,205	9,188	1,491,393	
			Brown trout.....					164,757		164,757	
			Rainbow trout.....					77,866	11,498	89,364	
			Speckled trout.....				40,000	695,308	75,733	811,041	2,556,555
1876	Bedford.....	Bedford, N.S.....	Atlantic salmon.....	(e) 300	500			1,239,765		1,240,565	
			Landlocked salmon.....					28,000		28,000	
			Salmon trout.....					115,000		115,000	
			Speckled trout.....					988,411		988,411	2,371,976
1902	Margaree.....	N. E. Margaree, N.S.....	Atlantic salmon.....			672,220	50,000	2,240,717		2,962,937	
			Speckled trout.....					35,220		35,220	2,998,157
1912	Lindloff (a).....	St. Peters, N.S.....	Atlantic salmon.....					650,000		650,000	
			Rainbow trout.....					156,040		156,040	
			Speckled trout.....					75,155		75,155	881,195
1913	Middleton.....	Middleton, Annapolis Co., N.S.....	Atlantic salmon.....					798,400		798,400	
			Speckled trout.....					603,450	63	603,513	1,401,913
1933	Nictaux Falls (d).....	Nictaux Falls, N.S.....	Atlantic salmon.....					44,500		44,500	44,500
1929	Yarmouth.....	South Ohio, N.S.....	Atlantic salmon.....			75,000		610,000	11,000	696,000	
			Kamloops trout.....						1,000	1,000	
			Rainbow trout.....					97,000	23,500	120,500	
			Speckled trout.....			12,000		399,585	93,000	504,585	1,322,085
1925	Chamcook lakes (b).....	Charlotte Co., N.B.....	Landlocked salmon.....	(e) & (f) 2,000						2,000	2,000
1928	Florenceville.....	Florenceville, N.B.....	Atlantic salmon.....					1,696,283		1,696,283	
			Speckled trout.....				149,000	731,837	487	881,324	2,577,607
1880	Grand Falls.....	Grand Falls, N.B.....	Atlantic salmon.....					1,841,422		1,841,422	
			Speckled trout.....					905,419		905,419	2,746,841
1915	Tobique (a).....	Plaster Rock, N.B.....	Atlantic salmon.....			471,172				471,172	471,172
1914	St. John.....	Saint John, N.B.....	Atlantic salmon.....			275,000	295,000	62,781		632,781	
			Atlantic salmon, hybrids.....						134	134	
			Brown trout.....				75,000	39,061	889	114,950	
			Brown trout, albinos.....					751	34	785	
			Brown trout, hybrids.....					48,059	282	48,341	
			Landlocked salmon.....				40,000	16,470		56,470	
			Landlocked salmon, hybrids.....						155	155	
			Loch Leven trout.....					20,761		20,761	
			Rainbow trout.....					27,580		27,580	
			Speckled trout.....	(e) 60,000			95,000	608,686	250	763,936	1,665,893
1914	St. John Salmon Pond.....	Saint John, N.B.....	Atlantic salmon.....	(e) & (f) 50,000						50,000	50,000
1874	Miramichi.....	South Esk, N.B.....	Atlantic salmon.....					3,854,200		3,854,200	
			Speckled trout.....					114,107		114,107	3,968,307
1874	Restigouche.....	Flatlands, N.B.....	Atlantic salmon.....			1,195,000	592,000	140,656		1,927,656	
			Speckled trout.....					112,430		112,430	2,040,086
1914	Nipisiguit (a).....	Bathurst Mines, N.B.....	Atlantic salmon.....			337,719				337,719	337,719
1906	Kelly's Pond.....	Southport, P.E.I.....	Atlantic salmon.....				583,400	505,154		1,088,554	
			Speckled trout.....				212,500	139,143		351,643	1,440,197
1914	Banff.....	Banff, Alta.....	Cutthroat trout.....				190,000	1,017,220		1,207,220	
			Loch Leven trout.....			90,000	20,000	350,160		440,160	
			Rainbow trout.....				228,795	256,400		485,195	
			Salmon trout.....					174,810	344	175,154	
			Speckled trout.....			10,000	178,885	2,545		191,430	2,499,159

1928	Jasper Park (a)	Jasper, Alta.	Kamloops trout			83,437				83,437		
			Rainbow trout			339,068				339,068		
			Speckled trout			38,944				38,944	461,449	
1928	Waterton lakes	Twin Butte, Alta.	Cutthroat trout				432,000	103,000	553	535,553		
			Rainbow trout				18,275	292,333	924	311,532	847,085	
1916	Cultus lake	Vedder Crossing, B.C.	Cutthroat trout		110,000	59,133				169,133		
			Kamloops trout		73,975	4,000				77,975		
			Sockeye salmon	(e)	624,438	3,943,966				4,568,404		
			Steelhead salmon					88,465	346	88,811	4,904,323	
1932	Smiths Falls	Vedder Crossing, B.C.	Sockeye salmon			807,000				807,000	807,000	
1906	Pemberton	Owl Creek, B.C.	Kamloops trout		250,000	35,950				285,950		
			Sockeye salmon			21,330,000				21,330,000	21,615,950	
1917	Pitt Lake	Alvin, B.C.	Coho salmon							489	489	
			Cutthroat trout		19,810					19,810		
			Sockeye salmon			3,002,145		199,680		3,201,825	3,222,124	
1903	Lakelse lake	Lakelse lake, via Terrace, B.C.	Cutthroat trout					38,700		38,700		
			Sockeye salmon			5,332,520		120,000	354	5,452,874	5,491,574	
1908	Babine lake	Babine lake, via Topley, B.C.	Sockeye salmon			4,877,587		1,008,163		5,885,750	5,885,750	
1906	Rivers Inlet	Rivers Inlet, B.C.	Sockeye salmon		7,758,655	8,455,557				16,214,212		
			Spring salmon					59,725		894,893	17,109,105	
1931	T'ell river (b)	Queen Charlotte Islands, B.C.	Pink salmon	(e)	695,246					695,246	695,246	
1911	Anderson lake	Kildonan, B.C.	Sockeye salmon			3,003,000		880,000	1,115,414	4,998,414		
			Spring salmon						180,448	180,448	5,178,862	
1933	Sproat river (c)	Sproat river, B.C.	Spring salmon			323,015				323,015	323,015	
1911	Cowichan lake	Lake Cowichan, B.C.	Atlantic salmon							20,000		
			Brown trout						30,589	30,589		
			Coho salmon		204,000	293,227				497,227		
			Cutthroat trout		145,000	183,591				328,591		
			Kamloops trout		112,000	28,028				140,028		
			Loch Leven trout			163,786				163,786		
			Spring salmon		95,000	482,102			218,155	795,257		
			Steelhead salmon			40,000		32,587		72,587	2,048,065	
1911	Kennedy lake	Tofino, B.C.	Sockeye salmon		1,985,975		3,201,000	2,145,934		7,332,909	7,332,909	
1933	Beaver lake (a)	Kelowna, B.C.	Kamloops trout			243,442				243,442		
1922	Lloyds creek (a)	Kamloops, B.C.	Kamloops trout			857,000				1,652,600	1,652,600	
1932	Lardo (a)	Lardo, B.C.	Kamloops trout			230,000				294,200	294,200	
1923	Nelson	Nelson, B.C.	Cutthroat trout			98,980				98,980		
			Kennerly's salmon	(e)	525,000	211,907				736,907		
			Kamloops trout			218,000		1,200		335,105		
			Speckled trout			36,000				130,512	1,301,504	
1928	Penask lake (a)	Quilchena, B.C.	Kamloops trout			265,000				265,000	265,000	
1928	Summerland (a)	Summerland, B.C.	Kamloops trout			110,000				266,224		
			Kennerly's salmon			239,250				239,250	505,474	
					807,546	17,045,348	55,414,360	7,680,682	28,351,635	260,468	109,498,454	*109,560,039

(a) Subsidiary hatchery.

(b) Collecting camp.

\* The eggs, fry and fingerlings included in this distribution, with the exceptions indicated, were from collection in the autumn of 1932, and the spring of 1933.

(c) Eyeing station.

(d) Pond and rearing station combined.

(e) Autumn collection 1933.

(f) Balance allotted to hatcheries.

HATCHERY OUTPUT, BY PROVINCES, OF EGGS, FRY AND OLDER FISH DURING  
1933

Nova Scotia—			
Atlantic salmon.....	7,883,795		
Brown trout.....	164,757		
Landlocked salmon.....	28,000		
Kamloops trout.....	1,000		
Rainbow trout.....	365,904		
Salmon trout.....	115,000		
Speckled trout.....	3,017,925		
			11,576,381
New Brunswick—			
Atlantic salmon.....	10,811,233		
Atlantic salmon (hybrids) (Atlantic salmon—Landlocked salmon).....	134		
Brown trout.....	114,950		
Brown trout, albinos.....	785		
Brown trout (hybrids) (Brown trout—Atlantic salmon).....	48,341		
Landlocked salmon.....	58,470		
Landlocked salmon (hybrids) (Landlocked salmon—Atlantic salmon).....	155		
Loch Leven trout.....	20,761		
Rainbow trout.....	27,580		
Speckled trout.....	2,777,216		
			13,859,625
Prince Edward Island—			
Atlantic salmon.....	1,088,554		
Speckled trout.....	351,643		
			1,440,197
Alberta—			
Cutthroat trout.....	1,742,773		
Loch Leven trout.....	440,160		
Kamloops trout.....	83,437		
Rainbow trout.....	1,135,795		
Salmon trout.....	175,154		
Speckled trout.....	230,374		
			3,807,693
British Columbia—			
Atlantic salmon.....	20,000		
Brown trout.....	30,589		
Loch Leven trout.....	163,786		
Coho salmon.....	497,716		
Cutthroat trout.....	655,214		
Kamloops trout.....	3,560,524		
Kennerly's salmon.....	976,157		
Pink salmon.....	695,246		
Sockeye salmon.....	69,791,388		
Speckled trout.....	130,512		
Spring salmon.....	2,193,613		
Steelhead salmon.....	161,398		
			78,876,143
			109,560,039

The experimental introduction of brown trout (*Salmo fario*) into the Cowichan and Little Qualicum rivers, British Columbia, was continued. A third allotment of 300,000 eggs for this experiment was received on January 11, 1934, from the Trout Brook Company, Hudson, Wisconsin. A second allotment of 100,000 eyed Atlantic salmon eggs was obtained through the Fishery Board of Scotland by the Game Board of British Columbia, in continuation of the latter's effort to establish early running Atlantic salmon in the province. These eggs were laid down January 13, 1934, and the resultant fry will be reared at the Cowichan hatchery, British Columbia.

The Canadian National Railway, Canadian Pacific Railway, Esquimalt and Nanaimo Railway, 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. A similar courtesy was also extended by the Northern Alberta Railways Company.

This courtesy has been extended by the Canadian National Railway and the Canadian Pacific Railway Companies to include transportation for eggs and fish, but without attendants, on the coastal service in British Columbia. The Canadian Pacific Railway Company has also granted free transportation for

such shipments with attendants on the British Columbia lake and river service and on the steamer service between Saint John, New Brunswick, and Digby, Nova Scotia.

The extent of co-operation in 1933 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.....	4,728	39	2,874	2,604	5,478	139	120	259	47
C.P.R.....	9,650	55	8,055	7,445	15,500	288	290	578	90
E. & N.R.....	1,176	22	633	633	1,266	80	80	160	24
N.A.R.....	990	2	495	495	990	6	6	12	2
D.A.R.....	390	2	201	201	402	7	7	14	2
	16,934	120	12,258	11,378	23,636	520	503	1,023	165

NOTE.—Number of passages refers to transportation one way. A return trip is counted as two passages. Number of permits refers to one-way passage for cases or cans.

Gratifying reports regarding results that are apparent from the distribution of hatchery output continued to accumulate from all districts where this department is operating hatcheries and an increased interest is generally apparent in fish cultural operations.

In addition to results mentioned further on in this report by District Supervisors Catt and Harrison, the following results from stocking barren lakes are mentioned: Manistee lake in the Fernie district, British Columbia, was stocked with 23,500 Kamloops fry in 1925. In the spring of 1927 Kamloops averaged 24 inches long and  $7\frac{1}{4}$  pounds weight. One fish weighing 13 pounds 1 ounce was taken in September, 1927. Cahill lake near Slocan, British Columbia, received 20,000 Kamloops trout eggs in 1925 and in 1931 fish up to 15 pounds (when dressed) were taken. Haskins lake in the Kelowna district, British Columbia, received 25,000 Kamloops fry in 1927 and four years later 14-pound fish were being caught. Lillian lake near Nelson, British Columbia, was stocked with 12,500 rainbow trout eggs in 1929 and by May, 1932, specimens had attained a weight of 7 pounds. Paul lake in the Kamloops district, British Columbia, was first stocked in 1909 from Granite Creek hatchery with 5,000 Kamloops trout fry. It now supplies Lloyd's Creek hatchery with approximately 1,000,000 eggs annually. Some 6,000 fish are captured from this lake each year. Maligne lake, Alberta, stocked in 1928 with speckled trout, produced spawning fish 18 inches long in October, 1929, and by November, 1931, they were 20 inches long and weighed 6 pounds, had a depth of  $7\frac{1}{2}$  inches and a girth of 16 inches. Clear lake in Charlotte county, New Brunswick, was stocked in 1925 and subsequent years with rainbow trout from Saint John hatchery. In 1929 rainbow  $24\frac{1}{2}$  inches long weighing  $4\frac{1}{2}$  pounds were caught. Alderson lake, Alberta (6, 1, 30 W. 4), received cutthroat fry in 1928. These had attained a growth of 10 to 14 inches by 1931 and weighed 2 pounds. Marvel lake, Alberta (22, 12, W. 5), had cutthroat introduced in 1926 and by 1933 they were 25 inches long and 6 pounds in weight. Herbert lake, Alberta, (T. 29, R. 16), received cutthroat fingerlings in 1930. They were 8 to 14 inches long by September, 1932.

The Director of Fisheries for Alberta advised in August, 1933, that excellent results were apparent, notably in the Bow, the Highwood, Willow creek and the Crowsnest river, from the introduction of rainbow trout into the foothill streams south of Calgary; that excellent rainbow trout fishing was being enjoyed in the Bow river from Calgary to about six miles east of Carseland, fish up to  $4\frac{1}{2}$  pounds being taken quite frequently in this part of the river, which was practically barren of trout before the rainbow were introduced; in the Highwood

for about thirty miles east of High River, where previously no trout were caught, rainbow up to 4 pounds in weight were taken, with many averaging  $2\frac{1}{2}$  pounds each, and that angling almost equally as good was enjoyed in Willow creek and the Crowsnest river.

In many districts private individuals and local organizations, such as fish and game clubs, angling and protective associations, boards of trade, service clubs, etc., have provided transportation for the distribution of hatchery product in local waters and have otherwise assisted in fish cultural work. In general the interest shown in co-operative fish culture has greatly increased. Several rearing ponds, some of them on a rather extensive scale, have been constructed. Construction costs have been borne by the local organization interested, in some instances assisted by the provincial government. The department has furnished biological, fish cultural, and engineering advice when requested in all instances prior to development, and it has also supplied eggs or fry up to the capacity of the respective ponds. The Avon River Power Company has continued its cordial assistance and co-operation in the operation of the Nictaux salmon retaining pond.

Officials and employees of other federal departments, provincial officials, and officers and crews of fishery patrol and protection boats, and other branches of this department have cordially co-operated in all instances where they could be of assistance. The Research Committee of the Biological Board has continued its courteous consideration of all fish culture problems that were referred to it.

From the autumn collection of 1932 various exchanges of eyed eggs were made with the United States Bureau of Fisheries, details of which are given in a subsequent statement.

## MARITIME PROVINCES, EASTERN DIVISION

### *District Supervisor of Fish Culture, James Catt*

Distributions as a whole from the several Maritime Province hatcheries were very satisfactory during the past season. In certain cases the stock liberated showed a marked improvement over the previous year.

The collection of speckled trout ova this season surpassed anything heretofore achieved in this division.

Atlantic salmon egg collections were below normal, due to a most unusual series of fall freshets with intervals of very cold weather.

Storms and freshets damaged the Miramichi retaining pond to such an extent that the majority of the impounded fish escaped. Heavy spates destroyed the fish trap at Margaree Harbour and twice washed out the retaining fence at River Philip. Floods also covered the Sackville river trap and fence and rendered them ineffective for considerable periods.

Notwithstanding bad weather conditions, a good collection of landlocked salmon eggs was made at Chamcook lake, New Brunswick. This was not the case at Grand lake, Nova Scotia, where freshets, after breaking the main fence on the Shubenacadie river, remained so high that for weeks the surface of the stream was at least eighteen inches over the top of the fence.

To the existing lists of waters proven to have been greatly benefited by stocking, at least two new areas may be added. They are Giant's lake, stocked with rainbow trout from Antigonish hatchery, and Hart's lake, stocked with speckled trout from Bedford hatchery. In the latter case many of the fish have descended into the headwaters of the Wallace river. Hart's lake received 2,500 speckled trout fry in 1931 and 30,000 in each of the years 1932 and 1933. In 1933 some of the trout caught in the lake were 19 inches long and in a spawning condition. Yearlings were 6 to 7 inches long. Giant's lake received its first

stocking in 1931. In 1933 large numbers of rainbow fingerlings, the result of natural propagation of the two-year-old stock, were seen by the inspecting officer while the largest of the two-year-old fish observed had an estimated weight of over 3 pounds. The size of many trout taken in the increased catch on the Antigonish rivers indicates that there can be no reasonable doubt as to their hatchery origin. In the small privately owned pond near Saint John, known as Ray's lake, the brown trout are doing well. One specimen over 6 pounds in weight was captured there in the summer of 1933. Many specimens of 1½ to 2 pounds were also taken. The speckled trout stock in this water continues to hold its own. Woodard lake below Pennfield in Charlotte county has yielded excellent returns from the speckled trout liberated in it from St. John hatchery. The fish have made a quick growth and specimens up to 4 pounds 3 ounces in weight have been reported.

An extended investigation to locate sites for natural fingerling and brood stock ponds was made particularly in southwestern Nova Scotia. These investigations entail a great deal of work as every mile of a suitable stream must be examined, providing that it conforms to accessibility requirements. Some records of flow and temperatures during the warm weather must also be made.

Natural brood ponds made by dams on the headwaters of the Tusket were investigated. These ponds were not all established with the intention of improving angling, but as storages for small lumbering operations, etc. They carry great quantities of trout. It is of interest to note that, when the water was run off the flowage areas of these ponds, no fish were trapped, and nearly all the larvae of aquatic insects appeared able to retreat to deeper water from the drying zones. This was due to the slow rate at which the ponds were lowered.

In Sullivans, Payson's and Klondike flowages (the natural ponds mentioned above), large numbers of well-conditioned speckled trout were found to be inhabiting water of a pH below 5.4.

The Saint John branch of the New Brunswick Fish and Game Protective Association, in conjunction with the Loch Lomond Protective Association, established a natural rearing pond for speckled trout on Stevenson's brook, Loch Lomond, a site suggested by the writer to Doctor A. G. Huntsman. The associations mentioned above spent a considerable sum of money in purchasing the necessary land and building a suitable dam to flood it. The pond, completed late in the fall, covers about 15 acres and has been stocked with large speckled trout fingerlings from the St. John hatchery.

At St. Stephen the local branch of the provincial association built a pond about one-quarter of an acre in area. This pond was deepened and cleaned in the autumn of 1933.

The St. Andrews branch of the New Brunswick Fish and Game Protective Association established a small rearing pond 150 feet by 5 feet on a spring brook feeding Limeburner lake. This water was stocked with 2,000 speckled trout fingerlings. In the fall, 500 of these fingerlings averaging three inches in length were liberated in Limeburner lake. A number of fish were left in the pond in order that their actions during the winter might be observed. Notwithstanding continued sub-zero weather, the pond was still open on December 19. It is to be enlarged during the coming season when it will also be covered with wire as a protection against kingfishers.

A small allotment of fingerlings was placed in a 20 by 8 foot pond on the brook feeding Bonaparte lake. The fish appeared to thrive without being fed, but unfortunately an early freshet destroyed the pond, which will not be rebuilt.

An examination was made of a number of pond sites suggested by the Fredericton and Moncton branches of the Provincial Protective Association. None of them however fulfilled requirements. Additional sites suggested by the secretary will be examined next spring.

The Nova Scotia Fish and Game Protective Association through Doctor Fales, in conjunction with the Provincial Government of Nova Scotia and divers municipal bodies, completed a group of rearing ponds for landlocked salmon at the head of Grand lake, Nova Scotia. As these ponds were completed late in the year, they have not yet been used.

The co-operation of the Chief Supervisor of Fisheries, and some of his officers, provincial officers, and divers branches of the fish and game protective associations in New Brunswick and Nova Scotia has in many ways benefited the department's fish cultural branch and is greatly appreciated.

The department's staff in its several Maritime establishments as a whole rendered excellent service. They displayed interest and intelligence in carrying out their duties.

#### ANTIGONISH HATCHERY

*K. G. Shillington, Superintendent*

An excellent distribution was made of Atlantic salmon, speckled trout, rainbow trout and brown trout fry and fingerlings, also some Atlantic salmon, rainbow and speckled trout yearlings.

The best previous collection of speckled trout eggs at any hatchery in the Maritimes was greatly exceeded; the brood stock of this species at this establishment produced 7,026,668 eggs.

Two new ponds of the circular type were constructed close to the river bank. They are operating most successfully and, at the end of 1933, carried several thousand speckled trout fingerlings from 7 to 8 inches in length.

The superintendent introduced an interesting innovation in the form of a movable spawning shelter. This is moved over the ponds where stripping operations are being carried out and permits this work to be done under comfortable conditions even in the coldest weather. Heavy spates prevented a good collection of speckled trout eggs at Lochaber lake, the streams in the district overflowing their banks as well as the traps and fences in them.

Selective breeding was practised at this establishment. Breeding from hatchery-reared stock of speckled trout produced fingerling fish bigger than those produced from eggs obtained from trout that had come to the spawning stage in their natural habitat. Weights of 100 fingerlings were taken in September—those produced from wild stock (Lochaber lake) weighed 7½ ounces while those from selected parents reared at the hatchery weighed 50½ ounces.

