

FIFTY-SECOND  
ANNUAL REPORT  
OF THE  
FISHERIES BRANCH

Department of the Naval Service

FOR THE YEAR

1918

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OTTAWA  
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PRINTER TO THE KING'S MOST EXCELLENT MAJESTY  
1920



*To His Excellency the Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.V.O., etc., etc.,  
Governor General and Commander in Chief of the Dominion of Canada.*

MAY IT PLEASE YOUR EXCELLENCY:

I have the honour to submit herewith, for the information of Your Excellency and the Parliament of Canada, the fifty-second annual report of the Fisheries Branch of the Department of the Naval Service.

I have the honour to be,  
Your Excellency's most obedient servant,

C. C. BALLANTYNE,  
*Minister of the Naval Service.*

DEPARTMENT OF THE NAVAL SERVICE,  
OTTAWA, November, 1919.



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## DEPUTY MINISTER'S REPORT.

To the Hon. C. C. BALLANTYNE,

Minister of the Naval Service.

SIR,—I have the honour to submit the fifty-second annual report of the Fisheries Branch of the Department of the Naval Service, which deals with:—

- (a) International Questions;
- (b) The various activities of the Branch;
- (c) The fishing operations of the year 1918.

### INTERNATIONAL FISHERY QUESTIONS.

#### FISHERIES COMMISSION.

The status of these questions was explained in my report for last year.

The International Commission, which was appointed last year to consider a settlement of outstanding fishery questions between Canada and the United States, completed its work during the past summer and submitted a joint report, dated September 6, to the respective Governments. While the report will be regarded as confidential until it is made public by the two Governments, it is understood that the Commission reached unanimous findings on all the matters referred to it.

Pending action by the two Governments on the report of the Commission it is anticipated that the arrangement for reciprocal privileges to the fishing vessels of either country in the ports of the other, that were adopted last year on the recommendations of the different sections of the Commission to their respective Governments, and which were fully explained in my last report, will remain effective. It is giving eminent satisfaction to practically all concerned on both the Atlantic and Pacific coasts. It has not only removed the irritating conditions that have been causing friction between the two countries for more than a hundred years, but it has facilitated the production of fish and the free movement thereof to all parts of this continent.

#### FUR SEAL FISHERY.

The good effects of the Pelagic Sealing Treaty of 1911 on the north Pacific seal herds are becoming strikingly evident. It will be remembered that when this treaty was entered into the seal-herds were on the verge of commercial exhaustion.

Under the treaty, Canada receives 15 per cent of the skins taken on the United States islands, 15 per cent of those taken on the Russian islands, and 10 per cent of those secured on the Japanese islands.

During the season 1918, 34,890 skins were taken on the United States islands and 550 on the Japanese islands. The latter islands are quite small. At the present time the only one on which seals are killed is Robin island, which was ceded by Russia to Japan following the close of the Russo-Japanese war. In the present unsettled conditions in Russia it has not been possible to ascertain how many seals, if any, were killed on the Russian islands during the year.

It will be remembered that in 1912, the first year that the treaty was effective, both the United States and Russia enacted a close season for five years, so that killing seals on the islands did not begin until 1917.

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Under the treaty Canada's share of the skins are to be handed over at the seal islands. This is an expensive method, as it involves sending a vessel to the islands each year. Also it is scarcely possible in practice to be sure that the skins that would be taken over there would be of average value. In the circumstances an arrangement has been entered into with the United States Government for the disposal of Canada's share of skins, which is eminently satisfactory to this country.

The United States Government conveys all the skins taken from the islands to market. They are all dressed and dyed and are sold at public auction, and the United States Government accounts to Canada for 15 per cent of the net proceeds.

The skins taken in 1918 have not yet been sold, but as they are in great demand and the prices are high it is anticipated that Canada's share will more than recoup the advance payments of \$200,000 plus \$10,000 per year during each year of the close season, made by the United States Government.

Keeping in view the rapidity with which the seal herds are increasing in number year by year, there is every reason to expect that the herds will speedily be brought back to a maximum of productivity, so that in the course of years an annual take of well over 100,000 seals may reasonably be expected.

## DEPARTMENTAL ACTIVITIES.

### CAMPAIGN FOR GREATER PROTECTION OF LOBSTER FISHERY.

While Canada has still a wonderful lobster fishery—by far the most important in the world—there is no question that it has seriously declined on account of over-fishing, notwithstanding highly protective regulations that have ever been growing in stringency. Minimum size limits have been tried, but the majority of the lobsters have for years been so small on the portions of the coast where they are mostly canned, that the industry could not go on if any reasonable size limit from a protective standpoint were enforced. From time to time the fishing seasons have been shortened. The taking of egg-bearing lobsters at any time excepting for hatchery purposes is illegal. Lobster hatching on an extensive scale was also tried, but it proved absolutely ineffective in building up the fishery, and it has been decided to discontinue hatching under present methods.

The fact is that the lobster fishery is a peculiarly difficult one to protect. For instance, one of the most important requirements is the prohibition of the retaining of any egg-bearing lobsters that may be found in the fishermen's traps; but with the exercise of care a dishonest fisherman can readily and speedily remove the eggs in such a way as to make it exceedingly difficult to prove that he did so, especially when lobsters are being handled in large numbers as is usually the case at the places where the boats bring their catches ashore. Indeed, it is obvious that if the fishery is to be saved from commercial exhaustion, the department must have the close co-operation of the fishermen and cannerymen to such end, and with such co-operation it can not only be saved, but it can be built up to a maximum of productivity. With this object in view an educational campaign amongst those engaging in the different branches of the industry was undertaken this year. The campaign was placed in charge of Professor A. P. Knight, M.A., M.D., etc., of Queen's University, who for several years past has been engaging in a study of the natural history of the lobster, and whose informative reports thereon have been published by the department year by year. To assist him in this work the following persons were employed: Professor A. Vachon, of Laval University, who was assigned the gulf coast of New Brunswick; Professor H. G. Perry, of Acadia University, to whom was assigned the southern shore of Prince Edward island; Professor W. T. MacClement, of Queen's University, to whom was assigned the southern portion of Northumberland strait; Dr. M. McGillivray, of Kingston, to whom was assigned the southern portion of New Brunswick, and western Nova Scotia; Acting Professor J. T.



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Herbert, of the University of New Brunswick, to whom was assigned Cape Breton island; Mr. Andrew Halkett, naturalist of the department, who had been engaged in assisting Dr. Knight in investigations into the life-history of the lobster for several seasons past continued such work, and also assisted in the campaign in Prince Edward island and at the Magdalen islands.

The campaign started in April, and was mainly confined to May and June. Meetings of the fishermen and canners were held in halls, in the canneries, on the wharves, and indeed wherever a few of them could be collected, at which the natural history of the lobster was gone into in simple language, and discussions on the subject encouraged. The imperative need of each fisherman immediately returning to the water every egg-bearing lobster that he might find in his traps was strongly emphasized, as was also the responsibility of each fisherman and canner to his neighbour engaging in the industry, as apart from other considerations it is eminently unfair to those who zealously endeavour to carry out the full requirements of the law if one of their neighbours fails to do so.

While it is impossible to say in advance what the effects of this campaign will be, there are strong indications that it was highly successful. Apart from the direct information given those interested, probably one of the most important results has been that it has caused a great deal of discussion of the whole question of the natural history of the lobster, and of the means necessary to the proper protection of the industry amongst the fishermen and canners themselves. Such discussions must end in general enlightenment, and no doubt in a keener appreciation of the importance of co-operating with the department in affording the fishery the full measure of protection it requires. The department is so satisfied that this campaign has been the cause of much good that it will be continued during the season of next year.

Moreover, as lobsters are now in the category of luxuries, as a large portion of the canned product has in the past been marketed in Europe; as it was doubtful whether shipping accommodation would be available for the transportation of any lobsters for the overseas trade; as the cost of all fishing equipment and of tin plate, gasoline, etc., had become so high that it seemed doubtful whether a reasonable profit could be made from the industry this year; and as during the war it was urgent that all reasonable efforts should be centered on the production of sea fish that would enter into the food supply of the people generally, it seemed that the time was opportune for undertaking some extraordinary measures of lobster protection. Consequently, on June 5, 1918, a circular letter was sent to each canner, and to a large number of lobster fishermen summarizing the situation, and asking for an expression of view:—

1. As to the wisdom of prohibiting all lobster canning in 1919, and each second year thereafter until the fishery would be restored; and

2. That canning be allowed in June, 1919, so as to enable the using up of cans, etc., that might be on hand, and then prohibited for a period of years.

A large number of replies were received. While the opinions expressed therein differed quite widely as to what should be done, there was a remarkable unanimity of opinion that some effective measures should be taken.

In the circumstances it was considered best to call into conference those directly interested in the different branches of the industry to discuss the whole matter. Such conference was held at Halifax on August 8, 1918. It had been advertised by circular letter from the department, and by posters on all portions of the Atlantic coast. Fishermen and canners had been urged to attend, or those from each locality to delegate some one to represent them. The convention was largely attended, and most portions of the coast were represented, although those engaging in the canning branch of the industry were present in greater number than the fishermen. However, the fishermen from different parts of the coast were capably represented by delegates.