During the season the following numbers of eggs were collected by the staff of this hatchery: Speckled trout, hatchery ponds, 7,026,668; Lochaber lake, 61,625; South river (sea-run variety), 4,455; Atlantic salmon, South river, 32,200; rainbow trout, hatchery ponds, 22,960. The following numbers of eggs were also received: 75,000 rainbow trout and 188,300 brown trout from Saint John; 1,638,000 Atlantic salmon from River Philip. Outgoing shipments were: 250,000 speckled trout to Yarmouth; 100,000 speckled trout to Lindloff and 200,000 Atlantic salmon to Lindloff. The distributions were: Atlantic salmon 1,491,393, speckled trout 811,041, rainbow trout 89,364, and brown trout 164,757.

#### BEDFORD HATCHERY

*George Heatley, Superintendent*

A good distribution of fingerlings, larger than that of any previous year, was made from the Bedford hatchery during the past season.

An effort to collect landlocked salmon eggs in the Grand lake district was not successful. This, however, could not be avoided in view of the unusual freshet conditions that obtained generally throughout the Maritime Provinces

last autumn. The apron, piers and fence which were erected in the Shubenacadie river near the outlet were entirely covered by the flood water, which also covered some area on both banks of the river, although the fence was built slightly above ordinary high-water mark. A trap was also installed in the upper part of the fish ladder in the new dam that was built at Fletcher's run at the upper end of Grand lake.

For the same reason, a smaller collection of Atlantic salmon eggs, namely 842,600, than that of the preceding year was made in the Sackville river near Bedford. A fence was erected in the channel leading to Roy's pond to prevent the fish passing around the dam, and horizontal racks were installed over the apron of the main dam. These precautions proved quite satisfactory until the entire area was completely flooded in the early part of October. Large numbers of fish were in evidence in Bedford basin prior to the freshets, but during the high water, the fences and barriers above referred to were no obstruction to the upstream passage of the fish. These were completely flooded and the water rose to such a height that boats were used as a means of transportation on at least one of the roads adjacent to the river.

A considerable amount of work was done to the canal which was used as a retaining pond for parent salmon, and eight concrete rearing ponds were constructed on the hatchery grounds.

Due to distributions from this hatchery, excellent fishing is now enjoyed in Hart's lake on the borders of Colchester and Cumberland counties. Previous to these introductions, this lake contained no speckled trout.

The following supplies of eggs were laid down in the Bedford hatchery during 1933: Atlantic salmon, Sackville river, 842,600; River Philip, 791,000; speckled trout, Antigonish hatchery, 1,000,000; Loch Leven trout, Bozeman, Montana, 302,000; landlocked or sebago salmon, Saint John, New Brunswick, 75,000.

Distributions for the season were: Atlantic salmon, 1,240,565; salmon trout, 115,000; speckled trout, 988,411; landlocked salmon, 28,000.

#### MARGAREE HATCHERY

*L. J. Burton, Superintendent*

A small collection of 73,940 speckled trout eggs was made in the hatchery ponds. Two million and ninety-two thousand Atlantic salmon eggs were received in November and December from the Margaree salmon pond, and 800,000 in February from the Kelly's Pond hatchery.

Distributions for the season were: Atlantic salmon, 2,962,937; speckled trout, 35,220.

#### LINDLOFF HATCHERY

*J. C. Goswell, Officer in Charge*

Lindloff hatchery, subsidiary to Margaree, received the following eggs, all in the eyed stage: 500,000 Atlantic salmon from the Miramichi hatchery and 200,000 from the Antigonish hatchery; 200,000 rainbow trout from the Saint John hatchery; 100,000 speckled trout from the Antigonish hatchery. Distributions were: 650,000 Atlantic salmon; 156,040 rainbow trout; 75,155 speckled trout.

For the first time, speckled trout fingerlings were reared at this establishment. Considerable trouble was experienced in maintaining an adequate water supply in the long earthen ponds. This was due to recurring leaks in the old mill dam. This difficulty has been overcome.

## MARGAREE SALMON RETAINING POND

*J. P. Chiasson, Superintendent*

For the second successive year, early running, or June, salmon were purchased from the commercial nets outside the Margaree harbour and retained in a pound-net pot in the harbour during the summer months. The percentage of loss was very low and there was a vast improvement over the results that were obtained during the previous year in the permanent pond at Buckle's cove. One hundred and eighty-eight early fish were impounded, of which 176 were stripped in the autumn. The balance of 12 did not all die but were liberated on showing signs of increasing distress shortly after their capture. One hundred and thirty-six salmon were also taken in the autumn but, as elsewhere, heavy freshets proved a great handicap, putting the trap out of commission and damaging it to such an extent that it could not be replaced. Early running salmon, 176 in number, produced 1,019,000 eggs, and late running 1,073,000, all of which were laid down in the Margaree hatchery.

## MIDDLETON HATCHERY

*F. M. Millett, Superintendent*

A satisfactory distribution was made from the Middleton hatchery and many favourable comments have been heard on the result of its operations. It was from this plant that speckled trout were distributed in Romsey, Sand, Lily, Waterloo, and Elliott lakes, in which excellent catches have been taken during the past season. Fish of 5 pounds in weight are reported from Romsey lake.

During 1933, 1,045,500 Atlantic salmon eggs were received from Nictaux pond, 280,500 from River Philip camp, and 772,000 speckled trout eggs from the Antigonish hatchery.

The general public is taking a greatly increased interest in its operations and the Fish, Forest and Game Protective Associations are co-operating. An increased number of applications is being received each year and, while it is impossible, owing to the large territory that this hatchery covers, to distribute the numbers that the department would like to, yet in most of the waters stocked the fishing is reported as being improved. A larger run of smolt is reported, particularly in the Nictaux and Annapolis rivers. Distributions were: Atlantic salmon, 798,400, and speckled trout, 603,513.

## NICTAUX SALMON RETAINING POND

*J. W. Heatley, Officer in Charge*

The run of Atlantic salmon that passed the Nictaux falls to the Nictaux salmon retaining pond in 1933 was considerably smaller than the runs of the two previous years. All were captured and held in excellent condition until the autumn. These fish yielded an unusually large number of first-class eggs, the quantity obtained being nearly double the number that was expected on the basis of the last two seasons. The total collection of 1,045,000 was laid down in the Middleton hatchery.

Twenty outside rearing troughs supplied with water from the canal were installed below the power dam. These troughs gave excellent results, producing 28,000 No. 2 and 16,500 No. 3 Atlantic salmon fingerlings.

## RIVER PHILIP EGG COLLECTING CAMP

*F. M. Millett, Superintendent*

The discarded upper dam that was one time operated by the Oxford Light and Power Company with its fishway is used for the capture of parent salmon

at this point. As this dam is not in regular use, it is not kept in repair and considerable work was necessary in removing debris from the fishway, erecting fences and otherwise preparing for the season's collection of eggs. All preliminary work of this nature was done by Superintendent Heatley of the Bedford hatchery. The capture of parent fish and the collection of eggs was undertaken by Superintendent Millett of the Middleton hatchery. As elsewhere in the Maritime Provinces, this work was done under very adverse weather conditions. Repeated heavy freshets, with intervals of extremely cold weather, rendered the operations very difficult. The retaining fence was washed away twice, and over 1,000 fish taken early in the season escaped when the river flooded out that portion of the canal which is used as a retaining pond. For eight days during the heaviest part of the run, the stream was so high that the Oxford dam presented no barrier to ascending fish, which merely swam over it instead of going into the trap. It is estimated that at least 5,000 salmon reached the headwaters. In spite of these difficulties, 865 salmon were retained in the pond and stripped. The resultant collection of eggs, namely 4,635,900, which creates a record for this station, was distributed as follows: To Antigonish hatchery, 1,638,000; Bedford, 791,000; Middleton, 280,500; Yarmouth, 748,000; Miramichi, 1,178,400.

#### YARMOUTH HATCHERY

*H. V. Gates, Superintendent*

The general output from the Yarmouth hatchery was good, a larger number of yearling and older fish being produced than at any other hatchery in the Maritime Provinces. The hatchery ponds produced 413,000 speckled trout eggs and 3,000 rainbow trout eggs, which were supplemented by 200,000 rainbow trout eyed eggs from the Cape Cod Trout Company, 250,000 speckled trout eyed eggs and 935,000 speckled trout green eggs from the Antigonish hatchery, 748,000 Atlantic salmon eggs, green, from the River Philip pond and 750,000 speckled trout eggs, eyed, from the American Fish Culture Company.

While the concrete ponds of this hatchery have yielded excellent results in raising large quantities of fingerlings and yearlings, they have not been as successful in producing adult trout of good quality. Consequently, the hatchery brook was subdivided into a series of ponds in which the adult fish appeared to thrive better.

While no proof exists that this year's improved speckled trout angling in the Yarmouth district was the outcome of hatchery stocking, yet there can be no reasonable doubt that such was the case. Members of the Yarmouth branch of the Nova Scotia Fish and Game Protective Association expressed themselves as being delighted with the improved early trout fishing.

An exhibit of live fish was made at the Yarmouth Exhibition, September 27 to 29 comprised of Atlantic salmon, rainbow and speckled trout in various stages of development from fingerlings to four-year-old fish.

Distributions for the season were: Atlantic salmon, 696,000; speckled trout, 504,585; rainbow trout, 120,500; Kamloops trout, 1,000.

#### FLORENCEVILLE HATCHERY

*George Sutherland, Superintendent*

Three hundred thousand eyed speckled trout eggs, originally purchased from the Cape Cod Trout Company, were transferred to this hatchery from Grand Falls in February. Two hundred and fifty thousand were also received from the American Fish Culture Company in December. One million two hundred and ninety-eight thousand eight hundred and twenty-four Atlantic salmon

eggs were received from the Saint John pond in November, and up to December 31, 957,266 speckled trout eggs were collected in the hatchery ponds.

Distributions for the season were: Atlantic salmon, 1,696,283; speckled trout, 881,324.

#### GRAND FALLS HATCHERY

*W. A. McCluskey, Superintendent*

The operations at this establishment continue to improve. A late output of salmon fingerlings was of exceptionally fine quality. The Superintendent made an initial but satisfactory collection of 393,316 speckled trout eggs in Three Brooks deadwater, the property of Mr. Donald Fraser of Plaster Rock. Collecting operations were carried on under extremely bad weather conditions, the freshets of early October being followed by snow and ice the latter part of the month. The department supplied an experienced hatchery man. Mr. Fraser supplied retaining crates and such assistance as was needed. The department transported the eggs to Grand Falls hatchery, where they were eyed, and purchased 200,000 of these eggs from Mr. Fraser when they had reached the eyed stage. The balance will be retained at the hatchery until they are free-swimming fry, when they will be placed at Mr. Fraser's disposal to be distributed in the ponds or otherwise disposed of by him. Three hundred thousand speckled trout eggs were received in February from the Florenceville hatchery and 1,000,000 in December from the American Fish Culture Company. The season's supply of Atlantic salmon eggs from the Saint John pond, namely, 1,270,260, were received in October and November. Distributions amounted to: Atlantic salmon, 1,841,422; speckled trout, 905,419.

#### TOBIQUE HATCHERY

*R. O. Barrett, Officer in Charge*

The Tobique hatchery, subsidiary to Grand Falls, which was established to facilitate the distribution of salmon in the Tobique river, which is the most important spawning tributary of the St. John river system, received its supply of salmon eggs, 600,000, from the Miramichi hatchery. Of this number 471,172 were hatched and distributed.

#### MIRAMICHI HATCHERY AND SALMON RETAINING POND

*Frank Burgess, Superintendent*

An effort was made for the second consecutive season to retain early or June salmon in the pond that had been dredged the previous year in the hatchery brook near its outlet to the Miramichi river. Twenty-five selected salmon were purchased from commercial fishermen and placed in this enclosure between June 5 and 15. Although the greatest care was exercised in selecting the fish and they were placed in the pond in apparently perfect condition, none of them survived until the autumn. In accordance with the usual practice, 1,712 salmon secured by tender and contract from commercial fishermen were placed in the pond between September 12 and October 23, but unfortunately a high tide accompanied by a very heavy northeast October gale caused the retaining fence to move slightly, but to a sufficient extent to permit most of these fish to escape. This occurred so late in the season that it was impracticable to secure other salmon as they had at that time dispersed to the spawning grounds at the headwaters of the Miramichi and its numerous tributaries. The collection of eggs, amounting to 1,002,128, was consequently very much smaller than that of recent years. This collection was supplemented by

receipt of 1,178,400 Atlantic salmon eggs in November from River Philip camp. Through an exchange agreement with the United States Bureau of Fisheries 1,000,000 Atlantic salmon eggs were shipped to Craig Brook hatchery, Maine, on February 28. Other outgoing shipments of eyed eggs of this species in March and April were: To Tobique hatchery, 600,000; Lindloff hatchery, 500,000; Restigouche hatchery, 600,000.

Distributions were: Atlantic salmon, 3,854,200; speckled trout, 114,107.

#### NEW MILLS SALMON RETAINING POND

*Wm. White, Superintendent*

Largely on account of a run of female salmon smaller than usual the egg collection at the New Mills pond was slightly below normal.

Considerable trouble was experienced in keeping the salmon in good condition in the pond during August. A drought at this time entirely dried up the feeder brook. This condition was aggravated by a run of neap tides which for some days did not reach the pond at high water. When the first fish showed signs of distress an attempt was made to improve conditions by removing part of them to pontoons which were to be moored in sea water. This proposal was found to be impracticable because sea water of sufficient depth to insure coolness could only be found in exposed portions of the bay. The total loss of salmon was not, however, nearly as great as was feared, or as might have been expected when the conditions were at their worst. The loss of twenty-eight during the season is attributed to unfavourable water conditions in the pond, and the loss of twelve to the effect of injuries. Four hundred and eighty-seven salmon purchased from the commercial fishermen of the district were placed in the pond from May 24 to July 8. The total yield of 1,350,131 eggs was laid down in the Restigouche hatchery.

#### RESTIGOUCHE HATCHERY

*W. A. Mowat, Superintendent*

Under unusually cold weather conditions, a small collection of speckled trout eggs amounting to 53,774 was made at Black lake near Campbellton. While the size of this collection was much smaller than had been anticipated, the parent fish were of unusually fine quality. From Miramichi hatchery 600,000 Atlantic salmon eyed eggs were received in March and in April 593,670 of these were shipped to the subsidiary hatchery at Nipisiguit. In October and November 1,350,131 Atlantic salmon eggs were received from New Mills salmon pond.

Distributions were: Atlantic salmon, 1,927,656; speckled trout, 112,430.

#### NIPISIGUIT HATCHERY

*J. T. Comeau, Officer in Charge*

The Nipisiguit hatchery, subsidiary to Restigouche, which was primarily established to facilitate the stocking of the Nipisiguit river, received 593,670 Miramichi river eggs from the Restigouche hatchery. The distribution amounted to 337,719 Atlantic salmon.

#### SAINT JOHN HATCHERY

*J. D. Nichol, Superintendent*

This hatchery had a very satisfactory season. Included in the distributions was a group of speckled trout fingerlings of a size and quality not previously equalled at Saint John. They were liberated in the natural rearing pond on

Stephenson's brook, recently completed by the Loch Lomond Protective Association and the Saint John branch of the New Brunswick Fish and Game Protective Association.

A small but valuable group of two-year-old salmon (*Salmo salar* crossed with *Salmo salar* sebago) from one-quarter pound to one-half pound in weight were liberated in Chamcook lake on October 19. These hybrids were produced in two ways, namely crossing the Atlantic male with the sebago female and crossing the Atlantic female with the sebago male. Before liberation, one group was marked by removal of the adipose fin and the other by removing the left pectoral and adipose fins. Three specimens were caught later in the season.

The demand from this district for speckled trout is annually increasing. At the request of local interests the brown trout brood stock, which was developed for the purpose of establishing the species in Loch Lomond, was liberated, thus affording greater space for the production of speckled trout fingerlings and adults.

The Fish and Game Protective Association rendered valuable aid in distributing the season's output by supplying guides, boats, and other assistance.

A collection of eggs in the autumn was made under rather difficult conditions due to early snow and frost, which entailed removal of ice from the ponds before the fish could be captured.

The following supplies of eggs were obtained from the hatchery ponds: Speckled trout, 1,169,146; brown trout hybrids, 27,136; Loch Leven trout, 2,340; brown trout albinos, 7,256; rainbow trout, 424,870.

Rainbow trout eggs were eyed and 200,000 transferred to Lindloff hatchery and 75,000 to Antigonish hatchery. Other outgoing shipments were: 75,000 sebago salmon to Bedford hatchery; 188,300 brown trout to Antigonish hatchery; 65,010 speckled trout, Atlantic and landlocked salmon to the Biological Station at St. Andrews, New Brunswick.

The collection of landlocked or sebago salmon eggs was continued in the Chamcook lakes under the direction of Assistant R. O. Barrett of the Grand Falls hatchery, who made observations over the whole of the upper lake and a portion of the lower lake, which resulted in the locating of six spawning beds in the upper and two in the lower lake.

One hundred and sixty-four fish were caught as compared with 156 last year. From these 279,290 eggs were obtained, of which 277,290 were transferred to the Saint John hatchery and 2,000 to the Atlantic Biological Station at St. Andrews.

On October 31, 823,556 Atlantic salmon eggs were received from the Saint John salmon pond.

Distributions for the year were: Atlantic salmon, 632,781; Atlantic salmon hybrids, 134; brown trout, 114,950; brown trout albinos, 785; brown trout hybrids, 48,341; landlocked salmon, 56,470; landlocked salmon hybrids, 155; Loch Leven trout, 20,761; rainbow trout, 27,580; speckled trout, 763,936.

#### SAINT JOHN SALMON RETAINING POND

*J. D. Nichol, Superintendent*

The collection of salmon eggs at the Saint John pond was rather disappointing, largely due to the heavy loss of salmon caused by unfavourable conditions during the warm weather. The yield of the females that were stripped was also below the average. The first salmon was placed in the pond on May 29 and the last on June 24, a total of 1,215 being impounded. The collection of 3,442,640 eggs, which was approximately one-half that of last year, was distributed as follows: Florenceville hatchery, 1,298,824; Grand Falls hatchery, 1,270,260; Saint John hatchery, 823,556; Biological Board, St. Andrews, New Brunswick, 49,000; Biological Board, Toronto, Ontario, 1,000.

## KELLY'S POND HATCHERY AND MORELL SALMON RETAINING POND

*F. C. Hayley, Superintendent*

Thirty-four thousand eyed speckled trout eggs were purchased from the Ings private hatchery in April. In the following autumn the collection of speckled trout eggs was confined to the hatchery and Ings pond. In the case of the former, the work was done by the hatchery staff, and in the latter by the proprietor. Ings pond supplied 124,200 eggs, which will be paid for in 1934 on the basis of number of eggs that eye. Three hundred trout were caught with rod and line and retained in a small pond below the dam at the hatchery until ripe and 79 were taken in trap on brook at head of pond. Forty-seven thousand four hundred and forty-one eggs were secured. It was proposed to liberate these fish in lake Verd and Sherrys brook, but, owing to road conditions, this was found to be impractical after the fish were stripped. They were consequently returned to the hatchery pond. In February 800,000 Atlantic salmon eyed eggs were transferred to Margaree hatchery.

Operations at the Morell salmon retaining pond were in charge of Assistant A. Tait. The trap and retainers were in place by October 1 and, although a few fish had already ascended, 1,124 salmon were captured between October 11 and November 13. Of this number 441 were surplus males and were liberated unstripped between November 7 and December 4 above the trap. Six hundred and seventy-one fish were stripped and yielded 2,720,600 eggs, which were all laid down in Kelly's Pond hatchery.

Unusually cold and stormy weather and high tides were experienced and the river was frozen over almost continuously throughout stripping operations. This made the work of lifting the nets and handling the fish very difficult so it became necessary to remove the fish to wooden crates on November 16.

Distributions made were: Atlantic salmon, 1,088,554; speckled trout, 351,643.

### WESTERN DIVISION

*District Supervisor of Fish Culture, C. W. Harrison*

The run of sockeye salmon to the coastal waters of British Columbia in the season 1933 was disappointing. This condition was reflected in the collections of eggs at all but one sockeye salmon hatchery in the province. Rivers Inlet establishment secured its full quota but the total collection of sockeye salmon eggs at all stations where this variety of Pacific coast salmon is handled was 52,925,300, as against 113,970,724 and 87,277,285 eggs, respectively, in the brood years of 1928 and 1929.

Had all conditions been favourable, natural reproduction in conjunction with the huge artificial assistance given in the brood years should have produced a far greater return of adult sockeye salmon in the 1933 season. That unknown part of their life spent in salt water was apparently responsible for a huge loss, which might explain the pack of 1933.

Spring salmon collections were secured and laid down in Cowichan lake, Rivers Inlet, Anderson lake hatcheries and Sproat River eyeing station. The total number of eggs of this variety obtained was 1,737,885 as compared with 2,525,340 in 1932 and 2,156,150 in 1931. In this connection there were noticeable decreases in the numbers secured at the two first-named stations and increases in the collections at Anderson and Sproat river establishments.

A collection of coho salmon eggs numbering 1,044,000 was also laid down in Cowichan lake hatchery.

During the past year a number of experiments in connection with fish culture was conducted at different establishments in the province as follows:—

Tests to determine whether the use of trough riffles gave better results than troughs operated without such equipment.

Tests of this nature made at Smiths Falls hatchery in 1931-32 by officers of the Biological Board would indicate that the best results are secured by the use of riffles. Later experiments conducted by hatchery officers would appear to indicate that there is very little difference in results obtained as between the two methods when the troughs are carrying a light or normal load of eggs, although it is generally conceded that a distinct benefit is derived from the use of riffles when heavy loads of eggs are carried or a subnormal oxygen saturation of the water supply is the case.

Another interesting experiment that was undertaken at Cultus lake, Rivers Inlet and Smiths Falls hatcheries was to determine whether or not there is any change in size of sockeye salmon eggs during the period of incubation between the time they are laid down as water-hardened eggs and when they are near the point of hatching out. The results secured by the several officers conducting this experiment show a distinct change in the number of eggs that the same measure will hold at the beginning and the end of the period in question. In all instances the measures were found to hold a smaller number of eggs of the same species at the end than they did at the beginning of the period, which demonstrates the necessity for accurate counts of the contents of the measure to be used when eggs are received or shipped at different stages of development.