The convention was a satisfactory one. The whole question was discussed from the different angles, Dr. Knight having addressed the conference from the natural

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history standpoint. Resolutions were finally drawn up, and unanimously adopted, recommending in effect that canning be not prohibited any year, but that the fishing season be restricted to two months in the year on practically all portions of the coast, excepting from Halifax harbour to Digby county, inclusive, where the live lobster trade is the main branch of the industry, and where it was recommended that the fishing season should be reduced from five and a half months to three months. The seasons recommended were as follows:—

<i>District.</i>	<i>Fishing Season.</i>
The portion of the Nova Scotia coast from Halifax harbour to Digby county, inclusive. . . . .	March 1 to May 31, inclusive.
Halifax harbour to Red point, Cape Breton island. . . . .	April 20 to June 20, inclusive.
Red point to Cape North. . . . .	May 15 to July 15, inclusive.
Cape North and including the south shore of the St. Lawrence excepting the Magdalen islands and the portion of the Northumberland strait specified in the next paragraph. . . . .	May 1 to June 30, inclusive.
The portion of Northumberland strait between a line drawn from the mouth of river Philip, Nova Scotia, to Victoria harbour, Prince Edward Island, to one drawn from Chock-fish river, New Brunswick, to West point, Prince Edward Island. . . . .	August 1 to September 30, inclusive.
Magdalen islands. . . . .	No change.

No size limits were recommended for any of these areas.

The other portions of the coast were not considered, as representatives were not present.

Following consideration of these recommendations the lobster fishery regulations were amended accordingly by Order in Council, September 30, 1918, with the following exceptions:—

(a) In the Gulf district from cape North to the south shore of the St. Lawrence, the fishing season was maintained from April 26 to June 26, as the department considered, in the light of all the information before it, that it would be unadvisable to allow fishing there later than June 26.

(b) In Northumberland strait the fishing season was fixed at August 16 to October 15 instead of the months of August and September, as the department's information showed that soft-shell lobsters would be taken if fishing were allowed during the first fortnight in August.

It is hoped that these regulations, that have been decided upon after such full deliberation, will not only be found efficient in enabling the fishery to be adequately protected, but that they will prove reasonably satisfactory to those engaging in the industry.

Also, it was obvious that the conference was a fitting conclusion of the educational campaign and that consequently the department will in future have a greater measure of co-operation from the cannery and fishermen in protecting the lobster fishery than it has experienced in the past.

Close investigations into the natural history of the lobster, and feasible methods of increasing the number thereof, will be continued.

#### TRANSPORTATION OF FRESH FISH.

One of the greatest, if not the greatest, of the problems facing the development of the demand for fish in this country is that of adequate and cheap transportation facilities. The department has, for years past, been doing everything it feasibly could towards securing such facilities.

Until the business acquires much larger dimensions than at present, express refrigerator car facilities are urgently required, but with the increase in passenger and express traffic the trains from the east have been so loaded, and the need for conserving

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coal on the railways has been so urgent, that at least during the war a regular refrigerator car express service seems impracticable.

Experience has demonstrated beyond question that fresh fish hauled by fast freight in refrigerator cars from the Atlantic coast reach Montreal in very much better condition than if shipped on ice in ordinary express cars. In these circumstances every effort has been made to develop the fast-freight service by refrigerator car into a practical express service.

With the object of making the best arrangements possible for the transportation of fresh fish from the Atlantic coast, the department called into conference representatives of the Canada Food Board, the Canadian National Railways, the Grand Trunk Railway, the Canadian Pacific Railway, the different express companies, and the Canadian Fisheries Association at Montreal on June 20 last.

At the conference it was made quite evident, as above indicated, that a regular refrigerator car express service is, for the present, impracticable, but it was arranged to inaugurate a special refrigerator car service by fast freight to be known as the "Sea Food Special", between Mulgrave and Halifax on the Atlantic coast, and Toronto. This train would move on schedule time as do express trains, and would leave Mulgrave and Halifax on Thursday, Friday, and Saturday of each week, and make the run to Montreal from Mulgrave in forty-seven hours. Shipments for Montreal and Toronto would be included in the same cars, if there was room for such, and on arrival at Montreal the shipments for that place would be removed, when the cars would be handed over to the Grand Trunk Railway, and were scheduled to reach Toronto twenty-four hours later.

As was explained in previous reports this department has, since 1908, been paying one-third of the express charges on shipments of fish from the Atlantic coast to points in Quebec and Ontario. This assistance, with other facilities afforded, has enabled the business to be so expanded that the time is approaching when it can feasibly be withdrawn; and as all the shipments on the days on which the "Sea Food Special" operates should be forwarded by that train, it was decided to withdraw the one-third rebate during such days. The "Sea Food Special" was inaugurated on the 27th of June, and the one-third rebate was discontinued on the 10th of July.

It was further decided that the express rebate should be withdrawn altogether at the end of the present fiscal year, and those interested have been so advised.

The "Sea Food Special" has operated, on the whole with much satisfaction. From the 27th of June to the 15th of November, one hundred and ninety-eight cars of fish were forwarded by it.

In December it became necessary to withdraw this train for a time to enable concentration of effort in moving the troops home, but the Canadian National Railways arranged to replace it by hauling two refrigerator cars on the Maritime Express and one on the Ocean Limited.

When the business increases to an extent that several cars of fish per day can be forwarded there seems to be no good reason why the requirements cannot be handled by fast freight, but in the meantime, when the demand has to be worked up, the need for an efficient and regular express refrigerator car service cannot be too strongly emphasized.

As was explained in my previous report, the payment of one-third the express charges on less-than-carload-lot shipments from the Pacific coast to points in the Prairie Provinces was modified in the fall of 1917, with the object of enabling a market to be worked up in these provinces for the different species of flounders and cod that abound on the Pacific coast, and that, as in the past, would be going to waste on account of lack of demand therefor. Under the modified arrangement no assistance is given on shipments of halibut and salmon, the market for which is now well established, but two-thirds of the transportation charges on shipments of other fish, whether by express or by freight, are paid. This assistance, coupled with the efforts of the Canada Food

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Board, has enabled a greater demand for these fish to be worked up than was even anticipated. During the calendar year 1918 over five million pounds of cod and flatfishes—other than halibut—were marketed in the Prairie Provinces.

It was the intention to continue this arrangement, with a modification so that it would apply to fresh and frozen cod and flatfishes (other than halibut) only, for another year, but under the changed conditions that have come about, following the armistice, it has been found that with the assistance not applying to the Atlantic coast, it is causing an unfairness to the Atlantic coast dealers, who are now arranging to develop a greater demand for Atlantic fish in the Prairie Provinces.

In the circumstances it has been decided to discontinue the payment of any portion of the transportation from the Pacific coast after the end of August next so that from that date assistance of the character started in 1908 will be altogether discontinued.

The amounts paid, as one-third of the L.C.L. express shipments from both coasts, and under the arrangement obtaining from the Pacific coast since the fall of 1917, are as follows:—

Year.	From East Coast.	From West Coast.
1909-10. . . . .	\$15,162 20	\$13,541 76
1910-11. . . . .	16,898 13	21,896 73
1911-12. . . . .	19,620 62	35,315 10
1912-13. . . . .	29,969 48	39,277 13
1913-14. . . . .	37,818 85	14,114 47
1914-15. . . . .	26,667 33	34,528 60
1915-16. . . . .	27,122 69	34,872 56
1916-17. . . . .	32,717 73	36,799 80
1917-18. . . . .	49,550 89	46,371 84
1918-19. . . . .	37,366 31	53,480 98

The department will, however, continue its efforts to secure adequate transportation facilities and also to expand the demand for fish throughout the country and to these ends it has arranged to establish during the coming year a Publicity and Transportation Division in the Fisheries Branch.

#### BIOLOGICAL WORK.

Researches in biology were carried on during 1918 as usual, under the Biological Board, at St. Andrews, N.B., the estuary of the Miramichi river, New Brunswick, and at Departure bay, British Columbia.

The workers at St. Andrews included scientists from Toronto, McGill, Queens, Laval, and New Brunswick universities, also from St. François Xavier College, Antigonish, N.S., to whom were given the task of investigating the life-history of such fish as monk fish, and the sea-cat or wolf fish; eel-pout, sea-bass, and cod were also studied, and hydrographical and chemical researches carried on.

Dr. Huntsman, and some of the members of the staff, were engaged from May till September in important dredging and tow-netting operations in Miramichi bay.

Dr. Knight continued his investigations of the life-history of the lobster, at Caribou harbour, Nova Scotia, and took the lead in conducting an educational campaign amongst lobster fishermen with a view to the preservation of the fishery. The work at the British Columbia station was actively carried on by a staff from the universities of British Columbia and Alberta under the supervision of Dr. McLean Fraser, the curator of the station.

Dr. Fraser and his staff covered some problems of much interest to the salmon-fishing industry; and have practically completed a study of the life history of the various species of Pacific salmon.

A volume of biological memoirs, including sixteen separate researches, has been published, and a further volume, it is expected, will shortly appear. The forthcoming volume will consist of about a dozen reports embracing a variety of important fishery subjects.

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## FISHERIES MUSEUM.

The specimens belonging to the Fisheries Museum, which had to be stored in various places when the museum building on O'Connor street was demolished to make room for a new departmental block, have not yet been reassembled for exhibition. The curator was, therefore, engaged during the year in making observations on the natural history of the lobster under the direction of Dr. A. P. Knight of the Biological Board. The data thus gathered contain much useful knowledge concerning the weight, size, sex, and condition of this crustacean at various times and places.

The curator also took part in the educational campaign carried on amongst fishermen and packers during the year, with a view to the conservation of the lobster.

## FISH CULTURE.

The fish cultural operations for the calendar year, 1918, embraced the fresh water and anadromous species only, and were confined almost entirely to the commercial food fish, such as Atlantic salmon in the Maritime Provinces and Quebec; whitefish, lake herring, salmon trout and pickerel in Ontario and the Prairie Provinces, and Pacific salmon in British Columbia.

The commercial species were practically all distributed as fry, after the food-sac was absorbed, on the natural spawning areas, and largely where such eggs were collected, but a small percentage was reared to the advanced fry and fingerling stages.

The sporting species such as speckled trout in the East, and cut-throat and rainbow trout in the West, were hatched in small numbers, and practically all distributed in public waters, after adequate return was made to the areas where such eggs were obtained. A small percentage was allotted to privately controlled, or leased areas on the payment of nominal prices and all distribution expenses.

As the resources of the country were devoted to the prosecution of the war, and expenditures for other purposes were confined to absolute necessities, the service was not extended by the erection of new hatcheries, but the work was energetically carried on at existing establishments, and while there was a falling off in some species, the total distribution of fry and collection of eggs was 55,000,000 and 77,000,000 greater, respectively, than those for 1917. In whitefish the increase was, in the distribution, 71,000,000, and in the collection of eggs, 129,000,000.

The successful outcome was due to the conscientious and unsparing efforts of the field and hatchery officers, and greater co-operation with them on the part of the fishermen in some districts; to greater co-operation between the Dominion and Provincial Governments in the Great Lakes, and to more intimate relations between the Canadian and United States Government in contiguous waters.

The United States and Canadian Governments have combined in an effort to re-establish the sockeye fishery of Puget sound and the Fraser river. With this end in view the United States Bureau of Fisheries furnished 20,700,000 sockeye eggs from Alaska, which were hatched in the Harrison Lake hatchery, and the fry distributed in suitable spawning grounds in the Fraser River watershed.

There are thirty-four hatcheries, eleven subsidiary hatcheries, and seven salmon retaining ponds in operation. From these the total distribution of the different species in each province during the season of 1918, was as follows:—

Nova Scotia—			
Atlantic salmon.. . . .	7,057,600		
Speckled trout.. . . .	171,500		
			7,229,100
New Brunswick—			
Atlantic salmon.. . . .	8,696,662		
Ouananiche.. . . .	480		
Rainbow trout.. . . .	645		
Speckled trout.. . . .	161,835		
			8,859,622

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Prince Edward Island—		
Atlantic salmon.. . . .	510,175	
Speckled trout.. . . .	259,885	
		770,060
Quebec—		
Atlantic salmon.. . . .	6,080,743	
Ouananiche.. . . .	52,829	
Speckled trout.. . . .	104,542	
		6,238,114
Ontario—		
Whitefish.. . . .	253,410,000	
Salmon trout.. . . .	31,637,842	
Herring.. . . .	48,760,000	
Pickrel.. . . .	158,765,000	
		492,572,842
Manitoba—		
Whitefish.. . . .	253,010,000	
Pickrel.. . . .	23,050,000	
		276,060,000
Saskatchewan—		
Whitefish.. . . .	61,585,000	
Tullibee.. . . .	9,000	
		61,594,000
Alberta—		
Atlantic salmon.. . . .	66,200	
Ouananiche.. . . .	32,300	
Cutthroat trout.. . . .	109,500	
Salmon trout.. . . .	196,050	
		404,050
British Columbia—		
Atlantic salmon.. . . .	418,053	
Ouananiche.. . . .	14,000	
Cutthroat trout.. . . .	363,200	
Steelhead salmon.. . . .	102,040	
Kamloops trout.. . . .	929,775	
Sockeye salmon.. . . .	57,444,072	
Spring salmon.. . . .	2,965,639	
Coho salmon.. . . .	3,361,958	
Humpback salmon.. . . .	14,350,500	
Chum salmon.. . . .	5,649,000	
Speckled trout.. . . .	148,100	
		85,746,337
Total distribution.. . . .		939,474,125

A detailed report on the fish cultural operations of the department is being published separately, in pamphlet form.

#### OYSTER CULTURE.

During the season of 1918 the officer in charge of this service visited the various public and private oyster beds along the south shore of the Gulf of St. Lawrence, and examined and cleaned such as required attention; he also furnished expert advice to those taking up artificial cultivation on private beds.

Some 200 barrels of young oysters were transplanted from comparatively fresh water, up the Richibucto river, to a piece of ground near the river's mouth, where the water's salinity is much greater. It will thus be of much interest and importance, from a re-stocking point of view, to note the development of these young oysters in their new and more saltish bed.

The oyster areas at Cariboo, N.S., and Shediac, N.B., were duly raked and cleaned. It was found that while the transplanted American oysters on the Cariboo beds do not appear to grow very well, those transplanted from Prince Edward Island beds have thriven greatly.

At Richmond bay, Prince Edward Island, the officer conferred with the owners of private oyster grounds, regarding the blight, which, two years ago, attacked and killed off nearly all the oysters in the bay. He found the bay and the rivers entering it—

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except at the head of some of the streams where a few healthy live ones remained—practically denuded of live oysters. He is of the opinion, and in this he is supported by all the private cultivators, that it is useless to think of re-stocking until the blight has completely run its course.

## FISHERIES PATROL SERVICE.

The Fisheries Branch has under its control a number of motor launches and small steamers, for the prevention of illegal fishing and for the general enforcement of the fisheries regulations in places where this cannot be properly done by land officers alone.

In patrolling Nova Scotia waters there were employed six of the department's own boats and three hired boats. One patrolled the waters of Northumberland strait, and two from Canso to the western boundary of Halifax county. Effective work was accomplished by both of these boats in suppressing illegal lobster fishing. Six boats patrolled the waters from Lunenburg county to Yarmouth county. A very active patrol was maintained, and very few violations of the law were reported.

In patrolling New Brunswick waters, four of the department's boats and one hired boat were employed. Three patrolled the waters of Charlotte county in the Bay of Fundy. The close seasons were generally well observed, but some illegalities, in the form of dynamiting pollock, occurred at times off Grand Manan. Three men were caught at this practice by the patrol boat officer and heavily fined, which put an end to further attempts at law breaking. Two boats patrolled the waters of the gulf counties, from Westmorland to Miscou island. One was engaged in supervising the salmon fishery at the mouth of the Miramichi river, and the lobster fishery along the coast, southwards. The other mainly patrolled the waters of Miscou and Shippigan islands, where illegally set lobster gear was found and destroyed, and the owners fined.

In patrolling Prince Edward Island waters, four boats were employed, mainly for the prevention of illegal lobster fishing. The efforts at illegal fishing in Prince county were persistent and a large amount of illegally used gear was broken up.

The Inspector of Fisheries for the province of Quebec makes use of a steamer for patrolling the gulf waters and enabling him to reach the widely separated and hardly accessible parts of his district. A hired motor boat was employed in patrolling the Magdalen Islands waters, where a number of lobster traps illegally set were seized and destroyed.

A small steamer owned by the department patrolled lake Winnipeg, in Manitoba, and assisted in the collection of fish eggs for the hatcheries of the lake during the season.

In patrolling the waters of British Columbia nineteen boats belonging to the department and nine hired boats were employed. Five boats patrolled the Fraser river, Howe sound, and part of the gulf of Georgia, in the southern district. Seven of the department's boats and nine hired ones patrolled the waters of the northern district. The regulations, on the whole, were well observed there, but a number of seizures were effected. Six departmental boats were engaged in patrolling the waters of the Vancouver island district, and in the course of the year made eleven prosecutions and eight seizures.

## DRIFT-NET FISHING OPERATIONS.

During the summer of 1918, the department's steamer *Thirty-three* was equipped with herring and mackerel nets, and sent to sea for the purpose of demonstrating the drift-net method of fishing.

Operations began early in June, and continued till October. The fish caught were sold in the port nearest to the fishing ground on which operations were being, at the time, conducted and where buyers were found prepared to handle the catches.

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While it was not to be expected that the operations of one drifter would go far towards definitely determining the temporary location and marking the somewhat erratic movements of the herring and mackerel schools along the whole Atlantic seaboard, the results of this vessel's work, notwithstanding certain handicaps, would indicate that a regular drift net fishery for mackerel could be established, by a fleet of several boats, of a suitable size, working in conjunction and following the fish from the western end of Nova Scotia eastward and into the gulf of St. Lawrence, during May, June, and July.

The results would further indicate that a regular drift-net fishery for herring could be conducted, during July and August, by a similar fleet in the waters between Inverness county, Nova Scotia, and the east coast of Prince Edward island, which seem to be exceptionally well suited for the purpose.

A detailed report of the season's operations will be found as an appendix to this report.

#### FISH INSPECTION.

The inspection of pickled fish and barrels was carried on during the year 1918, as in the three preceding years, under authority of the Fish Inspection Act of 1914.