Another interesting experiment that was undertaken at several hatcheries was to determine what becomes of eggs that remain in sockeye salmon that are liberated after they have been stripped by the expression method. This experiment was conducted at Kennedy lake, Anderson lake, Rivers Inlet, Pemberton and Babine lake hatcheries.

At the first-named station, eight pairs of sockeye salmon were placed in separate enclosures, the females having first been stripped by hand pressure, and were left therein undisturbed until they were dead. After death the females were cut open and all eggs remaining in them were counted. Later the gravel in each enclosure was carefully examined and all eggs found, both dead and alive, were recorded. The same procedure was followed at each of the other stations mentioned but with varying numbers of fish to suit the available accommodation. The following tables give the results obtained at each station mentioned above:—

## KENNEDY LAKE HATCHERY

Enclosure Number	Number Females	Eggs in fish after death	Recovered from Gravel	
			Alive	Dead
1.....	1	16	613	98
2.....	1	598	540	33
3.....	1	411	1,497	50
4.....	1	28	480	10
5.....	1	39	380	23
6.....	1	12	800	280
7.....	1	80	969	202
8.....	1	662	19	219
	8	1,846	5,298	915

## ANDERSON LAKE HATCHERY

1.....	1	48	181	48
2.....	1	297		
3.....	1	37	284	6
4.....	1	56	94	8
	4	438	559	62

## RIVERS INLET HATCHERY

Enclosure Number	Number Females	Eggs in fish after death	Recovered from Gravel	
			Alive	Dead
2.....	1	11	287	16
3.....	2	36	347	47
4.....	1	33	108	6
5.....	1	6	71	131
	5	86	813	200

## PEMBERTON HATCHERY

1.....	1	54	85	13
2.....	1	6	61	6
3.....	1	67	26	7
4.....	1	212	22	12
	4	339	194	38

## BABINE LAKE HATCHERY

1.....	1	21	64	11
2.....	1	174	18	2
	2	195	82	13

A general survey of the above would seem to show that hand-stripped sock-eye when liberated proceed to complete their spawning probably as well as sock-eye that have never been handled.

In accordance with the program for the introduction of brown trout to streams on Vancouver Island, 300,000 eggs were received from Montana in December, 1932, and the resultant fingerlings marked and liberated in the waters of the two streams selected, namely, Cowichan and Little Qualicum. These fish were liberated in the spring and averaged 5 inches in length. Specimens captured last fall in the vicinity of the Cowichan hatchery had attained a length of 9 to 10 inches.

The Provincial Game Commission secured 100,000 Atlantic salmon eggs from Scotland, and having no facilities of its own at the time to take care of incubation and distribution, the eggs were laid down in Cowichan lake hatchery. A part of the resultant fry was liberated in the Cowichan lake system when at the free swimming stage of development; the remainder was retained and fed in ponds through the winter of 1933-34 and will be released in the spring or early summer of 1934.

The results secured from the small retaining tank installed at Cultus lake hatchery in 1932 were particularly gratifying. Originally 19,600 steelhead fry were placed therein, and periodically during the summer and fall of 1932, this number was reduced as conditions demanded. Four thousand were retained through the winter and liberated in early summer of 1933. These had then attained a length of five to seven inches. The results were so satisfactory that the Provincial Game Commission, who contemplated the establishment of a rearing station at Stanley park, decided to alter their original plans and install a battery of these small tanks. This plant was designed by the fish cultural branch of the department and its engineer supervised construction; also an experienced fish cultural officer was loaned to the Commission for about three

and one-half months to conduct operations until it could secure a competent man to take his place. The department also supplied 100,000 Kamloops trout eggs and 25,000 steelhead advanced fry. The first named were transferred from Penask lake hatchery and the latter from Cowichan lake hatchery.

In the spring of 1933, under the direct supervision of the department's engineer, the Provincial Game Commission rebuilt the retaining pond system at Qualicum. Five ponds of similar design to those in operation at Cowichan lake hatchery were constructed. An arrangement was made whereby the Commission agreed to place four of these ponds at the disposal of the department for the purpose of rearing the brown trout fry allotted to the Little Qualicum river in return for the loan of two ponds at Cowichan lake hatchery for rearing Atlantic salmon fry. The Commission assumed all expense in connection with the Qualicum operations and this department in a similar manner cared for the Atlantic salmon at Cowichan.

The Provincial Game Commission has been most appreciative of the assistance and co-operation afforded by this department in connection with the development of its fish cultural service.

Unfortunately, owing to adverse climatic conditions which were responsible for the complete disorganization of the water supply of the Lardo hatching station, it was impossible to operate this establishment as contemplated, and as an alternative floating hatching baskets were provided, but owing to all streams in the district being in freshet condition, the results obtained from this method of incubation were not at all that might be desired.

In accordance with the urgent request of interested anglers, a more intensive program of fish cultural operations was initiated at Beaver lake, near Kelowna, British Columbia. The work done was of an experimental nature to determine the future possibilities for securing a satisfactory collection of Kamloops trout eggs that would justify a continuation of operations in future seasons on a much larger scale.

Although the attempt was not quite as successful as expected, it was sufficiently encouraging to justify a continuation of these operations this coming season on a somewhat larger scale, and to ensure greater success, considerable preliminary work was done in connection with clearing streams and construction and installation of more reliable traps and fences.

In recent years the Department of Fisheries, through its Fish Cultural branch, has increased extensively its activities in connection with sporting fish operations. Improved travelling conditions in British Columbia and fairly easy access to many bodies of water that previously were difficult to reach, and also as a greater attraction to the very valuable tourist trade, has made it imperative that many lakes that previously were in isolated positions should receive artificial assistance to ensure the maintenance of their fish population.

Splendid success has been achieved by transferring sporting fish eggs and fry from lakes and streams where there was an overabundance of native stock, to many other bodies of water that required such efforts to supply the demands of the public. Each year unassailable evidence has been forthcoming of the success secured. Particularly is this the case in connection with the many barren lakes in this province. Beaver lake is a case in point and other outstanding successses are lakes in Strathcona park on the Forbidden plateau near Courtenay, B.C., the elevation of which is about four thousand feet above sea level. There are many lakes in this system, all of which, until 1929, were barren of fish life.

In June, 1929, 90,000 eyed eggs were successfully planted followed in 1930 and 1931 by further shipments of 200,000 Kamloops trout eggs each year, and by 250,000 in 1932. No angling was allowed until the summer of 1932 when the lakes were officially opened to sportsmen by the Attorney General of British

Columbia, the Honourable R. H. Pooley, K.C. Since that time these lakes have become an angler's paradise; sportsmen visiting this district have unani- mously and enthusiastically expressed their gratification of the results secured. In the summer of 1933 fish six pounds in weight were captured and specimens of Kamloops trout that had spawned naturally in the spring of 1933 were for- warded to the Pacific Biological Station at Nanaimo, thus showing that these lakes originally stocked by artificial effort have become self supporting. With reasonable protection, they should maintain an abundant supply of trout for the future without fish cultural assistance.

Another case of a somewhat similar nature where outstanding success has followed the introduction of game fish to a previously barren area is Garibaldi lake situated in one of Canada's national parks—Garibaldi Mountain park. This lake is about five thousand feet above sea level and in 1928, 5,000 Kamloops trout eggs from the Pemberton hatchery were planted in Mimulus creek, a tribu- tary of that lake, followed by 12,500 eggs of the same species in 1929. During the summer of 1933 three fish, each weighing in the neighbourhood of nine pounds, were secured by anglers. Some of the fish taken had spawned naturally.

Pavilion lake, near Clinton, B.C., was first stocked in 1919 by the transfer of 2,000 Kamloops trout fry from Paul lake near Kamloops. Further stocking was done in 1924, 1925, 1930, 1932 and 1933; in all, 108,000 eyed eggs were planted in its tributaries in addition to the liberation of the 2,000 fry previously mentioned. Angling conditions have consistently improved and this summer one tourist captured forty-two pounds of Kamloops in one hour, the largest weighing fourteen pounds.

Snowshoe lake, Edgewood, B.C., was barren of fish previous to 1926. That year 20,000 eyed Kamloops trout eggs were planted and it is now heavily stocked. Fish up to twenty-four pounds in weight are being taken.

Jewel lake, near Greenwood, was first stocked with Kamloops trout in 1925 and additional seedings made each year until 1932, with the exception of 1931. The quantity of seed introduced in those years totalled 110,000 fry and 80,000 eyed eggs. This lake is intensively fished every summer and good catches secured. One fish captured this summer weighed forty-two pounds.

The fishery inspector of Nelson, B.C., reports that fifty barren lakes in his district stocked by the department have in every instance proved successful.

The bodies of water mentioned above in which outstanding success has been definitely proved are a comparatively small percentage of the lakes in this province that have been benefited.

A number of angling associations in the province have, in the last two years, become interested in co-operative fish culture, particularly in the develop- ment of rearing ponds, and every effort has been made by the department to assist them, both by advice and practical help.

The Kelowna Rod and Gun Club has developed a series of natural ponds, the water supply for which is obtained from seepage from irrigated lands above, and overflow from other small lakes at a higher elevation. Officers of the depart- ment assisted in installing gravel hatching troughs and supplied 140,000 Kam- loops trout eyed eggs and fry from Beaver lake camp, Lloyds creek hatchery, Penask and Summerland. Later it was reported that there had been an almost perfect hatch and the fry had passed safely from the gravel to the ponds. Latest information received is that these fish have done exceptionally well and speci- mens have been submitted six to seven inches in length, and in a particularly well fed condition. No artificial food was given and they subsisted solely on natural food produced in the ponds.

The local angling association at Princeton, B.C., have also achieved splen- did success in this line. They constructed a dam and crib with rock and earth fill seventy feet in length, eight feet high and six feet wide, enlarged a small

pond to four and one-half acres and installed another dam across a narrow neck to divide into two ponds. Three thousand Kamloops trout fry from the Summerland hatchery were liberated therein. There is an abundance of natural food including fresh water shrimps in these ponds and the last reports received are that the fish are making splendid progress and, providing these conditions continue, it is hoped to place in the ponds a much greater allotment next season.

The sockeye rearing station at Taft, B.C., was not required by the Biological Board last summer. Therefore the Revelstoke Angling Club was given permission to use it for rearing Kamloops fry. The department transferred from Lloyd's creek station 100,000 Kamloops eyed eggs and the above named organization placed a man in charge and assumed all expenses in connection with the rearing of the resultant fry and their later distribution as fingerlings to Griffin, Victor and Summit lakes.

The Cranbrook Rod and Gun Club have entirely taken over the management of their district fish cultural operations, the department continuing to afford considerable financial assistance by purchasing such eggs as the Club do not require.

Every effort has been made during the past year to conform with the demand for the strictest economy without impairing the success of fish cultural operations in this division but owing to uncontrollable adverse climatic conditions which were responsible for much damage to the property of the department in some districts, heavy expenditure was imperative for replacements and repairs. Unusual expenses were incurred at Lakelse lake hatchery, where freshets destroyed the retaining pond system and the road near the hatchery; also considerable work on Granite creek was necessary to protect the buildings. Other properties that suffered from the same cause were fences and traps at Quap creek, Owikeno lake and fences at Sweltzer creek, Cultus lake. The pipe line at Cowichan lake hatchery also required renewal. The old pipe line had been in operation for over twenty years and was in an irreparable condition. A new fence was also installed on T'ell river, Graham island, Queen Charlotte group.

A number of trout fingerlings that were killed in a peculiar manner, not previously known to the department were received from Mr. E. A. Wells who operated a rearing pond on Luckacuck creek near Sardis, B.C. Growing on the sides of the stream is a weed, the Bur-marigold (Stick-tight, *Bidens cernua*), which sheds barbed seeds. When these fall into the water they are snapped at by the small fish and when the barbs come in contact with the skin they take hold and the fish die.

The fish cultural staff of the Western Division have given most conscientious, faithful and unsparing service in the execution of their duties.

## ALBERTA

### BANFF HATCHERY

*J. E. Martin, Superintendent*

The Banff hatchery serves an extensive territory and handles a large number of species of sporting fish. During the calendar year of 1933, a widespread distribution of cutthroat, Loch Leven, rainbow, Eastern brook and salmon trout fry, advanced fry and fingerlings was made in many bodies of water in the province of Alberta. Its operations depend to a large extent on eggs secured by exchange arrangements with the United States Bureau of Fisheries and purchase from commercial firms. The incoming shipments this year consisted of 195,840 salmon trout eggs from Port Arthur hatchery, Ontario, 549,241 rainbow trout eggs and 260,925 speckled trout eggs from Troy, Montana, and

1,311,040 cutthroat trout eggs from Mammoth Hot Springs, Gardiner, Montana. Some 178,800 speckled trout eggs were collected locally at Vermilion lake between October 19 and November 23.

The total distribution of all varieties for the year, including fry resultant from eggs received in the fall of 1932; were: cutthroat trout, 1,207,220; Loch Leven, 440,160; salmon trout, 175,154; speckled trout, 191,430, and rainbow trout, 485,195.

The angling in the district served by this hatchery is generally considered to have been much improved by the fish cultural operations of this station, and many outstanding examples might be quoted that can justly be placed to the credit of artificial assistance given, e.g., Marvel lake, 22-12W5, originally stocked from the substation at Spray lakes, produces many cutthroat trout, some weighing from four to six pounds; Lemah lake at the head of the upper Spray river, was stocked from the same source as the one previously mentioned, and fish are reported to be numerous and larger than those mentioned above as secured in Marvel lake; lake O'Hara, 27-17W5, formerly a barren lake, has rainbow trout now well established and specimens are taken up to two and one-half pounds in weight. All of these lakes are about seven thousand feet above sea level. Shadow and Herbert lakes were also barren of fish until stocked with cutthroat trout in 1930. Both have been rigidly protected, and it is reported the former now contains fish up to twelve inches in length and the latter up to seventeen inches. Other lakes that have been benefited by assistance from Banff hatchery are Ross, Taylor, Minnewanka, Two Jacks, Boom, Altrude, Mud and Vermilion; also the following named streams: Bow, Elbow and Highwood rivers and Cataract creek.

The numerous fish and game organizations have been most generous in their co-operation, and their help is greatly appreciated. Pack horses have been gratuitously loaned for the purpose of packing fry to outlying waters, by the wardens and forestry branches. The help of the Director of Fisheries and his outside staff is also gratefully acknowledged.

#### JASPER SUBSIDIARY HATCHERY

Last year Amethyst lake in the Tonquin valley received its first planting with Kamloops trout. This stocking was continued in 1933, the eggs, 92,610 in number, having been secured in June from Lloyds creek hatchery in British Columbia. Speckled trout and rainbow trout eggs were received late in December last year, the former from Rainbow Ranch, Troy, Montana, and the latter through an exchange agreement with the United States Bureau of Fisheries. The following numbers were distributed in 1933: speckled trout, 38,944; rainbow trout, 339,068; Kamloops trout, 83,437.

#### WATERTON LAKES HATCHERY

*G. E. Bailey, Superintendent*

This station, although comparatively recently established, has given splendid service in its district, and all accessible lakes in the Waterton National Park have been stocked with sporting fish with gratifying results. Its operations also depend largely on eggs secured from other than local sources, and in addition to a small local collection of 28,569 rainbow trout eggs from Cameron lake and 1,939 from brood fish retained in Hatchery creek, 375,000 of the same species were received from Troy, Montana, and 614,400 cutthroat trout eggs from Cranbrook, B.C.

Distributions were: cutthroat trout 535,553, and rainbow trout 311,532.

Outstanding examples of improved angling conditions in lakes and streams served from Waterton hatchery are: Alderson, Carthew and Crowsnest lakes, and Old Man river, Crowsnest river and Willow creek.

The results secured by fish cultural assistance from Waterton hatchery in the two first-named bodies of water with cutthroat trout are particularly gratifying. They were both barren lakes prior to 1928, but to-day provide very fine angling during the open season. When the Carthew lakes were opened to angling in 1932 nearly 1,000 trout were taken in the space of one week. In the Crowsnest district very gratifying results were in evidence from the stocking done from the Waterton hatchery, particularly was this the case in connection with Willow creek and Crowsnest river. In the first named, specimens of rainbow trout were secured measuring sixteen inches in length and the angling generally in both bodies of water showed great improvement over past seasons.

## FRASER RIVER WATERSHED

### CULTUS LAKE HATCHERY

*A. Robertson, Superintendent*

In the spring of 1933 the distribution of sockeye salmon fry resultant from the 1932 collection was successfully accomplished. A total of 4,568,404 was given a widespread distribution around the shores of Cultus lake. In addition, 807,000 sockeye were distributed from the substation at Smiths Falls resulting from eggs used by the Biological Board in connection with tests to determine the results from the different methods of stripping the parent sockeye salmon.

Last spring an unusually good run of steelhead reached Sweltzer creek and the largest collection to date at this point of eggs of this variety of game fish was secured. It totalled 98,900 eggs. The resultant fry were retained and fed until the end of August when 83,328 well-fed vigorous fingerlings, ranging from one and a third to two and a half inches in length, were liberated in natural ponds tributary to Sweltzer creek. After the losses during incubation were deducted, there still remained 10,000 fingerlings which were transferred to the small retaining tank near the hatchery from which such gratifying results were secured, during the season 1932-33. Rapid growth of the fingerlings in this tank necessitated a further liberation, and in October and November, 1,550 fingerlings, two to three inches in length, were liberated into Sweltzer creek.

Other distributions during the past year were 346 steelhead yearlings ranging from five to seven inches in length, and 3,587 No. 5 fingerlings, five to six inches long in May, making a total distribution of this species of 88,811; cutthroat trout eggs and fry, 169,133; Kamloops trout, 77,975. The eggs of the last-named varieties were received from Cranbrook and Lloyd's creek respectively, and amounted to when received, 170,000 cutthroat and 78,000 Kamloops.

Unfortunately, during October and November, an attack of *Octomitus salmonis* developed amongst the steelhead fingerlings in the small retaining tank, and although a heavy loss was suffered the disease was finally overcome by frequently treating the fish with brine baths.

The run of sockeye to this district last fall was disappointing; 3,425 parent fish were counted into Sweltzer creek as against approximately 4,900 in the brood year of 1929. In addition to the number that reached the hatchery fences, it is reported that approximately 10,000 sockeye bearing the Cultus lake mark of 1929, the brood year, have been identified at the canneries by officers of the Biological Board. Thus, a larger proportionate escapement, equal at least to the escapement of the preceding cycle years, seems to be necessary to maintain the sockeye production of this area.

The collection of sockeye eggs last fall totalled 4,998,900, and of these, 318,200 green eggs were transferred to the Biological Board for the retaining ponds at Smiths Falls.

The program of the board for the current season calls for the planting of eyed eggs in the tributary streams to Cultus lake. Unusually mild climatic

conditions this winter were responsible for the very rapid development of the eggs, consequently well advanced eggs of the earliest collection were available for disposal much earlier than is usually the case at this station and the disposal of these eggs was commenced December 20. On that date, and December 22, 624,438 well-eyed eggs in splendid condition were planted in Spring creek. Before depositing these eggs that part of the stream most suitable for egg planting purposes was cleared of all debris, and the gravel was spaded over and the running water allowed to wash away the silt and mud it contained; also a huge quantity of new gravel was hauled and evenly distributed over that part of the creek bed in which the eggs were planted.

The damage done to the fences on Sweltzer creek in the fall of 1932 was repaired and the fence at the foot of the hatchery pool renewed.

#### PEMBERTON HATCHERY

*T. W. Graham, Superintendent*

Resultant from the collection of 1932, there was available for distribution during the spring of 1933, 21,330,000 sockeye fry. These fry were liberated in the usual way, that is, allowed to leave the incubating troughs when so inclined and pass through a series of small natural ponds to the Birkenhead river.

In June, a shipment of 288,000 Kamloops trout eggs was received from Lloyd's creek station. Of these, 150,000 were delivered to other fishery officers and distributed in lakes Horse, Williams, Burns and Kinney in the northern interior of the province and the remainder, numbering 138,000, were laid down in Pemberton hatchery and later planted as eggs or fry as conditions warranted in the different bodies of water in that district. The total distribution of Kamloops trout was 285,950.

The run of parent sockeye in the fall of 1933 that reached the Birkenhead river was disappointing, it being the smallest for many years and estimated at about twenty-five per cent of the average for the last three seasons; consequently a comparatively small collection of sockeye eggs was secured last season, totalling 10,680,000.

#### PITT LAKE HATCHERY

*R. H. Eaton, Superintendent*

An estimate of the number of parent sockeye that reached the spawning grounds of this district must be of a doubtful nature. Heavy freshets occurred during the collecting period which prevented the capture of the ascending sockeye and consequently, the number of eggs secured was below the hatchery capacity. An additional detrimental factor that will no doubt affect the return of sockeye in the cycle year, is that heavy freshets prevailed after the spawning season which scoured the spawning grounds and very probably destroyed a considerable percentage of the eggs deposited naturally.

The collection totalled 2,310,000 sockeye eggs and was secured from 606 females; some 621 males were used for fertilization. A noticeable difference in proportion of sexes was observed in the fish captured, the males predominating in a ratio of three to two. Conditions were particularly unfavourable for a successful collection as on some days when the greatest number of fish was passing up stream it was impossible to operate the nets, otherwise it is considered that had the conditions been more favourable the hatchery would have secured its full complement.

The total number of sockeye fry and fingerlings resultant from the fall collection of 1932, liberated in the spring of 1933, was 3,201,825. These were widely distributed in many tributaries to the Upper Pitt river.

In June, 20,000 cutthroat trout eggs were received from Cranbrook and after a normal loss of 190 eggs, the remainder 19,810 eyed eggs were planted in a small tributary to Bernice lake. Some 489 coho were also planted from this establishment.

#### VANCOUVER ISLAND

##### ANDERSON LAKE HATCHERY

*D. Bothwell, Superintendent*

Distributions of sockeye and spring salmon eggs, fry and fingerlings resultant from the 1932 collections, were successfully accomplished. All local waters were given adequate attention, and in addition, eyed eggs were planted in tributaries to Sproat and Maggie lakes, 2,002,000 and 1,001,000 respectively.