Prior to 1918 the work of inspection was confined to the Atlantic coast, where six inspectors were employed; but recent developments in the herring-curing business of British Columbia made the extension of the inspection scheme to that province necessary. Consequently, one inspector was appointed, towards the end of the past year, to advise packers and inspect their pack during the winter herring fishery on the Pacific coast.

Inspecting officers have no power to enforce the making of barrels or the packing of fish in accordance with the requirements of the Act. Notwithstanding that disadvantage, their efforts in the way of persuading and directing packers to use better packages and to pack better fish, have been on the whole productive of much good.

While the extent or value of the work of the inspectors cannot be judged alone by the number of barrels submitted—because of the practice of a number of packers who, after receiving instruction and advice from an inspector, sell and ship their fish without waiting for him to return and brand them—it is gratifying to be able to report that official inspection was made use of to a greater extent during the past year than in any previous year.

The following figures show the number of packers, who submitted their fish for inspection, and the quantity of fish inspected in each of the years in which the Act has been in operation:—

Year.	Packers.	Fish Inspected.
1915. . . . .	16	1,320 barrels.
1916. . . . .	73	7,213 "
1917. . . . .	80	8,977 "
1918. . . . .	110	20,664 "

In the year 1918, there were 16,667 barrels inspected on the Atlantic coast, and 3,997 on the Pacific.

Of the 20,664 barrels of fish inspected during the past season, 12,075 barrels were branded, while 8,589 did not receive the official brand. It should not be inferred therefrom, however, that the fish not branded were bad or unsaleable. As a matter of fact, most of them were good fish which, by reason of some defect in grading or in the quality of the package, fell somewhat short of the high standard required by the Act. It should be remembered that practically each lot submitted for inspection, whether branded or not, represented a more or less serious attempt by the packer at improved packing and compliance with the standards set.

Unfortunately, the services of three of the inspecting officers have been made little use of since inspection was instituted. Consequently, it was decided to ter-



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minate their engagement at the end of the year 1918. The names of the officers concerned are: H. H. Mann, Sydney, N.S., A. R. Hiltz, Mahone Bay, N.S., and Thomas Doyle, North Rustico, P.E.I. If any calls for inspection come from the districts of either of the discharged officers during the season of 1919, arrangements will be made to have such attended to by the remaining officers in the Maritime Provinces.

It is not customary for packers to send letters of thanks to the department for instruction and guidance given them in connection with this work, but two such were received recently—one from a packer in Nova Scotia, and the other from a packer in Gaspe—which may be quoted, to show something of the valuable nature of the work that is being carried on by the inspectors of pickled fish, covering as it does instruction in barrel making and fish-curing as well as the inspection of the finished product. The letter from the Nova Scotia packer. "Last summer, under your inspector's instruction, I cured some of our herring in the Scotch method, and am more than satisfied with the price received for same. When branding these fish the inspector informed me they were the finest cured fish he had branded this season. I simply followed his instructions, and I cannot understand why others don't do likewise."

The letter from the Gaspe packer: "I am writing to thank you for the services of your inspector, who instructed us and our men, this year, in the packing of herring in the Scotch style—the first to be packed in quantity on this coast. The inspector instructed us in the kind of barrels to be used, and had them shipped to us. Our packing was a success, and we obtained good value for our fish. Without the inspector's instruction we could not have operated. Again thanking you."

## CANNERY INSPECTION.

No fish or shellfish canning establishment is permitted to operate in Canada, except under a license issued by this department, after it has been assured of the suitability of the place for the handling of human food. Each cannery so licensed is subject to inspection under authority of the Meat and Canned Foods Act, at any time during operations.

Throughout the canning season of 1918, the department's outside staff of fishery officers periodically inspected all fish and shellfish canneries, and generally supervised the sanitary conditions under which operations were carried on therein.

On the Atlantic coast, lobsters were canned in 529 establishments; sardines in 3; salmon in 3; clams in 15; and other fish—such as herring, mackerel, haddock, etc.—in 22. In the Prairie Provinces, lake-fish were canned in one establishment. On the Pacific coast, salmon were canned in 90 establishments; herring, pilchards, etc., in 22; and clams in 2.

There were 2,317 inspections made and reported on. In the course of the year defects were noted in the buildings and equipment of four establishments, and the owners required to have them rectified.

Inspection under the Act, as amended 1917, which becomes effective during the season of 1919, will be more definite and comprehensive. The salient features of the amended Act are: (1) the inspection of buildings, utensils, and fish in accordance with regulations made thereunder, and appended thereto; (2) the authority granted to an inspector to stop the canning of fish which he considers unfit for human food; (3) the authority granted to an inspector to seize such fish on view; (4) the marking of cans with the name and address of the packer or the dealer who obtains the fish directly from the packer; a true description of the kind of fish (the species of salmon packed in British Columbia must be named) and the weight of the contents of the cans; (5) the correct marking of canned fish imported into Canada, so as to show their kind and quality, the place of origin, and the name and address of the packer or importer.

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It is anticipated that through the agency of the amended Act, the standard of packing will be further raised and that both producer and consumer will benefit thereby.

## BAIT-REPORTING SERVICE.

This service was instituted in 1913 for the purpose of providing masters of fishing vessels with definite information concerning bait supplies at points along certain parts of the Atlantic coast. The information is collected by officers of the Department, and sent by telegram daily to certain important ports and there posted up in a conspicuous place. It is also published in the Halifax and other daily newspapers. Copies of all telegrams are mailed weekly to headquarters at Ottawa, from where the work is directly supervised.

The service was continued during the season of 1918. In the spring months, 78 telegrams were sent from the Magdalen Islands, Souris, P.E.I., and Queensport, N.S., to Canso, Halifax, Lunenburg, and Riverport, N.S. In July and August, 130 telegrams were sent from Little Bras d'Or, L'Ardoise, Canso, Wine Harbour, and Musquodoboit Harbour, N.S., to North Sydney, Canso, Halifax, Lunenburg, and Shelburne, N.S.; also from Lockeport to Canso and Halifax, and from Shag Harbour and Digby, N. S., to Halifax, Shelburne, and Lockeport, N.S. From the beginning of September to the middle of November, 47 telegrams covering information as to supplies of bait in the counties of Charlotte and St. John, N.B., were despatched from Campobello, N.B., to Digby, Yarmouth, Pubnico, Clark's Harbour, Wood's Harbour, and Port La Tour, N.S.

That this service is beneficial alike to vessel fishermen in search of bait and net fishermen who have bait for sale, may be gathered from the following reports of the department's officers on the spot: Overseer Torrie, Digby, N.S.: "The bait reports have kept the boat fishermen informed as to what particular part of the county bait was being taken in. They have found the information of great value." Overseer Stoddart, Shelburne county, N.S.: "Owing to the great scarcity of bait in this locality, the reports were a great benefit. The fish dealers took advantage of the information contained in the reports, and wired localities where supplies were available and had fresh bait shipped to them; thus saving time to the fishermen and permitting them to continue operations. By means of the bait reports from New Brunswick, a good supply of lobster bait was secured and brought to the district. I may say that the bait reports during 1918 were of greater benefit than in any previous season". Overseer Walls, Shelburne county, N.S.: "I have talked with quite a number of the shore fishermen in my district, and also to many of the skippers of fishing vessels, and they have stated that it is a good thing for both net fishermen and vessel fishermen to have official reports of bait available". Overseer Hebb of Lunenburg county, N.S.: "I have made inquiries of the owners of Lunenburg fishing vessels, and they inform me that the results obtained from the publication of telegraphic reports concerning bait supplies last season were very beneficial, and their desire is that the service be continued". Overseer Cooper, Guysboro county, Nova Scotia: "Owing to the presence of submarines last summer, vessels did not visit my district for bait as in other years, but the bait reports kept the net fishermen in touch with the schools of bait, and in that way the benefit was great". Overseer Dillon, Guysboro county, N.S.: "The fishermen from Lunenburg and elsewhere, on arrival at points in my district where bait reports were posted, have found it a great convenience to have such information. I have thus been informed by vessel fishermen met and interviewed when going over my district".

## FISHERIES STATISTICS.

Under an arrangement between this department and the Dominion Bureau of Statistics, as was noted last year, the latter now compile and publish the annual statistics relating to the fisheries, as part III of its Census of Industry. The inform-

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ation is secured partly from manufacturing establishments, on individual schedules designed to fit in with the Bureau's general scheme of securing industrial statistics, and partly by the officers of this department, as in the past, from those fishermen and dealers who are not classed as manufacturers, but who market their own produce. The returns from both the manufacturers and our officers are checked in this department as before, and afterwards handed over to the Bureau of Statistics for publication. The new schedules were used for the first time, in taking statistics for 1918, and as neither the manufacturers nor the officers were quite clear, at the first, as to the filling in of the schedules, much correspondence resulted; while many of the returns had to be sent back for correction more than once. The delay thus caused prevented the Bureau of Statistics from having the full statistics compiled in time to permit of summarized tables being published in this report, the preparation of which has been postponed until now in the expectation that such tables would be available. Consequently, a general review only, made up from information obtained by the department from time to time, is given herein.

Monthly returns of the quantities and values of sea fish landed are sent to the department, as usual, by the officers in sea fishing districts. The returns are checked and compiled to show the landings in each county and province, and in the whole of Canada. The compiled information is then summarized in a report by the department, and made public through the press, monthly.

## FISHERIES EXPENDITURE, 1918-19.

		Appropriation.	Expenditure.
		\$	\$ cts.
Salaries and disbursements, Fishery officers.....	\$251,883 54		
Fisheries patrol service.....	209,829 35	500,000	466,867 88
Oyster culture.....	5,154.99		
Fish breeding.....		300,000	241,211 61
Cold storage and transportation of fresh fish.....		110,000	107,957 85
Building fishways.....		10,000	5,728 16
Legal and incidental expenses.....		4,000	1,357 08
Fisheries Intelligence Bureau.....		5,000	2,090 44
Toronto exhibition.....		5,000	4,295 25
Inspection of canned or pickled fish.....		15,000	11,966 39
Marine Biological Board.....		26,000	26,000 00
Totals.....		975,000	867,474 66
Fishing bounty.....		160,000	159,675 25
Paid out of Consolidated Revenue Fund.....			4,618 29

  

Provinces.	Salaries and Disbursements of Fishery Officers.	Fish Breeding.	Fisheries Patrol Service.	Building Fishways and Clearing Rivers.	Inspecting Canned and Pickled Fish.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Nova Scotia.....	58,600 78	17,233 22	34,002 19	6 92	5,355 50
Prince Edward Island.....	9,173 49	3,003 84	4,379 11		1,285 60
New Brunswick.....	49,013 23	36,351 19	14,140 73		2,950 56
Quebec.....	7,095 93	12,923 27	41,563 30		50 00
Ontario.....		64,996 55			
Manitoba.....	11,587 83	29,405 83	22,058 23		
Alberta.....	15,267 84	4,920 96			
Saskatchewan.....	16,966 00	5,529 72			
British Columbia.....	70,598 27	59,048 99	85,068 41	5,721 24	2,317 62
Yukon.....	531 50				
General account.....	13,048 67	7,798 04	8,617 38		7 11
Totals .....	251,883 54	241,211 61	209,829 35	5,728 16	11,966 39

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## FISHERIES REVENUE, 1918-19.

	Amounts Collected.	Refunds.	Net Amounts.
	\$ cts.	\$ cts.	\$ cts.
Nova Scotia.....	7,629 31	16 50	7,612 81
Prince Edward Island.....	2,561 19		2,561 19
New Brunswick.....	16,420 52		16,420 52
Quebec.....	8,135 80	14 00	8,121 80
Ontario.....	631 85		631 85
Manitoba.....	12,780 20	50 00	12,730 20
Alberta.....	10,293 15	5 00	10,288 15
Saskatchewan.....	4,982 83		4,982 83
British Columbia.....	59,349 94		59,349 94
Yukon.....	425 00		425 00
Totals.....	123,209 79	85 50	123,124 29

## FISHING BOUNTY.

Under authority of "An Act to encourage the development of the Sea Fisheries and the building of Fishing Vessels," the sum of \$160,000 is appropriated annually by the department and paid to fishermen of the eastern Maritime Provinces. The bounty is distributed under regulations made from time to time by the Governor in Council.

For the year 1918, payment was made on the following basis:—

To owners of vessels entitled to receive bounty, \$1 per registered ton; payment to the owner of any one vessel not to exceed \$80.

To vessel fishermen entitled to receive bounty, \$6.25 each.

To owners of boats measuring not less than 13 feet keel, \$1 per boat.

To boat fishermen, entitled to receive bounty, \$3.80 each.

There were 14,452 bounty claims received, and 14,440 paid. In the preceding year, 14,532 claims were received, and 14,516 paid. The total amount paid was \$159,675.25, allocated as follows:—

To 784 vessels and their crews. . . . . \$ 53,298 30

To 13,655 boats and their crews. . . . . 106,376 95

The following table shows in detail the payment of the bounty by counties, for the year 1918:—

Provinces and Counties.	No. of Vessels.	Tonnage.	Average Tonnage.	No. of Men.	Amount Paid.	No. of Boats.	No. of Men.	Amount Paid.	Total bounty paid to vessels and boats, 1918.
<i>Nova Scotia :—</i>					\$ cts.			\$ cts.	\$ cts.
Annapolis.....				1	6 30	183	289	1,281 20	1,287 50
Antigonish.....						169	238	1,073 40	1,073 40
Cape Breton.....	25	411	16	131	1,230 70	485	915	3,962 10	5,192 80
Cumberland.....						4	6	26 85	26 85
Digby.....	9	401	44	102	1,037 50	410	700	3,070 00	4,107 50
GuySBorough.....	54	856	15	250	2,419 50	856	1,366	6,649 40	8,468 90
Halifax.....	63	1,011	16	302	2,899 75	1,303	1,776	8,051 75	10,951 50
Inverness.....	26	363	13	126	1,151 25	401	799	3,437 40	4,588 65
Kings.....						53	74	334 20	334 20
Lunenburg.....	161	8,805	54	2,312	23,256 65	547	638	2,971 40	26,228 05
Pictou.....	2	38	19	8	88 00	62	86	388 90	476 90
Queens.....	17	213	12	47	506 75	151	241	1,066 85	1,573 60
Richmond.....	42	792	18	227	2,211 75	552	924	4,063 30	6,275 05
Shelburne.....	35	797	22	252	2,373 15	617	1,131	4,927 15	7,300 30
Victoria.....	12	148	12	61	529 90	324	488	2,179 20	2,709 10
Yarmouth.....	25	969	38	331	3,038 75	163	317	1,367 60	4,406 35
Totals.....	471	14,804	31	4,150	40,749 95	6,280	9,991	44,250 70	85,000 65
<i>New Brunswick :—</i>									
Charlotte.....	8	123	15	33	329 45	380	627	2,762 80	3,092 25
Gloucester.....	259	3,700	14	1,104	10,601 60	220	27	2,222 95	12,824 55
Kent.....	14	149	10	38	386 75	44	79	344 20	730 95
Northumberland.....	4	73	18	12	148 00	6	15	63 00	211 00
Restigouche.....						9	15	66 00	66 00
St. John.....						30	42	189 60	189 60
Totals.....	285	4,045	14	1,187	11,465 80	689	1,305	5,648 55	17,114 35
<i>Prince Edward Island :—</i>									
Kings.....	5	92	18	12	167 00	456	648	2,918 85	3,085 85
Prince.....	10	144	14	38	381 50	527	1,317	5,531 90	5,913 40
Queens.....	2	25	12	6	62 50	145	312	1,330 60	1,393 10
Totals.....	17	261	15	56	611 00	1,128	2,277	9,781 35	10,392 35
<i>Quebec :—</i>									
Bonaventure.....	2	26	13	7	69 75	1,069	1,888	8,247 15	8,316 90
Gaspé.....	6	69	11	28	244 30	3,377	6,908	29,635 85	29,880 15
Rimouski.....						86	110	504 20	504 20
Saguenay.....	3	45	15	18	157 50	1,026	1,916	8,309 15	8,466 65
Totals.....	11	140	12	53	471 55	5,558	10,822	46,696 35	47,167 90
Grand Totals.....	784	19,250	24	5,446	53,298 30	13,655	24,395	106,376 95	159,675 25

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## REVIEW OF THE FISHERIES OF 1918.

Detailed figures, compiled and completed, for the year 1918 are not yet available, but the information at present in the department is sufficient to permit of a general review and an approximate analysis of the year's fishing results being made in order to convey some idea of the increase or decrease in the production of the various kinds of fish as compared with the preceding years.

The estimated value of the fisheries of the whole of Canada in 1918 will exceed that in 1917, which amounted to \$52,312,044. But as the catch of most of the chief kinds of sea fish in 1918 was less, owing to some rather unusual conditions, on the Atlantic coast especially, the greater value is attributable to higher prices alone.

The first quarter of the year was marked by abnormally cold and stormy weather on the Atlantic, with ice infesting many harbours that are, as a rule, free from such obstructions. Indeed, the weather during each month of the year, with the exception of May, the latter half of July, and the whole of August and December, was characterized as very unfavourable for fishing—especially for boat fishing. Further, fishing, during August and September, both inshore and offshore, was very greatly interfered with by the presence of an enemy submarine, which sank several Lunenburg county vessels, one Yarmouth county vessel, and a Halifax steam trawler. Finally, the epidemic of influenza which over-ran the country caused many fishing vessels to be laid up while it lasted.

## ATLANTIC FISHERIES.

*Cod, Haddock, Hake, and Pollock.*

The quantity of cod landed was about 14 per cent less, and that of haddock, hake, and pollock each about 20 per cent less, than in the preceding year. While all the provinces show a shortage of cod, Quebec and Prince Edward Island show the highest percentage of decrease. The Lunenburg bank fishing fleet set out in the beginning of the year in somewhat greater force, and returned with an increased spring catch. The total quantity landed by the fleet for the whole season, however, was slightly less owing to the loss of vessels and the general interruption of operations by enemy undersea craft. In the northern parts of Cape Breton the high price of cod induced more fishermen to engage in that fishery with very satisfactory results.