The local distributions in Anderson lake and its tributaries during 1933 were 1,995,414 sockeye fry, advanced fry and fingerlings, and 180,448 spring salmon fingerlings. The total distribution of sockeye was 4,998,414 and of spring salmon 180,448.

The return of parent sockeye this season to the district was disappointing. It is estimated that only 7,500 adult fish reached Anderson lake waters. A heavy run was expected in view of the number that returned in the brood year of 1929 and the particularly favourable spawning conditions of that season, consequently the collection of sockeye eggs, namely, 3,256,000, was much below the number usually secured at this establishment.

In addition to the collection of the above mentioned variety of Pacific coast salmon, 229,500 spring salmon eggs were obtained from Anderson river, this being over double the number that was secured at this point in 1932.

The sub-station on Sproat river was again operated and 464,250 spring salmon eggs were secured, an increase of 27,750 over the number obtained the previous year. Of these, 323,015 were distributed as eyed eggs and 100,000 transferred to Anderson lake hatchery.

Three retaining tanks were in operation during the summer and 25,000 spring salmon fry were placed therein. These fish were transferred from the hatchery troughs to the retaining tanks during the first week in May and retained and fed until September 23 and 25. Unfortunately on May 18 and again the following night, an otter entered one of the tanks and destroyed some 5,000 fingerlings. After deduction of normal loss during retention and the number destroyed by the otter, there was available for distribution 18,619 healthy vigorous fingerlings averaging two and three-quarter inches in length. These were liberated in the Anderson river from which the eggs had originally been secured.

Maggie lake, emptying into Alberni canal, is a small lake approximately three miles in length and half a mile wide, having on the outlet stream a waterfall approximately twenty feet in height; consequently at no time have any Pacific coast salmon been able to reach its spawning grounds. Tidewater reaches to near the foot of the falls. In 1929 slightly over one million sockeye eggs were planted in tributaries of Maggie lake the intention being to later install a fishway if results justified the expense. Returning adult fish were expected last season and district fishery officers were on the lookout for them. Eight sockeye were observed at the foot of the falls on July 11.

Some years ago similar efforts were made to establish a run of sockeye in the waters of Great Central lake and to rehabilitate the Sproat lake area. This was entirely successful and in recent years heavy runs of sockeye have returned to these systems. A somewhat less commercial catch was secured than in 1932, 60,000 sockeye as against 77,000 in the last named year. The escapement to the spawning areas of both lakes was reported to have been all that could be desired. There appears to be no doubt but that the department's fish cultural efforts are responsible for the development of these exceptionally gratifying conditions in connection with the sockeye returns to these two lakes.

## KENNEDY LAKE HATCHERY

*W. P. Forsythe, Superintendent*

In accordance with the practice of recent years, all fry resultant from the 1932 collection were transferred from the hatching troughs to retaining ponds, and fed for greater or lesser periods before release; then, as conditions demanded, they were given a widespread distribution by scow and natural release to beaches and tributaries of Kennedy lake. The total number retained for feeding was 5,357,489, and of that number a loss is recorded during retention of 10,555; thus, 5,346,934 sockeye advanced fry and fingerlings were available for liberation.

In addition to the above, 1,038,795 eyed eggs were planted in Muriel lake and 947,180 in the Upper Kennedy river. Thus the seeding of the district from the collection of 1932 of sockeye eggs, fry and fingerlings totalled 7,332,909.

Fry resultant from the collection of 1932 before transfer to the retaining ponds, were fed for some time on screened herring meal before the total absorption of the food sac, and all such fry showed a marked increase in size and general condition over those of the same age and stage of development not given artificial food but allowed to develop in the natural way and depend for subsistence on nature's provision of their food sac.

The return of parent sockeye to this district, considering all spawning areas, was somewhat disappointing, in view of the heavy seeding and favourable conditions of the brood year of 1929. The total number of parent fish that returned is estimated at approximately 18,000. The early run to Clayoquot river was greater than in any previous year and to the Upper Kennedy river about the same as in the brood year 1929, but the late run did not materialize to the extent expected. The return to all spawning areas of the district in 1929 is estimated to have totalled approximately 23,000 fish; thus, the run of this season shows a decrease of approximately 5,000 sockeye from that of the brood year. A total of 3,368,800 sockeye eggs consisting of 540,000 from early run fish and 2,828,800 from the late run, was obtained as against 7,715,300 the previous season and 7,492,000 in the brood year of 1929.

A factor that to a considerable extent was responsible for the rather disappointing collection was the unequal division of the sexes. The ratio was estimated to be four males to every female; thus it will be appreciated that if an equal division of sexes had returned the collection would have been double that secured.

Although the run generally to the district was less than expected, the number of early run parent fish that reached Clayoquot river was approximately one hundred per cent greater than returned to that stream in the brood year of 1929, from which a collection of 397,000 eggs was secured. The resultant fry were retained and fed in ponds before liberated and this factor may have had considerable bearing on the increase of the number that returned this year, particularly if a comparison is made with the return to the Upper Kennedy river.

The return of parent fish to the last mentioned stream was about equal to that of the brood year when no eggs were taken and natural spawning prevailed. Therefore, it would appear reasonable to suppose that the increased run to the Clayoquot river can be attributed to the artificial assistance given in the brood year of 1929.

## COWICHAN LAKE HATCHERY

*J. H. Castley, Superintendent*

The usual varied fish cultural operations as annually carried on at this establishment were undertaken during the calendar year of 1933. Both local and imported stock of commercial and sporting fish were handled. The dis-

tributions were fry, fingerlings and eyed eggs of spring, coho and Atlantic salmon; steelhead, cutthroat, Kamloops and Loch Leven or brown trout.

Of the above named varieties, Kamloops and some cutthroat trout eggs were imported, namely, 142,000 Kamloops trout eggs from Lloyd's creek eyeing station, of which 112,000 were distributed as eyed eggs and 30,000 laid down in Cowichan lake hatchery and later 28,028 resultant fry released in suitable waters as free swimming fry. Some 270,000 cutthroat eggs were received in June from Cranbrook hatchery.

Three hundred thousand brown or Loch Leven trout eggs were received from Montana in December, 1932, and the resultant fry were transferred to retaining ponds in the close vicinity of this station and to Qualicum Beach. All resultant fingerlings were retained during the summer, and those in the Qualicum ponds were marked and liberated in late September and October in the Little Qualicum river and its tributaries.

At the close of the calendar year there remained approximately 14,000 Loch Leven trout fingerlings in the retaining ponds at Cowichan hatchery which will be retained until the coming spring, then distributed locally.

The local collection of cutthroat trout totalled 73,400 eggs which was over twice the number secured the previous season. In addition to these, 270,000 cutthroat trout eggs, as mentioned above, were purchased from Cranbrook hatchery and a widespread distribution of fry and eyed eggs was made in many bodies of water on Vancouver Island.

The steelhead collection totalled 78,200, being approximately fifty per cent of the number secured in 1932. There was an average run of parent steelhead, but owing to high water in the Cowichan river during the collecting period a much smaller collection was secured than anticipated.

There was a heavy run of coho salmon to this district, a sufficient number of eggs being secured to fill the accommodation available for this variety of salmon. The collection of this species totalled 1,044,000 eggs. Generally these fish were the largest in size ever seen in the Cowichan river, some of them weighing twenty pounds. A collection of 684,000 spring salmon eggs was made in the Cowichan river between October 18 and November 14. The Provincial Game Board secured from Scotland 100,000 Atlantic salmon in January and these were incubated in the Cowichan hatchery.

A new pipe line, two thousand feet in length, was laid down to replace the one originally installed twenty-three years ago.

Distributions were: Atlantic salmon, 20,000; brown trout, 30,589; cutthroat trout, 328,591; Kamloops trout, 140,028; Loch Leven trout, 163,786; spring salmon, 795,257; steelhead salmon, 72,587, and coho salmon, 497,227.

#### SKEENA RIVER WATERSHED

##### BABINE LAKE HATCHERY

*A. P. Hills, Superintendent.*

The distribution of sockeye fry and fingerlings resultant from the 1932 collection was successfully accomplished, consisting of 4,877,587 fry, 399,714 No. 1 fingerlings, and 608,449 No. 2 fingerlings, making a total of 5,885,750.

The run of parent sockeye to Morrison creek, on which this hatchery is situated and from which stream the major collections are usually obtained, was below the run of 1930 but larger than the runs of 1931 and 1932. It would appear from the reports of local officers that a sufficient number of sockeye reached Morrison creek to have more than filled the hatchery to capacity, but many that passed through the lower fence before it was closed did not ascend to the traps and yards some distance above but spawned in the creek between the fences where it is practically impossible to net them, particularly during the high-water conditions, such as prevailed during the 1933 season.

An additional factor responsible for the comparatively small collection of sockeye eggs at this station was the failure of parent fish to appear on the spawning grounds at the Babine river at the outlet of Babine lake. In past years when the Morrison creek run has failed, its collection has been augmented at this point. The number of sockeye eggs collected in Morrison creek was 3,552,500 and in Babine river, 114,000, making a total of 3,666,500.

A system of retaining ponds in the close vicinity of the hatchery was operated and a total of 1,008,163 No. 1 and No. 2 fingerlings were liberated therefrom early in August. These fish were in good condition and at the time of liberation averaged one and one-half inches in length. At this stage sockeye fingerlings usually increase rapidly in size, but high temperature of the water supply in late July and early August made it advisable to give the fish their freedom.

#### LAKELSE LAKE HATCHERY

*C. R. T. Hearn, Superintendent*

Owing to disastrous freshets in the fall of 1932, about one-half mile of road in the vicinity of this hatchery was completely destroyed and all fry resultant from the collection of the previous fall had to be carried past this point. A total of 5,452,874 fry were handled in this manner and distributed in suitable parts of Lakelse lake and its tributaries.

The same condition as mentioned above was also responsible for the destruction of about half of the retaining pond system, and no rearing of fry could be undertaken in the remaining ponds owing to their close proximity to the reconstruction work on the road. Again, other abnormal freshets in the fall of 1933 completely obliterated the remainder of the ponds.

The run of sockeye salmon to Lakelse lake last fall was slightly better than that of 1928 and 1931, but appreciably less than the number that reached this district in 1929 and 1930. The collection of sockeye eggs totalled 6,300,200, which is considerably less than the annual average for this station, but is approximately one half million more than secured the previous year.

The eggs laid down last fall were of exceptionally good quality and a very low percentage of loss was confidently expected, but three stoppages of the water supply caused by severe freshets, are responsible for a slightly higher loss than otherwise would have been the case.

A shipment of 40,000 cutthroat trout eggs was received in excellent condition at this station from Cranbrook on June 16, and in view of heavy blasting during construction of the new road in the vicinity of the hatchery, it was considered imprudent to bring these eggs to the hatchery for incubation. A suitable site was located in a small tributary stream to Lakelse lake, where they were hatched out successfully and 38,700 of the resultant fingerlings were liberated in Granite creek the balance being later transferred to a small retaining tank in the hatchery for the purpose of retention and later distribution as yearlings.

Summary of distributions: sockeye salmon, 5,452,874; cutthroat trout, 38,700.

#### MAINLAND WEST COAST

#### RIVERS INLET HATCHERY

*F. A. Tingley, Superintendent*

The sockeye salmon spawning grounds of Owikeno lake area were well seeded by natural reproduction. Heavy runs of this species occurred in the Wauquash, Cheo and Indian rivers. The total sockeye run to the whole area was well up to the average of the last three years. The majority of sockeye that frequent this particular district are generally conceded to be five-year

fish; therefore the returns to the spawning grounds and the increase in the commercial catch over the brood year would indicate that conditions in 1933 were very gratifying and the run to the district is being well maintained. The records show that the pack for the brood year of 1928 was 60,044 cases, and for 1933, 87,360 cases. Even if consideration is given to the possibility that last season's run contained a fair proportion of four-year fish, the commercial pack for 1933 shows an increase of 21,573 cases over and above what was obtained in 1929. In addition to the naturally well seeded spawning areas of the district, the hatchery secured 18,344,900 sockeye eggs. Therefore, it would seem that should no adverse natural condition develop, a heavy return of sockeye salmon should materialize in the cycle year of 1938.

The runs to Quap and Genesi creeks from which the collections for this station are annually secured, were well maintained although only thirty to forty per cent of the seed taken from them each season is returned.

An interesting feature of fish cultural work in this district is the condition that has developed in Walkus lake. This body of water is separated from the main system by a waterfall, approximately one hundred feet in height. The lake was barren of fish life until 1922 when 80,000 sockeye eyed eggs were planted in a small tributary stream. This was the first and only planting. The resultant fish have become landlocked and have degenerated into Kennerly's or Kokanee variety. This was the only seeding undertaken, therefore, theoretically there should be only natural reproduction in each four or five-year cycle. The unusual feature in this connection is that natural reproduction takes place annually. This fall it is reported that there was a heavier run of landlocked sockeye to the spawning grounds of Walkus lake than ever before, although it was observed that they were much smaller than when first seen in 1929.

The run of spring salmon to the Wauquash river was less than half the number that reached this area the previous season, consequently the collection was comparatively small, only 360,135 eggs being secured as against 1,039,240 in 1932, 485,250 in 1931 and 214,500 in 1930.

The distribution of sockeye fingerlings, advanced fry and eyed eggs resultant of the collection of 1932 was successfully accomplished. They were liberated and planted in suitable areas and totalled 16,214,212, consisting of 8,455,557 fry and 7,758,655 eyed eggs. Also, 894,893 spring salmon fry and fingerlings were liberated in the waters of the district.

## SPORT FISH OPERATIONS—SOUTHERN INTERIOR

### NELSON HATCHERY

*H. C. Crawford, Superintendent*

The local collections for this station were 351,520 Kamloops trout; 1,250,231 Kennerly's salmon and 280,645 Eastern brook trout eggs. The Kamloops trout eggs were secured during May and June in Cottonwood and Six Mile lakes, the Kennerly's salmon or Kokanee were obtained from Kokanee creek and the Eastern brook trout eggs from Violin lake, near Trail, B.C. In accordance with the present policy to restrict the distribution of the last named variety of sporting fish in the Nelson district and only stock waters in which this species is established, only a limited number of eggs was required, therefore collecting operations were confined to the lake mentioned and no attempt made to secure eggs from Boundary lake from which the major supply has been obtained in recent years. It was considered that the Eastern brook trout eggs from Violin lake were of better quality than those available at Boundary lake, which is of a stagnant nature, the supply of Eastern brook trout eggs obtained therefrom in recent years having been of poor quality.

Some 100,000 cutthroat trout eggs purchased from Cranbrook hatchery were received on July 6.

Distributions for the year were cutthroat trout 98,980; Kennerly's salmon 736,907; Kamloops trout 335,105; Eastern brook or speckled trout 130,512.

#### LARDO HATCHERY

*H. C. Crawford, Superintendent*

This subsidiary station was erected at Lardo approximately thirty miles from Gerrard hatchery in 1932 and is situated directly on the shore of Kootenay lake at Lardo, B.C.

It was established for the purpose of more economically handling the situation in the upper waters of Kootenay lake as it was considered advisable to annually supply three to five hundred thousand eggs from other collecting camps where they can be secured at a comparatively low cost rather than operate Gerrard hatchery. Thus, this district benefits to a considerable extent, receiving annually a shipment of eggs from other districts and permitting the local fish to deposit their eggs naturally on the spawning grounds of the Lardeau river.

It received 300,000 Kamloops eyed eggs on July 11 from Penask hatchery and made a distribution of 294,200 eggs and fry into Lardeau river and Kootenay lake.

Owing to a break in the Canadian Pacific dam on Davis creek which provided water for the hatchery, it was necessary to hatch the fry in floating baskets in the river. Some difficulty was experienced in this regard as at this time the river was in flood and not confined to its banks along the lower reaches. It also contained much floating debris and silt.

#### PENASK LAKE HATCHERY

*R. H. Eaton, Superintendent*

Fish cultural operations at this station were not nearly as successful as those of the previous season. A heavy snowfall during the winter and a late, cold spring were responsible for adverse conditions during the egg-collecting period. Freshets occurred when the Kamloops trout were passing up Penask creek, the stream overflowed its banks at the fences, and the majority of the parent fish escaped the traps. Opposite conditions prevailed at the outlet stream, Spahomin creek, over double the number of eggs being secured over any previous season; 555,000 Kamloops eggs were obtained at this point and 457,000 at Penask creek. In 1932, 3,739,000 eggs were secured from the last-mentioned stream and 263,000 from Spahomin creek.

In view of the heavy natural seeding resulting from the escape of the parent fish, it was not considered necessary to return any of the seed secured to Penask lake, therefore, all of the collection was shipped to other parts of the province. Outgoing shipments were:—

Powell lake.....	40,000
Provincial Government station, Stanley Park.....	100,000
Lardo hatching station, Kootenay lake.....	300,000
Beaver lake station, near Kelowna.....	125,000
Summerland hatchery.....	268,209
Charlie lake, Peace river district.....	100,000
Kelowna Rod and Gun Club ponds.....	25,000

By far the greatest distance to which eggs were transferred from this station was Charlie lake. In addition to the number given above, shipped from Penask lake, a like number from Lloyd's creek was added at Kamloops and the whole 200,000 were transferred to Charlie lake. Previous to this distribution this lake

was barren of any game fish; therefore, if the distribution is successful and Kamloops trout become established, a very valuable addition will be made to the natural attractions of this part of the Peace river district.

#### SUMMERLAND HATCHERY

*R. H. Eaton, Superintendent*

This station makes no independent collection of fish eggs but obtains its supply from other establishments and collecting camps, and is utilized for distribution of eggs and fry to many streams and lakes in the Okanagan and Nicola districts. Its major supplies are shipments of Kamloops trout eggs from Penask lake hatchery and Kennerly's salmon from Nelson. This season 268,209 Kamloops trout eggs were received from Penask lake in July and 150,000 Kennerly's salmon eggs from Nelson in December. Some 239,250 Kennerly's salmon fry were liberated into Okanagan lake during February, 1933. Kamloops trout amounting to 266,224 were distributed.

#### LLOYD'S CREEK HATCHERY

*A. P. Hills, Superintendent*

The run of parent Kamloops trout to the spawning grounds of Paul, Pinantan and Knough lakes was appreciably larger than in 1932, consequently a greater number of eggs was secured; the collections from these points totalled 1,318,000, or an increase of nearly 300,000 eggs over the collection of 1932 at these points.

The collection from Fish lake was approximately 100,000 eggs less than secured in 1932, although this does not indicate that there was a lesser number of parent Kamloops. The number of eggs secured in 1933 was 1,167,170 as against 1,274,000 the previous year. The water in Fish lake was about two feet higher than normal and allowance not having been made for this unusual condition, many parent fish leaped the fences. Including the collection secured from the last-mentioned body of water, the total number laid down in Lloyd's creek station was 2,485,170 Kamloops trout eggs, which, after deduction of a normal loss during development, and shipments of 288,000 to Pemberton, 78,000 to Cultus, 142,000 to Cowichan and 92,610 to Jasper, allowed for a distribution of 857,000 eyed Kamloops eggs and 795,600 fry.

In recent years this station, in addition to amply providing an abundant supply of seed for waters from which the collections have been secured, has also shipped annually large quantities of Kamloops trout eggs to many points where successful distributions have been made and many bodies of water have benefitted thereby. This season was no exception to the rule, and nearly one and one-half million eggs were available and distributed far and near as shown under shipments mentioned above.

#### CRANBROOK HATCHERY

Fish cultural operations in this district are entirely under the management of the local angling association, and on the completion of the season of 1932 it was decided by this organization to abandon the original hatchery located on Hospital creek, and erect a more modern and up-to-date establishment on St. Joseph's creek. This building was completed and in readiness for operations in 1933 and the results obtained this year proved entirely satisfactory, justifying the transfer of operations to the new site. The total collection secured from Fish, Munro, Mineral and Reservoir lakes was 2,465,000 cutthroat trout eggs and was a record for this district. In addition, 125,500 Kamloops eggs were obtained from Mineral, Smith and Premier lakes, all of which were originally stocked with this variety by the department.

The department purchased 1,500,000 cutthroat trout eggs from the association and the Provincial Government Game Commission, 400,000. Eggs purchased by the department were 900,000 for distribution in British Columbia and 600,000 for shipment to Waterton hatchery, Alberta. The association allowed generous measurements so that the actual numbers received somewhat exceeded these figures. The remainder, numbering 486,000, were distributed in the district. Some 109,200 Kamloops trout fry and fingerlings were also distributed locally.

Total distributions to all points from this establishment were 2,392,000 cutthroat and 109,200 Kamloops trout.

#### BEAVER LAKE EYEING STATION

*W. L. Goodlet, Officer in Charge*

Beaver lake is situated about twenty-seven miles northeast of Kelowna, B.C., at an altitude of 4,500 feet, and is one of a chain of lakes whose waters eventually discharge into Okanagan lake. These lakes were barren of fish life prior to 1926, when 5,000 Kamloops trout eggs were planted in one of its tributaries. Further introductions of eyed eggs and fry were made in 1927, 1928 and 1931; in all, 7,000 eyed eggs and 13,000 fry were distributed therein. The results were eminently successful and in the last few seasons many fish, ranging from three and one-half to eighteen pounds in weight, have been taken from its waters by anglers.

Last year there were indications that intensive angling was depleting the stock so the department took steps to build up the supply. Equipment was transferred from Summerland hatchery and 128,000 Kamloops trout eggs were secured. In addition, 125,000 eggs of the same species were received from Penask lake. Total distributions amounted to 243,442 Kamloops fry, of which 218,442 were planted in Beaver lake and 25,000 allotted to the Kelowna Rod and Gun Club.

Considerable preparatory work was done installing fences and traps and clearing logs and debris from Crooked creek to facilitate future operations.

#### QUEEN CHARLOTTE ISLANDS

TL'ELL RIVER—McCLINTON CREEK

*E. V. Epps, Officer in Charge*

In continuation of the program of the Biological Board at McClinton creek, Queen Charlotte islands, in connection with the habits and life history of the pink salmon that frequent the waters of these islands in huge numbers every second year, and to determine the possibilities for the development of a run of commercial value in the alternative years, similar operations were conducted as in the fall of 1931. The department provided an experienced fish cultural officer to make a collection of pink salmon eggs at the Tl'ell river flowing into Hecate straits, one of the few streams, if not the only stream, on Queen Charlotte islands which maintains a run of pink salmon in the off year.