The haddock catch of Nova Scotia the chief producer of these fish, was about 25 per cent less. This decrease was mainly due to the fact that at Ingonish, where haddock are caught largely in traps, the fish failed to appear as abundantly as usual in the spring. During May and June, 1917, there were taken at Ingonish, 160,000 cwts., whereas in May of 1918 none appeared and in June and July not more than 50,000 cwts. were caught.

*Herring, Sardines and Mackerel.*

The total quantity of herring taken was about 10 per cent greater. There was a small catch in Nova Scotia which was offset by an increased one both in New Brunswick and Quebec. As more attention is being given to the preparation of spring herring for food along the Gulf shores, this fishery is growing in importance and value. Owing to the sudden ending of the war towards the end of the year, the demand for salted herrings unfortunately fell off, and considerable quantities had to be either sold at a low rate or carried over till the succeeding consuming season.

The mackerel fishery resulted in a catch about 10 per cent greater than that of last year. More were landed in Prince Edward Island and Nova Scotia, but the catch in New Brunswick was less. Quebec produced about the same quantity as in the preceding year.

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The sardine fishery of the Bay of Fundy opened in a rather unpromising manner, but before the end of the season fish were abundant, so that with a large catch and high prices fishermen had a good season. The sudden ending of hostilities in Europe caused a drop in both the demand for and the price of the canned product, and packers were caught with large supplies on hand which afterwards were difficult to dispose of except at a price much below what was anticipated when the raw material was purchased.

*Other Sea Fish.*

Albacore, swordfish, and halibut are taken mainly by Nova Scotia fishermen. The quantity of halibut landed was about 20 per cent less, and of albacore and swordfish but slightly less than in the preceding year.

*Shellfish.*

The lobster catch of 1918 was little more than half the annual average catch of the four preceding years. The falling-off was common to all parts of the coast, but in some provinces it was much less pronounced than in others. For instance, the decrease from the preceding year in Quebec was 9 per cent and in Nova Scotia 35 per cent, while in New Brunswick it was 62 per cent and in Prince Edward Island 60 per cent. It should be noted, however, that on those sections of the coast where the decrease was greatest—northern New Brunswick, Prince Edward Island, and the Nova Scotia counties bordering the strait of Northumberland—the fishing period was extended for a month in 1917.

An analysis of the catches by counties in the provinces of Nova Scotia and New Brunswick shows the following: In the Gulf counties of the former province, Inverness, Antigonish, Pictou, Colchester and Cumberland the decrease was 45 per cent, attributable mainly to Pictou and Cumberland. In the eastern Atlantic counties, Victoria, Cape Breton and Richmond, there was a 27 per cent decrease. In the central counties, Guysborough and Halifax, the decrease was 31 per cent, chiefly in the latter county during April and May. In the western counties, Lunenburg to Digby, there was a decrease of 30 per cent. The range of decrease in the western counties was considerable; for example, the Shelburne county catch was 18 per cent less, while Yarmouth's decreased 30 per cent and Digby's about 38 per cent.

The decrease in the 1918 lobster catch is undoubtedly a serious one, and to some may, at first sight, seem to foreshadow the immediate end of this important branch of the fishing industry. But, while scarcity of lobsters on some of the fishing grounds may have had something to do with it, to other causes must the unsatisfactory results be chiefly attributed. During spring time, protracted spells of stormy weather and abnormal ice conditions prevented fishermen from operating regularly. Also, the greatly increased cost of lobster gear deterred fishermen from readily replacing lost equipment and carrying on as vigorously as in other years.

The quantity of oysters taken was slightly greater than in the preceding year. The catch of clams was also greater in all the provinces except New Brunswick.

*River-Spawning Fish.*

The total catch of Atlantic salmon was about 20 per cent less than an average one. In Nova Scotia there was a decrease of about 28 per cent, and in Quebec one of about 40 per cent. In New Brunswick, on the other hand, there was an increase of about 5 per cent; St. John county, in the Bay of Fundy, shows a decrease of 17 per cent, while the Gulf counties show an increase of 10 per cent. A curious thing about the increase in the Gulf counties is that, while Northumberland, the chief salmon county, shows an increase of 50 per cent, all the other counties show decreases of from 20 per cent to 50 per cent.

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The catch of smelts was very little less than in the preceding year. High prices were paid, and fishermen had a remunerative season.

The catch of alewives as a whole was less. In the county of St. John, New Brunswick, the chief centre of this fishery, there was a decrease of nearly 20 per cent, but in the Gulf counties of New Brunswick, the section next in importance to St. John county in the production of alewives, there was an increase of 20 per cent.

The quantity of shad taken was rather less than in the preceding year.

#### INLAND FISHERIES.

In what is called the inland district of New Brunswick, which comprises the St. John river system, alewives were not so abundant as in the preceding year, but an increase in value offset the decreased quantity taken. Salmon fishing on the St. John river during the 1918 season was not so good as usual, mainly owing to the lateness of the run. In the northern sections of this inland district excessive rain kept the brooks very full of water, consequently trout fishing was not quite up to the average.

In the Great Lakes of Ontario, fishing for whitefish resulted in a catch of about 11,000 cwts. more than that of 1917. Almost all the increase, however, came from the Lake Superior district. Lake Ontario produced 1,700 cwts. more, but the output of lake Erie was 1,100 cwts. less. The total quantity of herring taken was slightly less than the preceding year's catch, notwithstanding a very considerable increase in the production from lake Superior. The lake Erie catch was several thousand cwts. less. Neither pickerel nor pike came up to the previous year's total, but there was quite a large increase in the catch of trout.

Fishing results in Manitoba, as a whole, were satisfactory. The summer fishery for whitefish in lake Winnipeg was good, and before the season closed fishermen had caught their allotted quantity. Pickerel and tullibee were not found so plentifully as in the preceding year, which may have been due to the fact that the winter fishery was held up by the late formation of ice on the lakes. The fishery in lake Winnipegosis and the lakes in the western part of the province resulted in about the same quantity being taken as in 1917. Higher prices were paid for all kinds of fish and the total value is thereby greater.

Weather conditions were ideal for winter fishing in Saskatchewan during the 1918 season, and despite the influenza epidemic, which interfered with operations and caused numerous deaths amongst those engaged in fishing, reports from the various districts show that in the northern part of the province especially the fisheries were very successful. It is reported also that the fish in many of the lakes that have been fished for some years have improved in size and quality, as a result of the thinning out of the supply which, in some cases, was greater than the lake could well sustain.

Both the catch and the size of the fish at Lesser Slave lake, which provides the chief fish supply for the province of Alberta, were satisfactory. A feature of the year's operations was the fishing of several lakes in the north which had not previously been fished commercially. Some of these are over a hundred miles from the nearest railway, and, as can be well imagined, transportation of the fish to market is a difficult and expensive undertaking.

In Southern Alberta angling was not so good as in the preceding year owing to the lack of rain and the drying up of a number of the smaller streams.

#### PACIFIC FISHERIES.

##### *Salmon.*

The salmon fishery, as a whole, during 1918 was successful. While certain kinds of salmon were not very abundant in some sections of the coast, other varieties appeared in greater quantities in other sections.



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In the southern district, which is practically the Fraser River district, the failure of the big run of sockeye in 1917 was followed by a small pack in 1918. Other varieties were much less abundant than was expected. The total pack on the Fraser was, therefore, smaller than that of the preceding year.

In the northern district which extends from Smiths inlet to Naas river, and includes Queen Charlotte islands, the aggregate pack of salmon greatly exceeded that for the year 1917. Sockeye were plentiful in the Skeena river, but in Rivers inlet the run of these fish was poor. Spring salmon fishing was very good, and the results equalled those of the good seasons of five or six years ago. The varieties known as pinks and chums were very abundant all over the northern district, and prices were high.

In the Vancouver Island district, which covers the whole island and part of the mainland adjacent to the north end of it, fishing operations on the whole were very successful. Salmon fishing was very good, especially off the west coast, and a largely increased catch was landed. Chums were in great abundance.

Trolling for salmon with hook and line has become very popular all over the coast. Besides being an inexpensive method of fishing it is very remunerative. For that reason, the number of those engaging in it has increased enormously in the last year or two.

*Halibut.*

The halibut fishery suffered to some extent through the influenza epidemic, which disabled the crews of most of the vessels for a time. Notwithstanding this drawback the combined catch of Canadian and American vessels was looked upon as very satisfactory. Fishing operations were carried on in Hecate Straits and off the west coast of Queen Charlotte islands by the smaller vessels of the fleet, but the larger boats operated in the Gulf of Alaska far to the northward.

*Herring.*

The herring catch was very much greater than in the preceding year, and greater quantities were canned and pickled. These fish were extremely abundant in the Barclay Sound district on the west of Vancouver island; they appeared early and remained in abundance all through the season. Nanaimo harbour and the neighbouring bays and inlets on the east coast of the island were filled with herring early in the winter season, but little attention was given to catching them until the season was well advanced.

*Other Sea Fish.*

Pilchards were taken in large quantities on the west coast of Vancouver island, and more than ever of this delicious fish were preserved in cans.

The catch of black cod would appear to be not quite so large as in the preceding year.

Steam trawling was successfully carried on by two trawlers off the northern coast of the province, and good catches of excellent flatfish were secured throughout the year.

*Whales.*

One whaling station only, operated on the west coast of Vancouver island, but the catch, 246 whales, was almost as great as that of the preceding year when two stations were at work. The whaling stations at Rose harbour and Naden in the northern district were operated successfully also, and the total catch of the three stations was 500 whales.

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It is interesting to learn that nearly 30,000 cases of whale meat were packed, in the course of the year, and sold in a ready market.

## REMARKS.

Four steam trawlers operated out of Atlantic ports and two out of Pacific ports during the year, with marked success, and indications point to further developments in this respect.

Line fishing, too, has progressed, and larger motor boats of a size capable of fishing on any of the nearer Atlantic banks have taken the place of the old medium-sized sailing vessels, in many places.

The very hazardous nature of the fishing industry is evidenced by the annual toll of human lives paid by those who carry it on, and I regret to say that no fewer than 47 men, 28 on the Atlantic and 19 on the Pacific, were lost to us while prosecuting their calling during the year.

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In concluding, I desire to say that my thanks are due to the officers and clerks of the Fisheries Branch for their loyal co-operation with me in carrying on the work of the Branch; and, further, that their duties throughout the year have been performed in a most praiseworthy manner.

I am, Sir, your obedient servant,

G. J. DESBARATS,  
*Deputy Minister of the Naval Service.*

## APPENDIX 1.

## REPORTS OF INSPECTORS OF FISHERIES.

## REPORT OF INSPECTOR A. G. MACLEOD, OF SYDNEY, N.S., ON THE FISHERIES OF DISTRICT No. 1, NOVA SCOTIA, FOR 1918.

The season was rather unfavourable, on account of the late spring and unsettled weather, and the quantity of fish caught was less than it would otherwise have been, but prices ruled abnormally high. Consequently, the fishermen had a very prosperous year.

## LOBSTERS.

Owing to the drift ice remaining late on the coast, fishing operations did not begin along the northern part of the district until the 21st of May, at which time the great bulk of the spring herring had passed by, thus causing a great scarcity of bait, which was a serious handicap to the fishermen.

On account of the cost of lobster gear having advanced tremendously, the fishermen did not supply themselves with new equipment to replace that lost during the previous season. This, together with the unsettled state of the market and with fewer men engaged in the industry—many of the fishermen having enlisted for overseas—was the cause of the catch being lower than that of the preceding year; for, apparently, lobsters were fairly plentiful. At L'Ardoise, Richmond county, there was a decrease of 4,000 traps, and from Bay St. Lawrence to Neil's Harbour there were 4,060 traps less in operation than in the previous year.

## SALMON.

This branch of the industry was a failure all along the coast, with the exception of L'Ardoise, Richmond county, where good catches were made after the 15th of June. In the principal sporting river—the Margaree of Inverness county—during the fly fishing season, salmon were not up to the average; but they ascended in very large quantities in the fall, and the river was teeming with them in October and November.

## COD.

The high prices paid for cod caused more of our fishermen to engage in trawl line fishing to a greater extent than heretofore, which proved very profitable, especially at Ingonish, Victoria county, and Eastern Harbour, Inverness county. The fishermen of the former port reaped a harvest during the latter part of December, for cod of the largest size and choicest quality struck that coast in very large quantities—some of the fishermen having averaged \$45 per day.

## HADDOCK.

The catch of haddock fell behind that of the previous year, owing to the drift ice hugging the coast unusually late in the spring. At L'Ardoise, Richmond county, a trap net operating there did remarkably well in June.

## MACKEREL.

Large schools of mackerel appeared on the Inverness coast at a late date, but would not take the hook. The catch was lower than in 1917, caused, principally, by unfavorable weather and the epidemic of influenza which raged throughout this district at the time when the mackerel struck the coast.

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## HERRING.

Herring were very plentiful along the southern coast of Inverness, Richmond, and Cape Breton counties during the months of July and August, and were it not for unsettled weather and scarcity of salt, the catch would have been very much larger.

## VESSELS AND BOATS.

The condition of the fleet shows a great improvement over the preceding year, owing to the fact that many new craft have been added to the fleet and a better grade of engine installed in the old ones. At Ingonish, Victoria county, one vessel owned by Parkhurst Fisheries, Ltd., of Gloucester, Mass., was run down by another schooner and sunk, but no lives were lost.

## DEVELOPMENTS.

The catching of blackfish at Pleasant Bay, Inverness county, is a new branch of the fishing industry in this district. This fish is caught with the regular barbed pole used for swordfishing. After taking off the fat, the carcass is thrown away as a rule, but, in some cases, the meat has been fried and pronounced to be as delicious and palatable as beefsteak.

## LOSSES.

A storm of unusual severity swept along the Atlantic coast on the 14th of November, accompanied by a tidal wave which caused tremendous destruction, not only to wharves, stages and piers, but to fishing boats, nets, and even fish that had been packed away in fish houses. Great damage was done at Bay St. Lawrence, Cape North, Aspy Bay, New Haven, Neil's Harbour and Ingonish, Victoria county; and at Main-à-Dieu, Baleine, Lorraine, and Louisbourg, Cape Breton county. Total estimated loss \$54,000. I regret to report the drowning of one fisherman at New Haven, Victoria county, on the 14th November.

## NEEDED IMPROVEMENTS.

As the fishermen of Bay St. Lawrence, White Point, Aspy Bay, New Haven, Neil's Harbour, and North Ingonish, Victoria county, are operating at great risk to life and property on account of having no harbour, I would like to impress upon the department the great necessity of making provision for shelter to fishing boats at these ports, in order that the fishermen may equip themselves with larger boats, and thus be enabled to reach the best fishing grounds. In the district of Port Hood, Inverness county, the only place of safety for boats during fall fishing is at Port Hood island. Consequently, a large number of fishermen, chiefly from the southern end of the district, cannot take advantage of this shelter. Therefore, I would strongly recommend that the Government assists by constructing a shelter for their boats at the mainland.

## CLOSE SEASONS.

The close seasons have been well observed. I may say that the new system of appointing fewer guardians, with larger salaries, has been productive of very beneficial results. As smelts are late in ascending our streams for spawning, I would recommend that the close season be extended to July 31.

## ILLEGAL FISHING.

In order to prevent illegal fishing, the guardians are required to patrol at irregular intervals and perform their duties in such a manner that it is utterly impossible for any person to know where they may be stationed at any time. There were three prosecutions for attempts at illegal fishing in the Margaree river and convictions secured in each case, the offenders being fined \$25 each, with costs.

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## GENERAL REMARKS.

The regulation governing sawdust and mill refuse is carefully respected, for mill owners, as a rule, are desirous of affording every protection to the fish entering our streams.

The fishways in my district are in good condition.

There were no patrol boats in use in this district with the exception of two small motor boats supplied for the use of the special head guardians, Malcolm W. Ferguson, on the Mira river, and Pat. McDonald, on the Margaree river.

Two gaspereaux nets, two boats, and nineteen lobster traps were confiscated.

The following licenses were issued in my district: smelt gill net, 115; smelt bag net, 11; trap net, 81; lobster, 47; lobster extension, 23; angler's permits, 19; oyster, 81; mackerel canning, 1; haddock canning, 1.

## VICTORIA FISHERIES PROTECTIVE ASSOCIATION.

It affords me great pleasure to express to you my high appreciation of the faithful and invaluable services rendered by the active and competent secretary of this association—Mr. George Kennan, D. L.—for, with his hearty support and co-operation we have been enabled to procure greatly improved protection for the principal angling rivers of this district.

## REPORT OF INSPECTOR ROBERT HOCKIN, PICTOU, N.S., ON THE FISHERIES OF DISTRICT No. 2, NOVA SCOTIA, FOR 1918.

The catch of deep sea fish—cod, haddock, hake, and pollock—is estimated to be somewhat less than last year. Herring shows a considerable increase, and mackerel a slight decrease. The catch of halibut is much greater.

The quantity of salmon taken was slightly less than that in the previous year. On the Atlantic coast the fishery was nearly as good as last year; on the strait of Northumberland there was a greater falling off, while in the Bay of Fundy the reports indicate a considerable increase.

Over the whole district, we are confronted with the fact that the catch of lobsters was only about 25 per cent that of last year. On the strait of Northumberland the decline is about 50 per cent, and on the Atlantic coast about 25 per cent.

An unusual incident was the stranding of about one hundred and twenty large fish at Cape John, in Pictou county. They were from 10 to 20 feet long, the average being about 15 feet, and the weight of the largest about 4,500 pounds.

When the fish were seen on Tatamagouche bay, some parties went out in motor boats, which frightened the fish, causing them to swim towards the shore until they were grounded. Some of the fish which had turned seaward afterwards followed the school, until they also grounded. The best description I have of the fish is in an encyclopedia in which they are spoken of as the caaing whale, of which it is said that schools of 50 to 100 impetuously follow the leader ashore—when alarmed and surrounded—in a bay or fjord. It is recorded that 1,100 were killed in the winter of 1809 in Iceland. They have been called by various names, e.g., blackfish, pilot whale, etc. Very little use was made of the fish. The inhabitants were not prepared to render the oil, and most of them were used for fertilizer.