To further facilitate these operations, the department installed a permanent counting fence and new trap on this stream in July which gave greater satisfaction than the temporary structure installed in 1931.

The run of pink salmon was not quite as large as that of the brood year of 1931, but was of sufficient size to allow for the collection between August 26 and September 5 of 695,246 eggs, a sufficient number to meet the requirements of the officers of the Biological Board conducting the investigation.

STATEMENT, BY SPECIES, OF LOCAL COLLECTIONS AND DISPOSALS OF EGGS DURING 1933

Species	Collection area	Number collected	Disposal	Number	Totals		
Atlantic salmon.....	South river, Hatchery dam.....	32,200	Antigonish hatchery.....	32,200	17,163,699		
	River Philip, N.S.....	4,635,900	Antigonish hatchery.....	1,638,000			
			Middleton hatchery.....	280,500			
			Yarmouth hatchery.....	748,000			
			Miramichi hatchery.....	1,178,400			
			Bedford hatchery.....	791,000			
	Sackville river, N.S.....	842,600	Bedford hatchery.....	842,600			
	Margaree pond, N.S.....	2,092,000	Margaree hatchery.....	2,092,000			
	Nictaux pond, N.S.....	1,045,500	Middleton hatchery.....	1,045,500			
	St. John pond, N.B.....	3,442,640	Florenceville hatchery.....	1,298,824			
			Grand Falls hatchery.....	1,270,260			
			St. John hatchery.....	823,556			
			Biological Board, Toronto.....	1,000			
			Biological Board, St. Andrews.....	49,000			
	Miramichi pond, N.B.....	1,002,128	Miramichi hatchery.....	1,002,128			
	New Mills pond, N.B.....	1,350,131	Restigouche hatchery.....	1,350,131			
	Morell river, P.E.I.....	2,720,600	Kelly's Pond hatchery.....	2,720,600			
	Speckled trout.....	South river, hatchery dam (sea run).....	4,455	Antigonish hatchery.....		4,455	10,660,076
		Antigonish hatchery ponds, N.S.....	7,026,668	Antigonish hatchery.....		7,026,668	
		Lochaber lake, Antigonish county.....	61,625	Antigonish hatchery.....		61,625	
Margaree hatchery ponds, N.S.....		73,940	Margaree hatchery.....	73,940			
Yarmouth hatchery ponds, N.S.....		413,000	Yarmouth hatchery.....	413,000			
Florenceville hatchery ponds, N.B.....		957,266	Florenceville hatchery.....	957,266			
Fraser's pond,—Three Brooks, Victoria county, N.B.....		393,316	Grand Falls hatchery.....	393,316			
Black lake, Restigouche county, N.B.....		53,774	Restigouche hatchery.....	53,774			
St. John hatchery ponds, N.B.....		1,169,146	St. John hatchery.....	1,169,146			
Kelly's hatchery ponds, P.E.I.....		47,441	Kelly's Pond hatchery.....	47,441			
Vermilion lake, Alta.....		178,800	Banff hatchery, Alta.....	178,800			
Violin lake, B.C.....		280,645	Nelson hatchery, B.C.....	280,645			
Chamcook lakes, N.B.....		279,290	St. John hatchery.....	277,290			
			Biological Board, St. Andrews.....	2,000			
Landlocked salmon.....					279,290		
Sockeye salmon.....	Boise creek, Pitt River, B.C.....	246,000	Pitt lake hatchery.....	246,000			
	Charles Peter's creek, Pitt river, B.C.....	796,000	Pitt lake hatchery.....	796,000			
	Four Mile creek, Pitt river, B.C.....	161,000	Pitt lake hatchery.....	161,000			
	Mountain slough, Pitt river, B.C.....	1,107,000	Pitt lake hatchery.....	1,107,000			
	Sweltzer creek, Cultus lake, B.C.....	4,998,900	Cultus lake hatchery.....	4,680,700			
			Smiths Falls hatchery (Biological Board).....	318,200			
	Birkenhead river, B.C.....	10,680,000	Pemberton hatchery.....	10,680,000			
	Genesi creek, Owikeno lake, B.C.....	5,266,800	Rivers Inlet hatchery.....	5,266,800			
	Quap creek, Owikeno lake, B.C.....	13,078,100	Rivers Inlet hatchery.....	13,078,100			
	Granite creek, Lakelse lake, B.C.....	545,400	Lakelse lake hatchery.....	545,400			

	Salmon creek, Lakelse lake, B.C.	259,800	Lakelse lake hatchery	259,800	
	Scullabuchan creek, Lakelse lake, B.C.	460,800	Lakelse lake hatchery	460,800	
	Williams creek, Lakelse lake, B.C.	5,034,200	Lakelse lake hatchery	5,034,200	
	Babine river, B.C.	114,000	Babine lake hatchery	114,000	
	Morrison creek, Babine lake, B.C.	3,552,500	Babine lake hatchery	3,552,500	
	Anderson lake, B.C.	3,256,000	Anderson lake hatchery	3,256,000	
	Upper Clayoquot river, Kennedy lake, B.C.	540,000	Kennedy lake hatchery	540,000	
	Clayoquot Arm, Kennedy lake, B.C.	2,828,800	Kennedy lake hatchery	2,828,800	52,925,300
Cutthroat trout	Nixon creek, Cowichan lake, B.C.	43,100	Cowichan lake hatchery	43,100	
	Sutton creek, Cowichan lake, B.C.	30,300	Cowichan lake hatchery	30,300	73,400
Kamloops trout	Beaver lake, B.C.	128,000	Beaver lake eyeing station	128,000	
	Fish lake, Kamloops, B.C.	1,167,170	Lloyds creek hatchery	1,167,170	
	Knough lake, Kamloops, B.C.	219,000	Lloyds creek hatchery	219,000	
	Paul creek, Kamloops, B.C.	843,000	Lloyds creek hatchery	843,000	
	Pinantan creek, Kamloops, B.C.	256,000	Lloyds creek hatchery	256,000	
	Cottonwood lake, Nelson, B.C.	200,200	Nelson hatchery	200,200	
	Six Mile lake, Nelson, B.C.	151,320	Nelson hatchery	151,320	
	Penask lake, Nicola valley, B.C.	457,000	Penask lake hatchery	457,000	
	Spahomin creek, Nicola valley, B.C.	555,000	Penask lake hatchery	555,000	3,976,690
Brown trout (albino)	St. John hatchery ponds, N.B.	7,256	St. John hatchery	7,256	7,256
Brown trout (hybrid)	St. John hatchery ponds, N.B.	27,136	St. John hatchery	27,136	27,136
Loch Leven trout	St. John hatchery ponds, N.B.	2,340	St. John hatchery	2,340	2,340
Rainbow trout	Antigonish hatchery ponds, N.S.	22,960	Antigonish hatchery	22,960	
	Yarmouth hatchery ponds, N.S.	3,000	Yarmouth hatchery	3,000	
	St. John hatchery ponds, N.B.	424,870	St. John hatchery	424,870	
	Cameron lake, Alta.	28,569	Waterton lakes hatchery	28,569	
	Spring creek, Alta.	1,939	Waterton lakes hatchery	1,939	481,333
Kennerly's salmon	Kokanee creek, B.C.	1,250,231	Nelson hatchery	1,250,231	1,250,231
Steelhead salmon	Cowichan river, B.C.	78,200	Cowichan lake hatchery	78,200	
	Sweltzer creek, Cultus lake, B.C.	98,900	Cultus lake hatchery	98,900	177,100
Coho salmon	Cowichan river, B.C.	1,044,000	Cowichan lake hatchery	1,044,000	1,044,000
Pink salmon	T'll river, Queen Charlotte Islands, B.C.	695,246	McClinton creek hatchery (Biological Board)	695,246	695,246
Spring salmon	Anderson river, B.C.	229,500	Anderson lake hatchery	229,500	
	Sproat river, B.C.	464,250	Sproat River Eyeing Station	464,250	
	Cowichan river, B.C.	684,000	Cowichan lake hatchery	684,000	
	Wauquash river, Owikeno lake, B.C.	360,135	Rivers Inlet hatchery	360,135	1,737,885
					90,500,987

## Eyed eggs purchased in 1933:—

Cutthroat trout from Cranbrook Rod and Gun Club,—			
Waterton Lakes hatchery.....	614,400		
Cowichan Lake hatchery.....	270,000		
Cultus Lake hatchery.....	170,000		
Lakelse Lake hatchery.....	40,000		
Nelson hatchery.....	100,000		
Pitt Lake hatchery.....	20,000		
Stanley Park hatchery.....	400,000		
			1,614,400
Rainbow trout from Rainbow Ranch, Troy, Montana,—			
Banff hatchery.....	549,241		
Waterton Lakes hatchery.....	375,000		
			924,241
Speckled trout from American Fish Culture Co., Carolina, Rhode Island, U.S.A.—			
Yarmouth hatchery.....	750,000		
Florenceville hatchery.....	250,000		
Grand Falls hatchery.....	1,000,000		
			2,000,000
Speckled trout from Rainbow Ranch, Troy, Montana,—			
Banff hatchery.....	260,925		
			260,925
Speckled trout from Earl Ings, Charlottetown, P.E.I.—			
Kelly's Pond hatchery (received April 5).....	34,000		
Kelly's Pond hatchery (received Nov. 22, Dec. 1 and 9).....	124,200		
			158,200
			4,957,766

## Eyed eggs—no charge:—

Rainbow trout from Cape Cod Trout Co., Wareham, Mass., U.S.A.—			
Yarmouth hatchery.....	200,000		
Salmon trout from Department of Game and Fisheries, Toronto, Port Arthur hatchery,—			
Banff hatchery.....	195,840		
Summary of eggs received—			
Total eggs collected.....	90,500,987		
Total eggs purchased.....	4,957,766		
Total eggs free of charge.....	395,840		
			95,854,593

## Eyed eggs received 1933 from United States Bureau of Fisheries, in exchange for Atlantic salmon:—

Cutthroat trout from Troy, Montana, laid down as follows:—			
Banff hatchery.....			1,311,040
Loch Leven trout from Bozeman, Montana, laid down as follows:—			
Bedford hatchery.....			302,000

## In the interest of economy and convenience in the distribution of fry the following transfers of eyed eggs were made in 1933:—

Species	From	To	Number	Date received
Atlantic salmon.....	(a) Antigonish.....	Lindloff.....	200,000	March 21
	(a) Miramichi.....	Lindloff.....	500,000	March 23
	(a) Kelly's Pond.....	Margaree.....	800,000	Feb. 24
	(a) Miramichi.....	Restigouche.....	600,000	March 17
	(a) Miramichi.....	Tobique.....	600,000	April 25
	(a) Restigouche.....	Nipisiguit.....	593,670	April 12
Landlocked salmon.....	(a) St. John.....	Bedford.....	75,000	March 16
	(a) Antigonish.....	Lindloff.....	100,000	March 21
Speckled trout.....	(a) Antigonish.....	Yarmouth.....	250,000	March 24
	(a) Grand Falls.....	Florenceville.....	300,000	Feb. 10
Rainbow trout.....	(b) St. John.....	Antigonish.....	75,000	May 19
	(b) St. John.....	Lindloff.....	200,000	May 18
	(a) St. John.....	Antigonish.....	188,300	March 25
Brown trout.....	(b) Penask lake.....	Beaver lake.....	125,000	July 12
	(b) Lloyds creek.....	Cowichan lake.....	142,000	June 29
	(b) Lloyds creek.....	Cultus lake.....	78,000	June 23
	(b) Lloyds creek.....	Jasper Park.....	92,610	June 21
	(b) Penask lake.....	Lardo.....	300,000	July 11
	(b) Lloyds creek.....	Pemberton.....	288,000	June 22
	(b) Penask lake.....	Summerland.....	268,209	July 18
	(b) Nelson.....	Summerland.....	150,000	Dec. 19
Kennerly's salmon.....	(a) Sproat river.....	Anderson lake.....	100,000	Jan. 13

(a) 1932 Fall collection. (b) 1933 collection.

## MARKING OF FISH

The marking of Atlantic salmon handled for fish cultural purposes at the several salmon retaining ponds, which was commenced in 1913, was continued in 1933 at Nictaux, Sackville and Margaree ponds. Spring salmon fingerlings were marked at Anderson lake hatchery and speckled trout yearlings and older fish at West river, Nova Scotia. The extent and object of marking is shown in the following statement:—

Marked and Liberated at	Species	Number Marked	Dates of marking	Nature of mark	Object:— To throw some light on
Nictaux river, N.S.....	Atlantic salmon, adults.....	140	Oct. 30, 31; Nov. 3, 8, 13.....	Silver tag attached to dorsal fin.	The movements of Atlantic salmon in the sea; frequency in spawning and the extent to which early fish of any season return as early fish, or vice versa.
Sackville river, N.S.....	" " ....	150	Nov. 6, 10, 13, 14, 15, 19.....	" "	" " "
Margaree river, N.S.....	" " ....	166	Nov. 14, 15, 21, 28; Dec. 4, 7, 11	" "	" " "
Anderson river, B.C.....	Spring salmon, fingerlings...	18,619	Sept. 23 and 25.....	Removal of both adipose and dorsal fins.	The percentage of artificially fed fry that return as adults.
West river, Antigonish county, N.S.	Speckled trout, yearlings and older fish.	1,111	Season of 1933.....	Part of the pectoral fin.....	The movements of trout in West river.

## RE-CAPTURES, 1933—ATLANTIC SALMON

## NICTAUX RIVER, N.S.

Number	Weight (lbs.)	Length (ins.)	Condition	Sex	Date	1. Where liberated 2. Where caught
F2442	7	29	Kelt.....	F	Oct. 30, 1931	Nictaux river, N.S.
	12 $\frac{3}{4}$	33 $\frac{3}{4}$	Clean.....	F	May 27, 1933	Nictaux river, N.S.
F2461	6 $\frac{1}{2}$	28	Kelt.....	F	Oct. 30, 1931	Nictaux river, N.S.
	12 $\frac{1}{2}$	31 $\frac{1}{2}$	Clean.....	F	May 29, 1933	Nictaux river, N.S.
F3972	8	30	Kelt.....	F	Nov. 1, 1931	Nictaux river, N.S.
	15 $\frac{1}{2}$	34	Clean.....	F	May 16, 1933	Nictaux river, N.S.
F4933	6	29	Kelt.....	F	Nov. 16, 1931	Nictaux river, N.S.
	11	32	Clean.....	F	May 29, 1933	Nictaux river, N.S.
F4940	6	29	Kelt.....	F	Nov. 16, 1931	Nictaux river, N.S.
	(u) 9	32 $\frac{1}{2}$	Kelt.....	F	Nov. 3, 1933	Nictaux river, N.S. (power canal)
F5212	5	28	Kelt.....	F	Nov. 4, 1932	Nictaux river, N.S.
	11	.....	Clean.....	F	Dec. 1933	Portugal Cove, Newfoundland.
F5227	5	28	Kelt.....	F	Nov. 4, 1932	Nictaux river, N.S.
	12	.....	Clean.....	F	Nov. 25, 1933	Amherst Cove, Bonavista Bay, Newfoundland.
F5257	6	29	Kelt.....	F	Nov. 10, 1932	Nictaux river, N.S.
	14	.....	Clean.....	F	Nov. 18, 1933	Lower Amherst Cove, Bonavista Bay, Newfoundland.

## SACKVILLE RIVER, N.S.

F5529	5 lbs. 8 ozs.	27 $\frac{1}{2}$	Kelt.....	F	Nov. 7, 1932	Sackville river, N.S.
	.....	30	.....	F	1933	Lawn, Newfoundland.
F5549	3	23 $\frac{1}{2}$	Kelt.....	M	Nov. 8, 1932	Sackville river, N.S.
	6 lbs. 9 ozs.	.....	Clean.....	M	Sept. 28, 1933	Sackville river, N.S.
F5570	11 lbs. 8 ozs.	35	Kelt.....	F	Nov. 8, 1932	Sackville river, N.S.
	(u) 13	37	Kelt.....	F	Nov. 9, 1933	Sackville river, N.S.

(u) Liberated with same tag attached.

NOVA SCOTIA  
ANTIGONISH HATCHERY

	Atlantic salmon advanced fry	Atlantic salmon No. 1 finger-lings	Atlantic salmon No. 2 finger-lings	Atlantic salmon No. 3 finger-lings	Atlantic salmon year-lings	Brown trout No. 1 finger-lings	Brown trout No. 2 finger-lings	Rainbow trout No. 2 finger-lings	Rainbow trout year-lings
Antigonish Co.—									
Afton river.....		25,000							
Beaver Meadow river.....									
Black river.....		50,000							
Brierly brook, West river.....									
Brierly brook lake.....									
Copper lake.....									
Delhantys lake.....									
Glenroy river.....									
Hatchery pond, South river.....									
James river.....		90,000	10,000						
James river lake.....									
Lochaber lake.....									
McNabs brook-Lochaber lake.....									
Meadow Green river.....									
Mooney lake.....									
North lake.....									
Pinevale lake.....									
Polsons brook-South river.....									
South lake.....									
South river.....		62,000	9,360	2,366					
South river lake.....									
Tracadie river.....		100,000							
West river.....									
Wright river.....		40,000	10,000						
Cumberland Co.—									
Pugwash river.....									
River Philip.....			160,479						
Wallace river.....			70,000		9,188				
Guysborough Co.—									
Chain of lakes.....									
Cole Harbour lake.....									
Copper lake.....									
Country Harbour river.....	80,000								
Cudahays lake.....									
Donohue lake.....									
Doyles lake.....									
East river-St. Marys.....		75,000	90,000						

ANTIGONISH HATCHERY—Continued

	Atlantic salmon advanced fry	Atlantic salmon No. 1 fingerlings	Atlantic salmon No. 2 fingerlings	Atlantic salmon No. 3 fingerlings	Atlantic salmon yearlings	Brown trout No. 1 fingerlings	Brown trout No. 2 fingerlings	Rainbow trout No. 2 fingerlings	Rainbow trout yearlings
Ecum Secum river.....									
Eight Island lake.....									
Fitz lake.....									
Gaspereau brook-Liscomb harbour.....									
Giants lake.....								77,866	11,323
Goose Harbour lake.....									
Goshen lake.....									
Guysborough river.....						120,000	44,757		
Hazel Hill lake.....									
Jellow lake.....									
Lawlor lake.....									
Long lake.....									
Matties river.....		25,000							
McPherson lake.....									
Narrow lake.....									
Salmon river.....		100,000							
Square lake.....									
Three Mile lake.....									
West river-St. Marys.....		175,000							
Halifax Co.—									
Loon lake.....									
Pictou Co.—									
Barney river.....		90,000	30,000						
Battery lake.....									
Big brook-East river.....									
Brora lake.....									
Calder lake.....									
Centredale brook-East river.....									
East river.....		75,000	38,000						
Ferguson lake.....									
French river.....		50,000							
French river, branch.....									
Gairloch lake.....									
Graham lake.....									

Grants lake.....									
MacKinnons lake.....									
McLean lake.....									
Middle river.....		25,000							
River John.....									
Stewarts lake.....									
Taylor lake.....									
Wentworth lagoon.....									
Wentworth pond.....									
West Branch lake.....									
West river.....									
	80,000	982,000	417,839	2,366	9,188	120,000	44,757	77,866	11,323

Grants lake.....									
MacKinnons lake.....									
McLean lake.....									
Middle river.....									
River John.....									
Stewarts lake.....									
Taylor lake.....									
Wentworth lagoon.....									
Wentworth pond.....									
West Branch lake.....									
West river.....									
	80,000	982,000	417,839	2,366	9,188	120,000	44,757	77,866	11,323

ANTIGONISH HATCHERY—*Concludea*

	Rainbow trout older fish	Speckled trout advanced fry	Speckled trout No. 1 fingerlings	Speckled trout No. 2 fingerlings	Speckled trout No. 3 fingerlings	Speckled trout No. 4 fingerlings	Speckled trout yearlings	Speckled trout older fish
Antigonish Co.—								
Afton river.....								
Beaver Meadow river.....			15,000					
Black river.....								
Brierly brook, West river.....			5,000					
Brierly brook lake.....			5,000					
Copper lake.....			15,000					
Delhantys lake.....			10,000					
Glenroy river.....			15,000					
Hatchery pond, South river.....						3,022	152	200
James river.....								
James river lake.....								300
Lochaber lake.....			40,000	55,000	6,500	8,387	39,804	1,333
McNabs brook-Lochaber lake.....			10,000					
Meadow Green river.....			20,000					
Mooney lake.....								650
North lake.....			15,000					
Pinevale lake.....							800	
Polsons brook-South river.....			10,000					
South lake.....			15,000					
South river.....								
South river lake.....			25,000			2,687	3,500	422
Tracadie river.....								
West river.....			25,000				4,656	611
Wright river.....								
Cumberland Co.—								
Pugwash river.....							2,500	
River Philip.....								
Wallace river.....								
Guysborough Co.—								
Chain of lakes.....							2,500	
Cole Harbour lake.....			25,000					
Copper lake.....					3,000			
Country Harbour river.....								
Cudahays lake.....			15,000					
Donohue lake.....			10,000				2,500	250
Doyles lake.....				10,000				
East river-St. Marys.....								

Ecum Secum river.....					3,000			
Eight Island lake.....			10,000					
Fitz lake.....			5,000					
Gaspereau brook-Liscomb harbour.....					3,212			
Giants lake.....	175							
Goose Harbour lake.....			10,000					
Goshen lake.....			10,000					
Guysborough river.....								
Hazel Hill lake.....			20,000					
Jellow lake.....			10,000					300
Lawlor lake.....			10,000					
Long lake.....				18,000				
Matties river.....								
McPherson lake.....			20,000				2,500	
Narrow lake.....				10,000				
Salmon river.....					15,000			
Square lake.....								
Three Mile lake.....			15,000				2,500	
West river-St. Marys.....								
Halifax Co.—								
Loon lake.....					1,517	2,983		
Pictou Co.—								
Barney river.....							4,500	
Battery lake.....								
Big brook-East river.....		20,000						
Brora lake.....			10,000					
Calder lake.....							2,500	455
Centredale brook-East river.....			10,000					
East river.....				10,000				
Ferguson lake.....								
French river.....								
French river, branch.....			15,000					
Gairloch lake.....		10,000					2,000	
Graham lake.....			10,000					
Grants lake.....			10,000				2,500	
MacKinnons lake.....			10,000					
McLean lake.....					4,000			
Middle river.....								
River John.....			25,000					
Stewarts lake.....		10,000						
Taylor lake.....			15,000					
Wentworth lagoon.....			10,000				2,500	
Wentworth pond.....								300
West Branch lake.....			10,000		829	3,671		
West river.....			20,000					
	175	40,000	540,000	108,000	22,058	25,250	70,912	4,821

Total distribution..... 2,556,555

BEDFORD HATCHERY

	Atlantic salmon green eggs	Atlantic salmon eyed eggs	Atlantic salmon No. 1 finger-lings	Atlantic salmon No. 2 finger-lings	Atlantic salmon No. 3 finger-lings	Landlocked salmon No.2 finger-lings	Salmon trout No. 1 finger-lings	Speckled trout No. 1 finger-lings	Speckled trout No. 2 finger-lings	Speckled trout No. 3 finger-lings
Atlantic Experimental Station, Halifax.....		200								
Colchester Co.—										
D'Armand lake.....								30,000		
Debert river.....				15,000						
Folly lake.....								35,000		
Harts lake.....								30,000		
Lyons brook-North river.....								30,000		
Simpsons lake.....								25,000		
Stewiacke river—										
South branch.....								30,000		
Cumberland Co.—										
Amherst pumping station pond—										
Nappan river.....									12,000	
Bass river.....			48,270							
Dow brook-Wallace river.....								10,000		
Economy river.....			50,000							
Economy lake.....								35,000		
Great Village river (upper).....			50,000							
Isaacs lake.....									20,000	
Living brook-Mattatal lake.....								15,000		
Maccan river.....			50,000							
Newton lake.....								35,000		
Portapique river.....			50,000							
River Philip.....			197,000							
Shinimikas river.....			50,000							
Silica lake.....								30,000		
Sutherland lake.....								30,000		
Tead brook-Wallace river.....								10,000		
Dalhousie University.....	300	300								
Halifax Co.—										
Big Salmon river.....			35,000							
Little Salmon river.....			50,000							
Black point lake.....									12,000	
Chezzetcook river.....			50,000							
Clay lake.....								30,000	12,000	
Conrods lake.....								50,000		
East Sheet Harbour river.....			50,000							
Five Island lake.....								35,000		

Frasers lake.....								25,000		
Hatchet lake.....								12,000		
Lily lake.....									1,256	
Maxwells lake.....							20,000			
Moose lake.....							35,000			
Moose river.....		50,000	40,000							
Nine Mile river.....		50,000								
Quarry lake.....							50,000			
Ragged lake.....							35,000			
Rawdon river.....						28,000				
Sackville river.....			12,542	2,043						
Soldiers lake.....							50,000			
Springfield lake.....								10,205		
Tangier river.....		50,000	40,000							
Taylor brook-Musquodoboit river.....		50,000								
Hants Co.—										
Brown's lake.....							10,000			
Pentz lake.....							30,000			
Rawdon river.....		50,000								
Lunenburg Co.—										
Corkum lake.....							60,000			
East river.....		50,000								
Feener's lake.....								12,000		
Gold river.....		100,000								
Middle river.....		50,000								
Mill lake.....								25,000		
Mush-a-Mush lake.....								30,950		
Pidgeon or Conley lake.....								12,000		
Sherbrooke lake.....						115,000				
Spondo lake.....								24,000		
Tip Hill lake.....								30,000		
	300	500	1,130,270	107,452	2,043	28,000	115,000	810,950	176,205	1,256

Total distribution..... 2,371,976

## LINDLOFF SUB-HATCHERY

	Atlantic salmon No. 1 finger- lings	Rainbow trout No. 2 finger- lings	Rainbow trout No. 3 finger- lings	Speckled trout No. 2 finger- lings
Cape Breton Co.—				
Black brook (Mira bay).....				5,000
Catalogne lake (Mira bay).....				10,000
Enon lake.....		55,000		
Lever's lake.....		14,000	14,000	
Melsaac's lake.....			26,000	
McMillan's lake.....			26,000	
Pottles lake.....				10,000
Three rivers (Salmon river).....	230,000			
Inverness Co.—				
Big brook (Denny's river).....	60,000			
McDonald's brook (Inhabitants river).....	80,000			
Richmond Co.—				
Black river.....				5,000
Ferguson lake.....				10,000
Framboise river.....	125,000			
Grand lake.....				10,000
Grand river.....	130,000			
Indian lake.....				10,000
Lindloff lake.....			21,040	
McRae lake.....				10,000
Mountain lake.....				5,155
Tillard river (East).....	15,000			
Tillard river (West).....	10,000			
	650,000	69,000	87,040	75,155

Total distribution..... 881,195

MARGAREE HATCHERY

	Atlantic salmon fry	Atlantic salmon advanced fry	Atlantic salmon No. 1 fingerlings	Atlantic salmon No. 2 fingerlings	Speckled trout No. 1 fingerlings	Speckled trout No. 2 fingerlings	Speckled trout No. 3 fingerlings	Speckled trout No. 4 fingerlings
Cape Breton Co.—								
Gillis brook-Gillis lake.....								2,000
Jackson lake.....								3,000
Meadow brook-Gillis lake.....							2,000	
Dalem lake (Boularderie island) Victoria & Cape Breton Co.							2,000	
Inverness Co.—								
North East Margaree river—								
Between Greig's crossing and Hart's pool.....	613,220			22,717				
Between hatchery and Greig's crossing.....								
Between hatchery and Levis brook.....			50,000					
Between hatchery and Rock pool.....				45,000				
Big brook.....			40,000					
Big Intervale bridge.....			90,000	30,000				
Black Rock pool.....			30,000					
Boar's Back pool.....				65,000				
Cranton bridge.....			30,000	95,000				
Crowdis pool.....			50,000	40,000				
Dunn's brook.....			35,000	40,000				
Egypt brook.....					1,000	2,000		1,000
Ethrige pool.....			50,000					
Gallants brook.....		25,000		15,000				
Greig's crossing.....			75,000					
Hart's pool.....			30,000	40,000				
Hatchery brook.....								2,000
Hatchery pool.....	59,000		25,000					
Ingraham's bridge.....				40,000				
Island brooks.....			65,000					
Lake O'Law brook.....				25,000	1,000			
Levis brook.....			30,000	15,000				
McDaniels brook.....			30,000					
McDermids crossing.....			50,000					
McDonalds brook-hatchery brook.....		25,000						
McLean pool.....				40,000				
Mull river.....			80,000					
Old bridge.....			40,000					
Ross bridge.....				20,000				
Tingley crossing.....			75,000					
Timmons brook.....			30,000					
Wards pool.....				50,000				
Watsons brook.....					1,000			
Whittles pool.....				23,000				

MARGAREE HATCHERY—*Concluded*

	Atlantic salmon fry	Atlantic salmon advanced fry	Atlantic salmon No. 1 fingerlings	Atlantic salmon No. 2 fingerlings	Speckled trout No. 1 fingerlings	Speckled trout No. 2 fingerlings	Speckled trout No. 3 fingerlings	Speckled trout No. 4 fingerlings
<i>Inverness Co.—Conc.</i>								
Graham brook-Whyecomagh.....								1,000
Indian river-Whyecomagh.....								1,720
Little River Cheticamp.....			120,000					
River Inhabitants.....								500
South West Margaree river—								
McDonnell brook.....			40,000					
<i>Victoria Co.—</i>								
Baddeck river—								
Crowdis bridge.....			15,000					
East branch, headwaters.....			80,000					
Forks.....			70,000					
Gillis bridge.....			25,000					
North branch.....				25,000				
Barachois river.....			40,000					
Clyburn brook-Ingonish bay.....							4,000	
Middle river—								
Beaver brook.....			40,000					
Church bridge.....			35,000					
Foot bridge.....			50,000					
Headwaters.....			40,000					
Indian brook.....			40,000					
McLennans brook.....			40,000					
North river.....			40,000	30,000				
St. Ann's river—								
Church brook.....					1,000			
Goose Cove brook.....					1,000			
South Gut brook.....					1,000			
Warren lake.....							8,000	
	672,220	50,000	1,580,000	660,717	6,000	2,000	16,000	11,220

Total distribution..... 2,998,157

## MIDDLETON HATCHERY

	Atlantic salmon No. 2 fingerlings	Atlantic salmon No. 3 fingerlings	Speckled trout No. 1 fingerlings	Speckled trout No. 2 fingerlings	Speckled trout No. 3 fingerlings	Speckled trout No. 4 fingerlings	Speckled trout yearlings
Annapolis Co.—							
Allen lake (west).....				10,000			
Annapolis river.....		70,000					
Morton brook.....			2,000				
Paradise brook.....				10,000			
Parker brook.....				5,000			
Slocomb brook.....			3,000				
Bear lake.....				5,000			
Birch Bark lake.....					10,000		
Chute lake.....				10,000			
Elliott lake.....				10,000		400	19
Gibson lake.....				10,000			
Hatchery pond.....						1,475	
Keyhole lake.....				5,000			
Kelly brook—Curl Hole lake.....				5,000			
Lake Joli.....				10,000			
Lake LeMerchant.....				10,000			
Lake Pleasant.....			10,000				
Lequille river.....		20,000					
Lequille river—headwaters				5,000			
Lily lake.....				5,000		300	19
Little river.....				15,000			
Long lake.....				10,000			
Milford lakes.....				15,000			
Nictaux river.....	100,000	193,400					
Quilty lake.....			10,000				
Round Hill river.....		30,000					
Round Hill river—head- waters.....				5,000			
Scragg lake.....					10,000		
Shannon river.....			10,000			375	
Spectacle lake.....				10,000			
Springfield lake.....			10,000				
Taller lake.....				10,000			
Thirty lake.....			10,000				
Trout lake.....			20,000				
Waterloo lake.....				10,000			
Zwicker lake.....			10,000				
Digby Co.—							
Haines lake.....				10,000			
Malletts lake.....				10,000			
Hants Co.—							
Armstrong river.....				10,000			
Avon river—							
LeBreau brook.....				5,000		200	
South branch.....		15,000					
West branch.....	15,000						
Cameron lake.....				10,000		300	
Canoe lake.....					10,000		
Cards lake.....			15,000				
Coxcomb lake.....				10,000			
Five Mile lake.....					5,000		
Kennetcook river.....		20,000					
Meander river.....		20,000					
Murphy lake.....			10,000				
Nixes lake.....				10,000			
Panuke lake.....				20,000			
River Herbert.....		15,000					
River Herbert—head- waters.....					10,000		
Walton river.....				10,000			
Zwicker lake.....			10,000				
Kings Co.—							
Cornwallis river—							
Adams brook.....			5,000				
Bowlby brook.....			5,000				
Lawrence brook.....			5,000				
Gaspereau river.....	25,000						
Grand Pre Memorial Park- ponds.....				400			25
Habitant river.....			10,000				
Lake Torment.....			10,000				

MIDDLETON HATCHERY—*Concluded*

	Atlantic salmon No. 2 fingerlings	Atlantic salmon No. 3 fingerlings	Speckled trout No. 1 fingerlings	Speckled trout No. 2 fingerlings	Speckled trout No. 3 fingerlings	Speckled trout No. 4 fingerlings	Speckled trout yearlings
<b>Lunenburg Co.—</b>							
Butler lake.....				10,000			
Gold river.....		70,000					
Hardwood lake.....				15,000			
Horse lake.....					10,000		
La Have river.....		60,000					
Mud brook.....				15,000			
North branch.....		25,000					
Lake Sherbrooke.....					10,000		
Lewis lake.....				10,000			
Little Winnifred lake.....				10,000			
Medway river.....		90,000					
Petite riviere.....		30,000					
Smith lake.....					10,000		
Upper Sixty lake.....				10,000			
Whelan lake.....				10,000			
Whitstone lake.....					10,000		
Whitney lake.....				10,000			
	140,000	658,400	155,000	360,400	85,000	3,050	63

Total distribution..... 1,401,913

## NICTAUX FALLS REARING POND

	Atlantic salmon No. 2 fingerlings	Atlantic salmon No. 3 fingerlings
<b>Annapolis Co.—</b>		
Nictaux river.....	28,000	16,500
	28,000	16,500

Total distribution..... 44,500

YARMOUTH HATCHERY

	Atlantic salmon fry	Atlantic salmon No. 1 fingerlings	Atlantic salmon No. 2 fingerlings	Atlantic salmon No. 3 fingerlings	Atlantic salmon No. 4 fingerlings	Atlantic salmon yearlings	Kam-loops trout 2 year olds	Rain-bow trout No. 2 fingerlings	Rain-bow trout No. 3 fingerlings	Rain-bow trout No. 4 fingerlings	Rain-bow trout No. 5 fingerlings	Rain-bow trout yearlings	Speckled trout fry	Speckled trout No. 1 fingerlings	Speckled trout No. 2 fingerlings	Speckled trout No. 5 fingerlings	Speckled trout yearlings
Digby Co.—																	
Barn river.....															30,000		
Barrio lake.....																10,000	
Bear river.....			40,000														
Belleveau Cove river.....															13,000		
Carleton river—																	
Meadow brook.....															30,000		
Clear lake.....									15,000								
Clearwater lake.....																	5,500
Grosses Coques river.....																	2,500
Harris lake.....																	2,500
Henderson brook-St. Mary's bay.....															15,000		
Jerome lake.....															30,000		
Long Tusket lake.....																	2,500
Meteghan river.....																	5,000
Pine lake.....															20,000		
Round lake.....								15,000		10,000	3,000	6,000					
Salmon river.....	75,000			45,000		3,000								51,585			
Salmon river lake.....																	4,500
Fricks brook.....														55,000			
Seven Pence Ha Penny river.....																	7,500
Spectacle lake.....																	5,000
Tusket river—																	
Paysons Meadow brook.....																	2,500
Victor lake.....														55,000			
Kings Co.—																	
Lake George.....																	4,500
Queens Co.—																	
Cranberry lake.....										4,000		2,000					
High lake.....								15,000				7,500					3,000
Lake Nancy.....						2,500											
Medway river.....						2,500											
Mersey river.....			80,000	100,000													
McGinty brook.....																	1,500
Pescawaas brook.....																	1,500
Pathe lake.....																	1,500
Robertson Little lake.....																	1,500
Shupes lake.....																	1,500
Shelburne Co.—																	
Clam lake.....								15,000				2,500					
Clyde river.....		60,000		20,000		3,000											
Downies river.....															20,000		
Jordan river.....			50,000	20,000													
Roseway river.....			50,000	20,000	10,000												

YARMOUTH HATCHERY—Concluded

	Atlantic salmon fry	Atlantic salmon No. 1 finger-lings	Atlantic salmon No. 2 finger-lings	Atlantic salmon No. 3 finger-lings	Atlantic salmon No. 4 finger-lings	Atlantic salmon year-lings	Kam-loops trout 2 year olds	Rain-bow trout No. 2 finger-lings	Rain-bow trout No. 3 finger-lings	Rain-bow trout No. 4 finger-lings	Rain-bow trout No. 5 finger-lings	Rain-bow trout year-lings	Speckled trout fry	Speckled trout No. 1 finger-lings	Speckled trout No. 2 finger-lings	Speckled trout No. 5 finger-lings	Speckled trout year-lings
Yarmouth Co.—																	
Argyle river.....																	
Bird lake.....								10,000				5,500					2,500
Cedar lake.....																	3,000
Coldstream river.....																	10,000
Lake Annis.....															25,000		5,000
Lake Ellenwood.....								1,000									
Lake Utley.....																	
Little Brazil lake.....								10,000									
Moulton lake.....																	
Salmon river.....				15,000												15,000	
Gardners brook.....													12,000				
Scotia brook-Forchu river.....																	500
Sunday lake.....																	4,000
Tusket river.....		100,000															
East branch.....																	
West branch-Reynards bridge.....															20,000		
Two island lake.....															10,000		4,000
Whistler lake.....																	11,500
	75,000	160,000	220,000	220,000	10,000	11,000	1,000	65,000	15,000	14,000	3,000	23,500	12,000	161,585	228,000	10,000	93,000

Total distribution..... 1,322,085

NEW BRUNSWICK  
FLORENCEVILLE HATCHERY

	Atlantic salmon No. 1 fingerlings	Atlantic salmon No. 3 fingerlings	Speckled trout advanced fry	Speckled trout No. 1 fingerlings	Speckled trout No. 3 fingerlings	Speckled trout older fish
Carleton Co.—						
Acker creek-St. John river.....				20,000		
Becaguimec river.....	195,000	17,000				
Big Guisguet river.....				47,000	1,800	48
Big Presquile river.....	130,000					
Bogan brook-South West Miramichi river.....	10,000					
Bubby's brook-St. John river.....				7,000		
Bulls creek-St. John river.....				51,000		
Buttermilk creek-St. John river.....					350	
Centreville pond-Presquile river.....						156
Clearwater brook-South West Mira- michi river.....	10,000					
Dingee brook-St. John river.....				3,000		
Elliott brook-South West Miramichi river.....	35,000					
Gallivan brook-St. John river.....			6,000			
Gibson creek-St. John river.....				20,000		
Glassville pond-Shiktahawk river.....				5,000		
Hagerman brook-St. John river.....				20,000		
Hardwood brook-St. John river.....				12,000	1,800	
Hathaway brook-St. John river.....					750	
Lanes creek-St. John river.....			8,000			
Little Guisguet river.....				36,000	1,800	
Little Presquile river.....	50,000	13,283		10,000		
Little Shiktahawk river.....	50,000					
Lockharts pond-Shiktahawk river.....						56
Mallory brook-St. John river.....				15,000		
Marven brook-Meduxnekeag river.....	10,000					
Maynes brook-Presquile river.....				15,000		
McLeary's brook-Lakeville pond.....			15,000			
McQuade pond-St. John river.....				40,000		
Meduxnekeag river.....	155,000	17,000				
Mile brook-St. John river.....				3,000	600	
Monquart river.....	130,000	17,000				
Payson lake.....				10,000		
Priests brook-Shiktahawk river.....				10,000		
River de Chute.....				50,000	2,000	98
Shiktahawk river.....	130,000	17,000				
Simpson brook-South West Miramichi river.....	10,000					
Smith brook-Becaguimec river.....				5,249		
South West Miramichi river-north branch.....	150,000					
South West Miramichi river-south branch.....	150,000					
Stickney brook-St. John river.....				5,000		
Teague brook-South West Miramichi river.....	15,000					
Tweedie brook-St. John river.....				6,500		
White Marsh creek-St. John river.....				8,188	1,800	129
Charlotte Co.—						
Digdeguash river.....				60,000		
York Co.—						
Davidson lake.....				35,000		
Dunbar brook-Nashwaak river.....				15,000		
First Eel river lake.....				25,000		
Second Eel river lake.....				25,000		
Indian lake.....				25,000		
Keswick river.....	90,000					
Mactaquac river.....	50,000					
McBean brook-Nashwaak river.....				15,000		
Nackawic river.....	50,000					
Nashwaak river.....	100,000	28,000				
Nashwaaksis river.....			75,000			
Nigger brook-Nackawic river.....				12,000		
Pokiok river.....				50,000		
Risteen lake.....				25,000		
Shogomoc river.....			45,000			
Skiff lake.....	50,000	17,000				

FLORENCEVILLE HATCHERY—*Concluded*

	Atlantic salmon No. 1 fingerlings	Atlantic salmon No. 3 fingerlings	Speckled trout advanced fry	Speckled trout No. 1 fingerlings	Speckled trout No. 3 fingerlings	Speckled trout older fish
York Co.— <i>Con.</i>						
Taffa lake.....				15,000		
Tay stream-Nackawic river.....				15,000		
Zeland lake.....				5,000		
	1,570,000	126,283	149,000	720,937	10,900	487

Total distribution..... 2,577,607

## GRAND FALLS HATCHERY

	Atlantic salmon No. 1 fingerlings	Atlantic salmon No. 2 fingerlings	Speckled trout No. 1 fingerlings
Salmon river—Victoria Co.—			
Salmon river, mouth of.....	45,000	55,000	
Salmon river, outlet.....			20,000
East branch.....			15,000
North branch.....			15,000
Aubin crossing.....	45,000		
Big bogam.....	45,000	10,000	
Big brook.....			15,000
Boat landing.....	45,000	10,000	
Cyr flats settlement.....	45,000		
Davis Mill brook.....	25,000		
Foley brook.....	50,000	35,000	
Four Falls brook.....			20,000
Graham brook.....			20,000
Head waters, Salmon river.....	20,000	35,422	
Iron bridge.....	15,000		
Little Salmon river.....	45,000		
Main Salmon river, Davis mill to mouth of Salmon river.....	50,000		
Mooney brook.....	25,000		
Morin bogam.....	35,000		
Otter Slide.....			7,000
Ryan brook.....			15,000
Small lake-Salmon river.....			4,000
Sutherland brook.....			50,000
Tom Cote Mill brook.....	45,000		
St. John river—Victoria Co.—			
At hatchery.....		1,000	
Andover bar.....	45,000	15,000	
Argosy crossing.....	80,000	25,000	
Aroostook bar.....	45,000		
Aroostook junction.....	45,000	25,000	
Black rapids.....	5,000		
Boutout brook.....			8,000
Costigan point.....	45,000		
Dee point.....	45,000		
Gillespie lake.....			15,000
Hatchery brook or Rapide de Femme.....	5,000		24,419
Indian Ferry.....	20,000		
Inman flats.....	100,000		
Kilburn ferry.....	50,000		
Limestone siding.....	95,000	60,000	
Little river-Grand Falls.....			75,000
Lower basin.....	10,000		
Lower Perth.....	50,000	10,000	
Morell siding.....	70,000	55,000	
Muniac river, mouth of.....	140,000		
Muniac brook.....		15,000	
Ortonville siding.....	45,000	60,000	
Madaswaska Co.—			
Baker lake.....			135,000
Caron lake.....			10,000
Grand river—			
Bear brook.....			60,000
Green river.....			200,000

GRAND FALLS HATCHERY—*Concluded*

	Atlantic salmon No. 1 fingerlings	Atlantic salmon No. 2 fingerlings	Speckled trout No. 1 fingerlings
St. John river— <i>Con.</i>			
Madawaska Co.— <i>Con.</i>			
Little river.....			40,000
Beaver brook.....			5,000
Dead brook.....			30,000
Head waters.....			45,000
Perkins brook.....			10,000
Rocky brook.....			5,000
Mazeroll pond.....			2,000
Seigas river.....			10,000
Unique lake.....			50,000
	1,430,000	411,422	905,419
Total distribution.....			2,746,841

## MIRAMICHI HATCHERY

	Atlantic salmon No. 1 fingerlings	Atlantic salmon No. 2 fingerlings	Atlantic salmon No. 3 fingerlings	Speckled trout No. 1 fingerlings	Speckled trout No. 3 fingerlings
Aboujugan river.....				7,000	
Bartibogue river.....	75,000	27,200	14,400		
Bass river.....		30,000			
Bay du Vin river.....	97,500	12,800			
Black river.....	135,000	12,000			
Buckley lake.....				5,000	
Buctouche river.....	30,000				
Burnt church river.....	82,500				
Caraquet river.....				6,600	
Cocagne river.....	30,000				
Eagle lake.....				5,000	
Estey lake.....				4,000	507
Grand Aldouane river.....					6,400
Hashmans brook—Westmoreland Co.....				7,000	
Kouchibouguac river.....	30,000				
Little South West Miramichi river.....	630,000	98,400			
Little river—Nipisiguit bay.....		22,500			
Nappan river.....	52,500				
North West Miramichi river.....	1,080,000	110,400			
Millstream.....	82,500	12,800			
Sevogle river.....		147,200			
Stewart brook.....	28,000				
Trout brook.....	24,000				
Pokemouche river.....				12,500	
Richibucto river.....	30,000				
Shaddock lake.....				8,000	
South West Miramichi river—					
Barnaby river.....	105,000	27,200			
Bartholomew river.....	52,500				
Burntland brook.....				10,000	
Cains river.....	106,500	79,700	26,400		
Porter brook.....				10,000	
Renouar river.....	180,000	68,400			
Dungarvon river.....	52,500	44,400			
Taxis river.....	97,500				
Tabusintac river.....	82,500		14,400		
Eskeddelloe brook.....				8,000	
Tetagouche river.....		22,500			
Tracadie river.....				12,500	
Little Tracadie river.....				6,600	
Votoure lake.....				5,000	
	3,083,500	715,500	55,200	107,200	6,907
Total distribution.....					3,968,307

NIPISIGUIT SUB-HATCHERY

Nipisiguit river—	Atlantic salmon fry
Bear island, foot of.....	30,000
Bear island, head of.....	30,000
Church point.....	33,000
Club House pool.....	33,000
Comeau landing.....	31,000
Gilmore brook.....	30,000
Grilse pool.....	30,719
Knight brook.....	30,000
Long Meadow, head of.....	30,000
Marchall Boudreau beach.....	30,000
Middle beach.....	30,000
	337,719
Total distribution.....	337,719

RESTIGOUCHE HATCHERY

	Atlantic salmon fry	Atlantic salmon advanced fry	Atlantic salmon No. 1 fingerlings	Atlantic salmon No. 2 fingerlings	Speckled trout advanced fry
Black river.....					2,000
Jacquet river.....		40,000			
Middle river (Gloucester Co.).....	40,000				
Restigouche river.....	250,000	192,000	5,300	46,000	
Christopher brook.....					25,430
At Dawsonville.....	40,000				
Little river, P.Q.....					35,000
Matapedia river.....	365,000	285,000		45,000	
Millstream falls.....	50,000				
Pitts siding.....	50,000				
Upsalquitch river.....	350,000	75,000		44,356	
Grog brook.....					35,000
Walker brook.....					15,000
Wires brook.....	50,000				
	1,195,000	592,000	5,300	135,356	112,430

Total distribution..... 2,040,086

SAINT JOHN HATCHERY

	Atlantic salmon fry	Atlantic salmon advanced fry	Atlantic salmon No. 1 fingerlings	Atlantic salmon No. 2 fingerlings	Atlantic salmon No. 3 fingerlings	Atlantic salmon hybrid 2 year olds	Brown trout advanced fry	Brown trout No. 1 fingerlings	Brown trout old fish	Brown trout albino No. 1 fingerlings	Brown trout albino 3 year olds	Brown trout hybrid No. 1 fingerlings	Brown trout hybrid yearlings and older	Land-locked salmon advanced fry
Albert Co.—														
Jonah pond-Petitcodiac river.....														
Turtle creek-Petitcodiac river.....														
Atlantic Biological Station, St. Andrews, N.B.			1,000	1,000										
Charlotte Co.—														
Bartlett lake-thoroughfare brook.....														
Bonaparte lake.....														
Bonaparte lake-rearing pond.....														
Burnt dam lake.....						134								
Chamcook lake.....														
Clarence stream—Magaguadavic river.....		75,000												
Clear lake.....														
Craig brook-Digdeguash river.....														
Dead water brook—Magaguadavic river.....														
Disappointment lake.....														
Gibson lake.....														
Gibson lake-rearing pond—Upper Magaguadavic lake.....														
Green Brown brook—Canous river.....														
Halls brook—Digdeguash river.....														
Hitching brook—Digdeguash river.....														
Kerr lake.....														
Lake Utopia.....														
Limeburner lake-rearing pond.....														
Little lake—Pocologan river.....														
McDougall lake.....														
McDowell pond.....														
Murchie brook—St. Croix river.....														
Piskahegan river.....			40,000											
Pocologan river.....		50,000												
Red Rock lake.....														
Soap brook—St. Croix river.....														
St. Croix rearing pond.....														
Stein lake.....														
St. Patrick lake.....														
Kings Co.—														
Clarks lake.....														
Dolan lake.....														
Kennebecasis river.....		100,000												
Kennebecasis river-headwaters.....														
Marys lake.....														
McBrien lake.....							25,000							
Moss Glen lake.....														
Parlee brook—Kennebecasis river.....														
Piquett stream—Kennebecasis river.....														
Pollett lake.....														

SAINT JOHN HATCHERY—Continued

	Atlantic salmon fry	Atlantic salmon advanced fry	Atlantic salmon No. 1 fingerlings	Atlantic salmon No. 2 fingerlings	Atlantic salmon No. 3 fingerlings	Atlantic salmon hybrid 2 year olds	Brown trout advanced fry	Brown trout No. 1 fingerlings	Brown trout old fish	Brown trout albino No. 1 fingerlings	Brown trout albino 3 year olds	Brown trout hybrid No. 1 fingerlings	Brown trout hybrid yearlings and older	Land-locked salmon advanced fry
<b>Kings Co.—Concluded</b>														
Salmon river.....														
Smith creek-Kennebecasis river.....														
Therriault lake.....							25,000							
Trout creek-Kennebecasis river.....		50,000												
Wards creek-Kennebecasis river.....														
Wetmore dam-Kennebecasis river.....														
<b>Queens Co.—</b>														
Moose lake.....														
Salmon river.....		30,000												
<b>St. John Co.—</b>														
Balls lake.....														
Black river.....	100,000		5,000		7,000									
Blindman lake.....														
Boaz lake.....														
Brown's lake.....														
Deer lake.....														
Donaldson lake.....														
Douglas lake.....														
Eagle lake.....														
Garnett lake-Kennebecasis river.....										751	34			
Grassy lake.....														
Henry lake.....														
Lily lake-Rockwood park.....														
Little river.....														
Little river reservoir.....														
Loch Alva-St. John and Kings Cos.....														
Loch Lomond.....								39,061	889			48,059		
(x)Loch Lomond-rearing pond.....														
Milligan lake.....														
Mispec stream.....	75,000		3,007		5,774									
Menzie lake.....														
Musquash river, east branch.....														
Musquash river, west branch.....														15,000
Otter lake.....														
Rockwood park—														
Lake No. 3.....							25,000							
Lake No. 4.....														
Seven Mile lake.....														
Shadow lake.....														
Southern lake.....													282	
Wood lake.....														

Sunbury Co.—															
Burpee brook-French lake.....															
Noonan brook-French lake.....															
Oromocto river.....		50,000													
Westmoreland Co.—															
Bennett brook-Petitcodiac river.....															
York Co.—															
Baker brook-St. John river.....															
Big Cranberry lake.....															
Big Magaguadavic lake.....															
Grand lake.....		40,000													
Grant lake.....															
Lacoste brook-Palfrey lake.....															
Lake George.....															
Mink lake.....															
Risteen lake.....															
Rusagonis stream-Oromocto river.....															25,000
Skiff lake.....															
Yoho lake.....															
	275,000	295,000	49,007	1,000	12,774	134	75,000	39,061	889	751	34	48,059	282	40,000	

SAINT JOHN HATCHERY—*Concluded*

	Land-locked salmon No. 1 fingerlings	Land-locked salmon No. 2 fingerlings	Land-locked salmon hybrid 2 year olds	Loch Leven trout No. 1 fingerlings	Rain-bow trout No. 1 fingerlings	Rain-bow trout No. 2 fingerlings	Speckled trout green eggs	Speckled trout advanced fry	Speckled trout No. 1 fingerlings	Speckled trout No. 2 fingerlings	Speckled trout No. 3 fingerlings	Speckled trout No. 4 fingerlings	Speckled trout No. 5 fingerlings	Speckled trout yearlings and older
Albert Co.—														
Jonah pond-Petitecodiac river.....									10,000					
Turtle creek-Petitecodiac river.....										5,000				
Atlantic Biological Station, St. Andrews, N.B.										1,000				
Charlotte Co.—	2,000						60,000							
Bartlett lake-thoroughfare brook.....									5,000					
Bonaparte lake.....									10,000					
Bonaparte lake-rearing pond.....											1,000			
Burnt dam lake.....														
Chamcook lake.....									10,000					
Clarence stream-Magaguadavic river.....			155											
Clear lake.....														
Craig brook-Digdeguash river.....						17,000								
Dead water brook-Magaguadavic river.....									10,000					
Disappointment lake.....									15,000					
Gibson lake.....									10,000					
Gibson lake-rearing pond-Upper Magaguadavic lake.....									10,000					
Green Brown brook-Canous river.....		14,470												
Halls brook-Digdeguash river.....									15,000					
Hitching brook-Digdeguash river.....									5,000					
Kerr lake.....									15,000					
Lake Utopia.....									10,000					
Limburner lake-rearing pond.....									40,000					
Little lake-Pocologan river.....											1,000			
McDougall lake.....									5,000					
McDowell pond.....									15,000					
Murchie brook-St. Croix river.....								10,000						
Piskahegan river.....									5,000	4,500				
Pocologan river.....													5,000	
Red Rock lake.....														
Soap brook-St. Croix river.....														
St. Croix rearing pond.....									10,000					
Stein lake.....										500				
St. Patrick lake.....									10,000					
Kings Co.—									10,000					
Clarks lake.....												2,500		
Dolan lake.....								5,000						
Kennebecasis river.....														
Kennebecasis river-headwaters.....									20,000					
Marys lake.....									5,000					
McBrien lake.....														
Moss Glen lake.....								20,000						
Parlee brook-Kennebecasis river.....									5,000					
Piquett stream-Kennebecasis river.....									10,000					
Pollett lake.....									10,000					
Salmon river.....									5,000					
Smith creek-Kennebecasis river.....									5,000					
Therriault lake.....														
Trout creek-Kennebecasis river.....									5,000					

Wards creek-Kennebecasis river.....									5,000	5,000								
Wetmore dam-Kennebecasis river.....																		
Queens Co.—																		
Moose lake.....																		
Salmon river.....																		
St. John Co.—																		
Balls lake.....																		
Black river.....																		
Blindman lake.....																		35
Boaz lake.....																		
Brown's lake.....																		
Deer lake.....																		
Donaldson lake.....																		
Douglas lake.....																		
Eagle lake.....																		
Garnett lake-Kennebecasis river.....																		
Grassy lake.....																		
Henry lake.....																		
Lily lake-Rockwood park.....																		
Little river.....																		
Little river reservoir.....																		15
Loch Alva-St. John and Kings Cos.....																		200
Loch Lomond.....				20,761														
(x)Loch Lomond-rearing pond.....																		
Milligan lake.....																		
Mispec stream.....																		
Menzie lake.....																		
Musquash river, east branch.....																		
Musquash river, west branch.....																		
Otter lake.....																		
Rockwood park—																		
Lake No. 3.....					5,000													
Lake No. 4.....					5,000	580												
Seven Mile lake.....																		
Shadow lake.....																		
Southern lake.....																		
Wood lake.....																		
Sunbury Co.—																		
Burpee brook-French lake.....																		
Noonan brook-French lake.....																		
Oromocto river.....																		
Westmoreland Co.—																		
Bennett brook-Petiteodiac river.....																		
York Co.—																		
Baker brook-St. John river.....																		
Big Cranberry lake.....																		
Big Magaguadavic lake.....																		
Grand lake.....																		
Grant lake.....																		
Lacoote brook-Palfrey lake.....																		
Lake George.....																		
Mink lake.....																		
Risteen lake.....																		
Rusagonis stream-Oromocto river.....																		
Skiff lake.....																		
Yoho lake.....																		
	2,000	14,470	155	20,761	10,000	17,580	60,000	95,000	517,125	53,000	10,500	4,091	23,970	250				

Total distribution..... 1,665,893

(x) Operated by St. John branch of the New Brunswick Fish and Game Protective Association in conjunction with the Loch Lomond Protective Association.

## TOBIQUE SUB-HATCHERY

	Atlantic salmon fry
Tobique river—	
Tobique forks.....	50,000
Blue bogan.....	10,000
Blue Mountain bend.....	15,000
Davis bogan.....	10,000
Dow flats.....	15,000
Everett bogan.....	10,000
Fraser lodge.....	15,000
Gaunces bogan.....	10,000
Grear flats.....	25,000
Haley brook.....	50,000
Hatchery brook.....	10,000
Hatheway bogan.....	15,000
Horse island bogan.....	21,172
McCarthy flats.....	25,000
Millers bogan.....	35,000
Plaster rock.....	25,000
Riley brook.....	25,000
Rocky brook.....	15,000
Tapley flats.....	40,000
Two brooks.....	50,000
Total distribution.....	471,172

## PRINCE EDWARD ISLAND

## KELLY'S POND HATCHERY

	Atlantic salmon advanced fry	Atlantic salmon No. 1 fingerlings	Atlantic salmon No. 3 fingerlings	Speckled trout advanced fry	Speckled trout No. 1 fingerlings	Speckled trout No. 2 fingerlings	Speckled trout No. 3 fingerlings
<b>Kings Co.—</b>							
Bear river.....				4,000			
Big pond.....				5,000			
Bristol pond (Hoopers pond).....				4,000			
Cardigan river.....	24,000						
Cardigan river, head of.....				5,000			
Coogan's stream-Morell river.....	53,300	18,000	3,000				
Crane's pond, below mill-Morell river.....		32,000					
Dingwell pond-Fortune river.....		12,300					
East lake.....					5,000		
Fisher's brook-Morell river.....				5,000			
Fortune river.....	35,000						
Goose river.....				6,000			
Grant's bridge-Morell river.....		30,000					
Hay river.....				5,000			
Leard's pond, below mill-Morell river.....	35,000						
Leard's bridge-Morell river.....			3,154				
Martin Vale stream (Cranes pond)-Morell river.....				6,000			
McAulay's brook-Morell river.....				5,000			
McKinnon's stream-Morell river.....	53,300						
McLeod's pond-Murray river.....					6,000		
McRae's pond-Montague river.....					6,000		
Midgell river.....		50,000					
Mill stream-Rollo bay.....		30,000					
Montague pond.....				6,000			
Montague pond (New pond).....				6,000			
Mooney's bridge-Morell river.....	30,400	12,300					
Mooney's stream-Morell river.....	35,600						
Mooney's pond-Morell river.....				3,000			
Naufrage river.....	35,000	30,000					
North lake.....				5,000			
Priest pond.....				5,000			
Quigley's pond.....				5,000			
Quigley's pond, below mill dam.....	32,000						
Red bridge-Morell river.....		32,000					
Schooner pond.....	25,000						
Souris river.....					5,000		
Sturgeon river.....		32,000					
Warren's pond.....				3,000			
West river.....					4,000		
<b>Prince Co.—</b>							
Bain's brook.....					4,500		
Beaton's brook-Percival river.....				5,000			
Big Pierre Jacquet river.....				6,000			
Little Pierre Jacquet river.....				6,000			
Black pond.....	25,000						
Bray river.....				5,000			

KELLY'S POND HATCHERY—*Concluded*

	Atlantic salmon advanced fry	Atlantic salmon No. 1 fingerlings	Atlantic salmon No. 3 fingerlings	Speckled trout advanced fry	Speckled trout No. 1 fingerlings	Speckled trout No. 2 fingerlings	Speckled trout No. 3 fingerlings
<i>Prince Co.—Concluded</i>							
Conroy's pond.....					5,000		
Crosman's pond.....					4,000		
Doyle's brook.....					4,000		
Dunk river.....	32,000	64,000					
Gordon's pond-Kildare river.....				6,000			
Green's stream (Miminegash).....	35,600						
Marchbank's pond-Kildare river.....				6,000			
Myer's pond.....					4,000		
Nail pond.....	17,800						
Pridham's pond-Kildare river.....				6,000			
Reid's brook-Miminegash river.....	26,000						
Rix stream.....					4,000		
Round pond.....				8,000	200		
Sea Cow pond.....					4,500		
Skinner pond.....	17,800						
Tignish river.....					4,500		
Webster's pond-Dunk river.....					3,000		
Wright's pond, 100 miles from hatchery.....					4,000		
Wright's pond-Dunk river, 46 miles from hatchery.....					5,000		
<i>Queen's Co.—</i>							
Adam's pond.....				3,000			
Andrew's pond.....					3,000		
Bagnall's pond-Hunter river.....				4,000			
Beer's pond-Clyde river.....				3,000			
Birt's brook-Covehead.....					2,500		
Black river.....				4,000			
Blooming point pond.....				10,000			
Brander's pond.....				3,000			
Callaghan's pond-East river.....					5,000		
Campbell's pond.....				3,000			
Clark's stream-East river.....					8,000		
Cousin's pond.....				6,000			
Crapaud mills.....					5,000		
Craswell's pond-Clyde river.....				3,000			
Crooked creek.....				4,000			
Dixon's pond.....					5,000		
Found's pond.....					5,000		
Gurney's stream.....		30,000					
Hardy's pond.....				5,000			
Hatchery brook.....						11	
Henry's pond.....						4,500	
Hillsboro or East river, head.....	35,000						
Holme's pond.....					3,000		
Hope river.....				4,000			
Johnson's river.....		30,000					
Lake Verde.....					6,000		
McCallam's pond.....					3,000		
Miller's creek-East river.....				3,000			
North river.....		32,000					
Parson's pond.....				5,000			
Pleasant Grove-Winter river.....					5,000		
Rackham's pond.....				5,500			
Scott's pond-Clyde river.....				5,000			
Simpson's pond.....							3,560
Stephenson's pond.....				3,000			
Vessey's brook-Winter river.....				9,000			
Winter river.....	35,600	64,400					
Wisner pond-McKennis brook.....					6,000	1,872	
Wood pond-Hunter river.....				4,000			
	583,400	499,000	6,154	212,500	129,200	6,383	3,560

Total distribution..... 1,440,197

ALBERTA  
BANFF HATCHERY

	Cut-throat trout advanced fry	Cut-throat trout No. 1 fingerlings	Loch Leven trout fry	Loch Leven trout advanced fry	Loch Leven trout No. 1 fingerlings	Rainbow trout advanced fry	Rainbow trout No. 1 fingerlings	Salmon trout advanced fry	Salmon trout No. 4 fingerlings	Speckled trout fry	Speckled trout advanced fry	Speckled trout No. 1 fingerlings
Altrude lake.....		15,000										
Baker lake.....		20,000										
Baptiste river—												
Chambers creek.....					25,000							
Lawrence creek.....					18,000							
Ruth creek.....					12,000							
Beaver lake.....					10,000							
Boom lake.....		20,000										
Bow river—												
Anthracite creek.....		15,000										
Baker creek.....		24,000										
Beaver dam creek.....		10,000										
Beaufort creek.....		10,000										
Big Hill creek.....		30,000										
Cascade creek.....		25,000										
Cold creek.....		25,000										
Consolation creek.....		18,000										
Corral creek.....		20,000										
Eight Mile spring.....	20,000											
Forty Mile creek.....		30,000										
Four Mile creek.....		10,000										
Gap creek.....		10,000										
Healey creek.....		25,000										
Johnson creek.....		25,000										
Jumping Pound creek.....							10,000					
Muskeg creek.....							10,000					
Sibbald creek.....							15,000					
Spring creek.....							10,000					
Massive creek.....	30,000											
Pederson creek.....		10,000										
Policeman creek.....	20,000											
Red Earth creek.....		8,000										
Pharaoh creek.....		8,000										
Seven Mile creek.....		10,000										
Spencer creek.....		10,000										
Spring creek.....		5,000										
Sundance creek.....		30,000										
Twenty-three Mile creek.....		5,000										
Twenty-seven Mile creek.....		5,000										



BANFF HATCHERY—Concluded

	Cut-throat trout advanced fry	Cut-throat trout No. 1 fingerlings	Loch Leven trout fry	Loch Leven trout advanced fry	Loch Leven trout No. 1 fingerlings	Rainbow trout advanced fry	Rainbow trout No. 1 fingerlings	Salmon trout advanced fry	Salmon trout No. 4 fingerlings	Speckled trout fry	Speckled trout advanced fry	Speckled trout No. 1 fingerlings
Highwood river—												
Cataract creek.....							16,000					
Etherington creek.....							16,000					
Flatt creek.....							19,000					
Pekisko creek.....							19,000					
Sheep creek—												
Spring creek.....		10,000										
North Sheep creek.....		25,000										
Fisher creek.....		25,000										
King creek.....		10,000										
South Sheep creek.....		20,000										
Blue Rock creek.....		10,000										
Canyon creek.....		10,000										
Gorge creek.....		10,000										
Horse creek.....		10,000										
Long Prairie creek.....		10,000										
Sullivan creek.....							19,000					
Horseshoe lake, T. 34, R. 6.....					10,000							
Horseshoe lake, T. 34, R. 6 (No. 2 lake).....					10,000							
James river—												
East Stony creek.....					25,000							
Lake Louise.....	30,000											
Lake Minnewanka.....								174,810	344		76,665	
Lake O'Hara.....							16,000					
Larch lake.....		8,000										
Linda lake, T27, R17.....						10,000						
Lost lake-Bow river.....		10,000										
Marpole lake.....							8,000					
Milk river—												
Battle creek.....						20,000						
Grayburn creek.....						10,000						
Miller lake, T. 24, R. 1, W. 6.....		15,750										
Moraine lake.....		23,000										
Mud lake.....		15,000										
Norman lake, T. 24, R. 5.....							2,400					
North Ghost river—												
Lake creek.....		40,000										
Old Man river—												
North Willow creek.....							16,000					
Pigeon lake-Battle river.....			40,000									

Pipestone river.....	20,000											
Private pond at Brisco, B.C. (J. V. Daniken, Esq.).....									10,000			
Ptarmigan lake.....	10,000											
Rainy lake, T. 35, R. 6.....					10,000							
Raven river.....					25,000							
Red Deer river—												
Bearberry creek.....					10,000							
Smith creek.....					10,000							
Elder creek.....					5,000							
Castle creek.....					2,000							
Fallen timber—												
Bear creek.....		10,000										
Gibson creek.....					3,750							
Grant creek.....					3,000							
Little Red Deer river.....					16,760							
Dog Pound creek.....				15,000								
Swanson creek.....				5,000								
Fallen timber.....					8,400							
Steuer creek.....					6,250							
Spring creek.....					20,000							
Twin springs.....					5,000							
Redout lake.....	10,000											
Ross lake.....								5,000				
Shadow lake.....	24,000											
Sherbrooke lake-Yoho Park.....								20,000				
Spray river—												
Goat creek.....	19,220											
Taylor lake.....	16,000											
Two Jacks lake.....	15,000											
Vermilion lake (lower).....	50,000											
Vermilion lake (upper).....										16,000		
Vermilion river.....	40,000											
Vista lake.....	15,000											
Wabamun lake, T. 53, R. 4 and 5.....		40,000						15,000				
Wapta lake.....												
Wammick lake, T. 34, R. 6 (No. 1).....					2,500							
Wammick lake, T. 34, R. 6 (No. 2).....					2,500							
Wammick lake, T. 34, R. 6 (No. 3).....					5,000							
Wammick lake, T. 34, R. 6 (No. 4).....					5,000							
Wammick lake, T. 34, R. 6 (No. 5).....					5,000							
	190,000	1,017,220	90,000	20,000	330,160	228,795	256,400	174,810	344	10,000	178,885	2,545

Total distribution..... 2,499,159

## JASPER PARK HATCHERY

	Kamloops trout fry	Rainbow trout fry	Speckled trout fry
Amethyst lake, Tonquin valley.....	83,437		
Athabaska river-(beaver dams) Maligne range.....		15,000	
Caledonia lake.....		7,000	
Celestine lake.....		6,000	
Deacon lake.....		10,000	
Devona lake.....		10,000	
Edson river north fork.....		10,000	
Erith river—			
Center creek, near Lovett.....		5,000	
Crooked creek, near Lovett.....		2,500	
Halpenny, near Sterco.....		2,500	
Lovett creek, near Lovett.....		10,000	
Embarras river—			
Byron creek, near Robb.....		5,000	
Chance creek, near Coalspur.....		5,000	
Dummy creek, near Coalspur.....		5,000	
Mitchell creek, near Robb.....		5,000	
Thirty-one mile creek, near Robb.....		5,000	
Thirty-five mile creek, near Robb.....		5,000	
Evelyn lake.....		15,000	
Hibernia lake.....		15,000	
Honeymoon lake.....		30,000	
Lake Annette.....		10,000	12,000
Lake Edith.....		10,000	12,000
Leach lake.....		15,000	
Leyland creek (beaver dam) near Leyland.....		5,000	
Marjorie lake.....		15,000	
Mary Gregg lake, near Lucas.....		5,000	
Cabin creek.....		5,000	
McLeod river—			
Hornback river.....		10,000	
Sundance creek.....		10,000	
Horse creek.....		5,000	
Trout creek, near Peers.....		10,000	
Five Mile Prairie.....		5,000	
Spreen creek.....		5,000	
Watson creek, near Leyland.....		5,000	
Minnow lake T. 45, R. 2, W. 6.....		7,000	
Pembina river, near Lovett.....		2,500	
Pocahontas (beaver dams).....		9,000	
Pyramid lake, creek west.....		5,068	
Rainbow lake, near Lovett.....		2,500	
Rocky river, upper.....		20,000	
Trefoil lake.....			14,944
Unnamed creek, Wolf river.....		5,000	
Zanzell lake, near Marlboro.....		5,000	
	83,437	339,068	38,944

Total distribution..... 461,449

WATERTON LAKES HATCHERY

	Cutthroat trout advanced fry	Cutthroat trout No. 1 fingerlings	Cutthroat trout yearlings	Cutthroat trout 2 year olds	Rainbow trout advanced fry	Rainbow trout No. 1 fingerlings	Rainbow trout No. 2 fingerlings	Rainbow trout yearlings
Alderson lake (17-1-30 W. 4).....	5,000							
Belly river.....	30,000							
Cardston, Alta.—Purchased by J. C. Shaw, Esq.....					1,000			
Castle river—								
Beaver Mines creek.....						10,000		
Gardener creek.....						8,500		
Gladstone creek.....						10,000		
Lynx creek.....						8,500		
Mill creek.....	30,000							
Crowsnest lake.....						20,000		
Crowsnest river—								
Allison creek.....						10,000		
Blairmore creek.....						10,000		
Byron creek.....						10,000		
Gold creek.....						10,000		
Star creek.....						5,000		
Todd creek.....						25,000		
Livingstone river (6-11-3 W. 5).....	25,000							
Old Man river—								
Adair creek.....	5,000							
Beaver creek.....	30,000							
Beaver dams (8-11-3 W. 5).....	40,000							
Beaver dams (32-10-3 W. 5).....	40,000							
Bobs creek.....	25,000							
Callum creek.....	20,000							
Damon creek.....	5,000							
Heath creek.....	15,000							
Pincher creek.....					11,275	15,000		
Playle creek.....	5,000							
Racehorse creek.....	25,000							
Sharples creek.....	15,000							
Willow creek—								
Burke creek.....						10,000		
Burton creek.....						5,000		
Chaffin creek.....						10,000		
Johnston creek.....						10,000		
Kuntz creek.....						5,000		
Lyndon creek.....						15,000		
Nelson creek.....						5,000		
Patterson creek.....						5,000		

WATERTON LAKES HATCHERY—*Concluded*

	Cutthroat trout advanced fry	Cutthroat trout No. 1 fingerlings	Cutthroat trout yearlings	Cutthroat trout 2 year olds	Rainbow trout advanced fry	Rainbow trout No. 1 fingerlings	Rainbow trout No. 2 fingerlings	Rainbow trout yearlings
Old Man river— <i>Concluded</i>								
Willow creek— <i>Concluded</i>								
Riley creek.....						5,000		
Trout creek.....						15,000		
Westrup creek.....						5,000		
Willow creek, north fork.....						15,000		
Willow creek, south fork.....						15,000		
St. Mary's river—								
Lee creek.....	15,000							
Tough creek.....	15,000							
Waterton lake (lower).....		20,000						
Waterton lake (upper).....		28,000						
Waterton river—								
Beaver dams (22-3-30 W. 4).....						5,000		
Beaver dams (27-3-30 W. 4).....						5,000		
Carpenter creek.....	20,000							
Cottonwood creek.....		25,000						
Drywood creek.....	25,000							
Hatchery creek, above dam.....							333	
Pass creek.....	6,000							
Pine creek, south fork.....						15,000		
Smith creek, above falls.....					6,000			
Spring creek.....	5,000		380					924
Stoney creek.....				173				
South Kootenay creek.....	6,000							
Trail creek.....	10,000							
Yarrow creek.....	15,000							
Yarrow creek, north fork.....		30,000						
Yarrow creek, south fork.....						5,000		
	432,000	103,000	380	173	18,275	292,000	333	924

Total distribution..... 847,085

## BRITISH COLUMBIA

## ANDERSON LAKE HATCHERY

	Socketeye salmon eyed eggs	Socketeye salmon advanced fry	Socketeye salmon No. 1 fingerlings	Spring salmon No. 1 fingerlings	Spring salmon No. 4 fingerlings
Anderson river.....				159,832	18,619
Anderson lake.....			220,000		
Adlem creek.....		220,000	220,000		
Boulder creek.....		220,000			
Cedar creek.....			220,000		
Clemens creek.....			233,417	1,997	
Falls creek.....			220,000		
Four Mile beach.....		220,000			
Eight Mile beach.....		220,000			
Ternan creek.....			1,997		
Hillier creek-Maggie lake.....	1,001,000				
Sproat lake— Taylor river.....	2,002,000				
	3,003,000	880,000	1,115,414	161,829	18,619

Total distribution..... 5,178,862

## BABINE LAKE HATCHERY

	Socketeye salmon fry	Socketeye salmon No. 1 fingerlings	Socketeye salmon No. 2 fingerlings
Morrison creek—Babine lake.....		339,714	608,449
Morrison lake.....	4,877,587		
	4,877,587	339,714	608,449

Total distribution..... 5,885,750

## BEAVER LAKE EYEING STATION

Beaver lake.....	Kamloops trout fry 218,442
Kelowna rearing ponds—Mission creek.....	25,000
	243,442

Total distribution..... 243,442

COWICHAN LAKE HATCHERY

	Atlantic salmon fry	Brown trout yearlings	Coho salmon eyed eggs	Coho salmon fry	Cut-throat trout eyed eggs	Cut-throat trout fry	Kam-loops trout eyed eggs	Kam-loops trout fry	Loch Leven trout fry	Spring salmon eyed eggs	Spring salmon fry	Spring salmon No. 1 fingerlings	Spring salmon No. 2 fingerlings	Steel-head salmon fry	Steel-head salmon advanced fry
Beacon Hill Park-pond (Victoria).....						4,000									
Campbell river—															
Forbes creek.....							60,000								
Quinsam river.....										75,000			5,000		
Cowichan lake.....				93,227				2,028			250,000			40,000	
Beaver creek.....			50,000												
Cottonwood creek.....						10,594									
McKay creek.....				40,000											
Mead creek.....			30,000												
Nixon creek.....						15,000									
Shaw creek.....						12,497	48,000								
Sheep creek.....			40,000												
Sutton creek.....						15,000									
Cowichan river.....		30,589		120,000							132,102	159,018	54,137		7,587
Beadnall creek.....				40,000											
Beaver creek.....			39,000												
Green creek.....			45,000												
Cowichan bay—															
Hennessy's creek-Koksilah river.....								2,000							
Cruikshank river-Comox lake.....					40,000										
Highland district—															
Forke lake.....						6,000									
Killarney lake.....						500									
Second lake.....						4,000									
Hotel lake-Pender Island.....								6,000							
Lonesome lake.....							4,000		4,000						
Loon lake-Alberni district.....															
Nanaimo district—															
Cedar lake.....					10,000										
Kidney lake.....						6,000									
Long lake.....						6,000									
Robertson river.....											100,000				
Rogers lake.....						2,000									
Qualicum district—															
Qualicum ponds (Provincial).....	20,000								163,786						
Big Qualicum river.....					30,000										
Horne creek-Horne lake.....					25,000										
Morrison creek-Englishmans river.....					30,000										
Rowbottom (or Loon) lake.....					10,000										
Saanich Inlet—															
Goldstream river.....										20,000					
Prospect lake.....						30,000									
Shawinigan lake.....								20,000							
Salt Spring Island—															
Cushion lake.....						6,000									
Ford lake.....						10,000									
Stanley Park hatchery (Provincial).....															25,000



## KENNEDY LAKE HATCHERY

	Sockeye salmon eyed eggs	Sockeye salmon advanced fry	Sockeye salmon No. 1 fingerlings	Sockeye salmon No. 2 fingerlings	Sockeye salmon No. 3 fingerlings
Kennedy lake—					
Clayoquot Arm—					
Calm bay-Couger creek.....		215,000			
Cedar creek-Peter bay.....		250,000			
Deer beach-Narrows.....			80,605	80,000	
Duck island.....				10,000	
Duck island-Loon bay.....		150,000			
Duck island-Martin creek.....		261,000			
Loon bay-Martin creek.....				12,000	
Martin creek-Peter creek.....					14,185
Fir creek-Yew creek.....		200,000			
Log bay-Yew creek.....			29,511	15,000	
Grassy bay-Deer beaches.....		200,000			
Irvin creek-Deer beaches.....				10,000	20,959
Green bay-Irvin bay.....		200,000			
Hatchery beach.....			4,500	30,000	21,399
Little Pond creek.....				45,000	23,088
Pond creek.....			110,000	195,000	63,134
Pond beach.....			175,000	99,683	
Rocky bay-Cosy bay.....		220,000			
Rocky bay-Deer beaches.....			60,000	80,000	
Silent bay and vicinity.....		220,000	175,000		
Otter creek-Charlie creek.....		220,000			
Charlie creek-Ucluelet bay.....		250,000			
Ucluelet bay-Snag bay.....		200,000			
Ucluelet bay.....			150,000		
Grant creek and south.....			179,993		
Narrows-Halfway point.....		250,000	75,000		
Shallow bay-Norger bay.....			200,000		
Kennedy river.....			186,877		
Olsen's bay.....		145,000			
Sutton's slough.....		220,000			
Muriel lake—					
David creek.....	1,038,795				
Upper Kennedy river (Elk).....	947,180				
	1,985,975	3,201,000	1,426,486	576,683	142,765

Total distribution..... 7,332,909

## LAKELSE LAKE HATCHERY

	Cutthroat trout No. 1 fingerlings	Sockeye salmon fry	Sockeye salmon No. 1 fingerlings	Sockeye salmon yearlings
Lakelse lake.....		2,450,000	120,000	354
Granite creek.....	38,700	235,490		
Salmon creek.....		173,830		
Scullabuchan creek.....		1,400,000		
Williams creek.....		1,073,200		
	38,700	5,332,520	120,000	354

Total distribution..... 5,491,574

## LARDO SUB-HATCHERY

	Kamloops trout eyed eggs	Kamloops trout fry
Kootenay lake-upper end.....		64,200
Lardeau river-around shores.....	230,000	
	230,000	64,200
Total distribution.....	294,200	

## LLOYDS CREEK HATCHERY

	Kamloops trout eyed eggs	Kamloops trout fry
Biological Board, Taft, B.C.....	100,000	
Hope district—		
Coquihalla river.....	20,000	
Kelly lake.....	20,000	
Pavilion lake.....	30,000	
Silver creek.....	20,000	
Kamloops district—		
Beaver lake.....		5,000
Fish lake.....		257,600
Knough lake.....		150,000
Paul lake.....		200,000
Pinantan creek.....		150,000
Spring creek-Walloper lake.....	25,000	
Kelowna Rod and Gun Club-rearing ponds.....	50,000	
Nisconlith lake-South Thompson river.....		33,000
Peace river district—		
Charlie lake.....	100,000	
Shuswap district—		
Canoe creek-Shuswap lake.....	60,000	
Granite creek-Shuswap lake.....	72,000	
Renicker creek-Shuswap lake.....	48,000	
Salmon river-Shuswap lake.....	60,000	
Palmer creek-Salmon river.....	72,000	
Vancouver island—		
Cameron lake.....	60,000	
Great Central lake.....	60,000	
Sproat lake.....	60,000	
	857,000	795,600

Total distribution..... 1,652,600

## NELSON HATCHERY

	Cut-throat trout eyed eggs	Kennerly's salmon eyed eggs	Kennerly's salmon fry	Kamloops trout eyed eggs	Kamloops trout fry	Kamloops trout No. 3 fingerlings	Speckled trout eyed eggs	Speckled trout fry
Creston district—								
Meadow creek-Kootenay river.....							20,000	
Grand Forks district—								
Wallace lake.....					6,000			
Greenwood district—								
Boundary creek-Kettle river.....							16,000	
Christina lake.....		150,000						
Jewel lake.....					20,000			
West Kootenay—								
Arrow creek-Goat river.....	14,000							
Arrow lake-lower (at Edgewood)				20,000				
Beatrice lake-Slocan lake.....				20,000				
Beaver creek-Columbia river.....								12,000
Big Sheep creek.....								16,000
Bjerkness creek-Kootenay lake.....				8,000				
Boundary lake.....								34,512
Box lake.....				20,000				
Cahil lake.....				20,000				
Champion lake.....	14,000							
Cottonwood lake.....					25,000			
Crawford bay-retaining pond (Capt. Hincks).....					2,000			
Fletcher creek-Kootenay lake.....	10,000							
Goat river.....	20,000							12,000
Inonoaklin river.....								20,000
Kaslo creek, south fork.....								
Kaslo lake.....	8,980							
Kokanee creek-Kootenay river.....		150,000	61,000					
Kokanee lake.....	6,000							
Kemball lake.....				10,000				
Marble lake.....	4,000							
Rockslide lake-Kootenay river.....				10,000				
Salmon river.....				20,000				
Sitkum creek-Kootenay river.....			40,000					
Six Mile creek-Kootenay lake.....						1,200		
Six Mile creek-Kootenay river.....			50,000					
Six Mile lake.....				10,000	15,000			
Slocan lake.....		100,000		20,000				
Slocan pool.....					20,000			
Slocan river.....				20,000				
Snow creek-Arrow lake.....				20,000				
Springer creek-Slocan lake.....				20,000				
Sproule creek-Kootenay river.....			60,907					
Tanal lake.....	10,000							
Wheeler lake.....	12,000							
Unnamed creek-Lower Arrow lake, Robson, B.C., retaining pond (Mr. F. E. Osborne).....					1,000			
Wilson lake.....		75,000						
Kootenay lake-West Arm.....					11,905			
Kootenay river-West Arm.....					15,000			
Westminster district—								
Jones lake, near Hope.....		50,000						
	98,980	525,000	211,907	218,000	115,905	1,200	36,000	94,512

Total distribution..... 1,301,504

## PEMBERTON HATCHERY

	Kamloops trout eyed eggs	Kamloops trout fry	Sockeye salmon fry
Alta lake.....		28,560	
Birkenhead river.....			21,330,000
Brennen lake-Howe Sound.....	10,000		
Burns lake-Prince George district.....	40,000		
Conroy lake-Cheakamus river.....		7,390	
Henrietta lake-Howe Sound.....	10,000		
Horse lake-Quesnel district.....	30,000		
Kinney lake-Prince George district.....	40,000		
Lac La Hache.....	20,000		
Lucille lake.....	10,000		
Lower Owl creek lake.....	10,000		
Upper Owl creek lake.....	10,000		
Ogre lake-Kootenay district.....	10,000		
Tranquille lake-Kamloops district.....	20,000		
Williams lake-Quesnel district.....	40,000		
	250,000	35,950	21,330,000
Total distribution.....			21,615,950

## PENASK LAKE HATCHERY

	Kamloops trout eyed eggs
Charlie lake-Peace river block.....	100,000
Kelowna ponds-Mission creek (Kelowna Rod and Gun Club).....	25,000
Powell lake-North Vancouver district.....	40,000
Stanley Park hatchery (Provincial Government).....	100,000
	265,000
Total distribution.....	265,000

## PITT LAKE HATCHERY

	Coho salmon yearlings	Cutthroat trout eyed eggs	Sockeye salmon fry	Sockeye salmon No. 1 fingerlings
Pitt river—				
Boise creek.....			640,000	
Charles Peter's slough.....			640,000	
Four Mile creek.....			442,145	199,680
Four Mile slough.....	489		640,000	
Seven Mile creek.....			640,000	
Small creek-Bernice lake (Dewdney district).....		19,810		
	489	19,810	3,002,145	199,680
Total distribution.....				3,222,124

QUALICUM BEACH PONDS  
(Provincial)

	Atlantic salmon No. 4 fingerlings	Loch Leven trout No. 3 fingerlings	Loch Leven trout No. 4 fingerlings
Biological Research.....	100		400
Cowichan lake.....	14,716		
Little Qualicum river.....		3,428	13,019
Whiskey creek-Little Qualicum river.....		15,490	37,292
Little creek-Whiskey creek.....			5,639
	14,816	18,918	56,350
Total distribution.....			90,084

## RIVERS INLET HATCHERY

	Sockeye salmon eyed eggs	Sockeye salmon fry	Spring salmon fry	Spring salmon No. 4 fingerlings
Owikeno lake.....		708,714		34,725
Asklum creek.....		1,100,625		
Cheo river.....		901,527		
Dallick river.....		1,027,202		
Genesi creek.....	2,619,565			
Medowse creek.....			504,400	25,000
Nookins river.....	998,000			
Second Narrows.....		792,240	330,768	
Quap creek.....	517,780	3,002,476		
Shumahault river.....	2,616,685			
Wauquash river.....		922,773		
Nanaimo river, draining the 2nd Nanaimo lake.....	1,006,625			
	7,758,655	8,455,557	835,168	59,725

Total distribution.....17,109,105

## SMITHS FALLS HATCHERY

Cultus lake.....	Sockeye salmon fry 807,000
Total distribution.....	807,000

## SPROAT RIVER EYEING STATION

Somass river— Stamp river-Alberni District.....	Spring salmon eyed eggs 323,015
Total distribution.....	323,015

## SUMMERLAND HATCHERY

	Kamloops trout eyed eggs	Kamloops trout fry	Kennerly's salmon fry
Okanagan district—			
Dog (Skaha) lake.....		20,000	
Island lake.....		16,224	
Kalamalka lake.....		35,000	
Kelowna ponds-Mission creek (Kelowna Rod and Gun club.).....		40,000	
Vasseaux lake.....		12,000	
Woods lake.....		15,000	
Okanagan lake.....			239,250
Shuswap river—			
Mable lake.....	50,000		
Sugar lake.....	20,000		
Similkameen river—			
Missoula lake.....	20,000		
Nickle Plate lake.....		15,000	
Princeton Rod and Gun Club.....		3,000	
Wolf lake.....	20,000		
	110,000	156,224	239,250

Total distribution..... 505,474

## TLELL RIVER EGG COLLECTING STATION

Biological Board— McClinton creek hatchery.....	Pink salmon green eggs 695,246
Total distribution.....	695,246