## PROSECUTIONS.

There were thirty-one prosecutions for violations of the Fisheries Act; two for fishing for gaspereaux out of season; seven for allowing sawdust to pass into waters frequented by fish; eighteen for fishing for salmon in close season; two for having

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salmon in possession in close season; one for neglecting to build a fishway. Convictions were secured in twenty-six cases. Twenty-two nets and two spears were seized for violation of the Fisheries Act, and confiscated.

The following licenses have been issued during the year: 1 lobster pound, 63 lobster canning, 20 lobster extension, 13 herring weir, 167 drag seine, 26 salmon net, 44 trap net, 1 fish cannery, 64 oyster fishery, 3 angler's permits, 81 smelt gill-net, 149 smelt bag-net, 1,160 lobster fishing.

## REPORT OF INSPECTOR H. H. MARSHALL, OF DIGBY, N.S., ON THE FISHERIES OF DISTRICT No. 3, NOVA SCOTIA, FOR 1918.

With regard to the condition of the fleet of vessels and boats, there has been a slight increase in the number of boats for the district, by the addition of a number of larger high power motor boats that are being used in fishing. There has been a slight decrease in the fleet of vessels, owing largely to the presence of a submarine on this coast, which sank eight of the fleet from Lunenburg alone, viz.: *Lucille M. Schnare*, *E. B. Walters*, *Uda A. Saunders*, *Potentate*, *C. M. Walters*, *Gloaming*, *Verna Adams*, and the *Elsie Porter*. The fishing schooner *Otokia* was lost with all on board on her way home from the Grand Banks. The remainder of the district remains about the same, and I am advised that arrangements have been made for the construction of five steam trawlers by Lunenburg parties during the next season. There have been a number of developments worthy of note in this district, such as the steam trawlers under construction, above noted. A five million pound cold storage plant has been constructed at Liverpool, Queens county, and I am advised that it is one of the finest of its kind in the Maritime Provinces. A large fish cannery is being constructed at Freeport, Digby county, by the Frank E. Davis Co., of Gloucester, Mass. This, I believe, is one of the most up-to-date, and will be capable of handling a large output. There have also been quite a large number of additions to other canneries in this district.

There have been very few offences reported, and the close seasons have been quite well observed. This may be largely accounted for by the presence of the patrol boats, as we have had a very active patrol, the operations of which have been very satisfactory for the season.

Very little trouble has been experienced with the mills on our rivers and fishing streams from sawdust and mill refuse, as the regulations respecting this matter have been generally well observed.

With respect to the fishways in this district, they are all reported as efficient as they ever were, and all in operation. There are two new ones under construction, one at Lawrencetown, on the Annapolis river, and one at Charleston, on the Medway, which, when completed, I think will be satisfactory and efficient.

The following is a statement of the number of licenses issued during the 1918-19 season:—

Lobster packing.. . . .	44
Lobster extension.. . . .	30
Cannery licenses.. . . .	13
Special angling permits.. . . .	59
Smelt bag-net.. . . .	24
Trap-net.. . . .	68
Smelt gill-net.. . . .	50
Lobster pound.. . . .	10
Herring weir.. . . .	87
Scallop licenses.. . . .	221

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REPORT OF INSPECTOR S. T. GALLANT, CHARLOTTETOWN, PRINCE  
EDWARD ISLAND, ON THE FISHERIES OF PRINCE EDWARD  
ISLAND FOR 1918.

## LOBSTERS.

Fishing commenced May 6, and fair weather prevailed throughout the season, but owing to the scarcity of lobsters only a very few packers operated the whole season. It is thought that the extension of the lobster season in the fall of 1917 was partly responsible for the small catch in 1918.

## COD.

This fishing is carried on chiefly with trawls, and although the catch was somewhat below the season of 1917, increased values were realized in 1918, bringing the total value about the same.

There was an increase in the catch of haddock over that for last year.

There was a good catch of hake, and good prices were obtained.

## HERRING.

These were again scarce on this coast during spring, and great difficulty was experienced in procuring a supply for lobster bait, but there was a great increase in the quantity for August, and very high prices were realized.

## SMELTS.

The catch of smelts was about the same as in 1917, but the prices obtained were much lower than the prices realized in that year. This was partly due to mild weather and to transportation, which was altogether inadequate to carry the fish that was being offered. The result was that some of this fish was six and seven days on the road to the Boston market, and had to be destroyed on arrival.

## OYSTERS.

The catch of oysters was about the same as the season 1917, but values increased. The disease which last season killed the oysters in Richmond bay and Grand river has somewhat abated, and it is hoped that it has now run its course. In some parts of this bay and Grand river there was a fair catch of spat, and the small oysters seem to be developing naturally.

## MACKEREL.

I have to report a large increase in the catch of this fish, principally caught with nets. Increased prices were obtained so that the fishermen were well pleased with the season's operations.

There was a large increase in the catch of alewives, and a small decrease in the catch of trout, but an increase in value.

## LICENSES ISSUED.

Lobsters.. . . .	181
Lobster extension.. . . .	49
Quahaug.. . . .	38
Fish trap.. . . .	7
Oyster.. . . .	215
Smelt gill-net.. . . .	211
Smelt bag-net.. . . .	245
Fish cannery.. . . .	14

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REPORT OF INSPECTOR J. F. CALDER, CAMPOBELLO, N. B., ON THE  
FISHERIES OF DISTRICT No. 1, NEW BRUNSWICK, FOR 1918.

The year just closed was a very profitable one for practically all fishing interests. The efforts of the fishermen were, at least, fairly successful in all branches, and remarkably so in several. High prices were paid for all kinds, and the total value of the catch was greatly in excess of that for any other year.

Fishing vessels are fast disappearing from the district. More money can be made by fishing in large gasoline boats. Fishermen operate on all Bay of Fundy grounds in these boats, in many instances going as far out as the Grand Manan Bank. A splendid type of gasoline fishing boat is built in the district; these boats meet the fishermen's needs better than any other kind of craft, and while their number and efficiency are steadily increasing, as already stated, the sailing vessel is fast disappearing.

Gill nets are being introduced for the first time in the cod and pollock fishery. It is too early yet to form an opinion as to the effect of such operations.

The sardine herring season was a very successful one. A large catch was landed and sold at a good price. Unfortunately the packers were caught with large supplies of the canned product on hand when the armistice was signed, and as the price of canned fish has steadily decreased since then, the prospects for the coming season are not good.

Generally speaking, the close seasons were well observed. A few lobster traps were put out from time to time at different places, but they were soon located and destroyed by the patrol boats.

The principal illegal fishing that had to be contended with was the destruction of fish by means of dynamite off White Head, Grand Manan. As the pollock grounds there cover a very large area, a great portion of which is outside the three-mile limit, it is possible for more of this work to be carried on in spite of the best efforts of the most efficient officer. We have a splendid officer in Mr. Medley B. Green who patrols this area. He succeeded in catching three men engaged in dynamiting fish. They were prosecuted, convicted, and heavily fined. Such action had a splendid effect, for I do not believe any more dynamiting was done during the season.

The condition of the streams, in so far as sawdust and mill refuse are concerned, is better than it has ever been in the past.

The fishways were kept open as long as it was necessary. The one in the dam at Porter's Mill stream does not appear to be effective for gaspereaux. The fishway in the Cotton Mill dam at Milltown was taken out in order that needed repairs be made to the dam. A log sluice-way around the dam was kept open and well supplied with water; no doubt, the sluice-way was as effective as the other fish pass.

The following is a statement showing the number of licenses of various kinds issued in my district, during the 1918-19 season:—

Herring weir.....	799
Lobster pound.....	2
Cannery licenses.....	8
Permit to dig soft-shell or long-neck clams.....	54
	<hr/>
	864

REPORT OF INSPECTOR D. MORRISON, NEWCASTLE, N.B., ON THE  
FISHERIES OF DISTRICT No. 2, NEW BRUNSWICK, FOR 1918.

There was an increase in the catch of salmon, and an increase in its value. The destruction of salmon by seals still continues at the mouth of the Miramichi river and bay. The run of parent salmon in the Miramichi river was greater than ever, and with the assistance of the hatcheries we have reason to believe that this fishery will hold its own. The regulations were well enforced and the patrol steamer *Hudson* did good work keeping those using drift nets outside the three-mile limit.



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I regret to report a serious falling off in the lobster fishery. The southern part of my district showed a greater falling off than the northern section. The second season in 1917 contributed in some measure, at least, to the falling off in 1918. As the southern district is now changed from June to August, thus making a close season of all July and part of August, it will, in my opinion, assist very much in saving the lobsters that come into shoal water and are not more than half full of meat during July and August. Another very important matter is the saving of the female lobster. The licensing of fishermen, the co-operation of the canners, whose sympathy we are gaining, and the strict enforcement of the regulations will assist in this fishery being saved. The regulations were more strictly enforced than in previous years. The canners who have large investments in this fishery realize that it is necessary for them to give all the assistance possible to the officers. With that assistance there may be some hope of this fishery regaining its former importance.

There was a large falling off in the catch of cod, haddock and hake, but owing to increased prices the decrease in value is small. The unfavourable weather conditions in the early part of the season is given by the fishermen as the cause for the decrease in catch.

There was a considerable increase in the herring fishery, both in quantity and value. This fishery is becoming important. There are still large quantities used as fertilizer, but fishermen are taking advantage of the increased market value and are giving their attention to salting these fish, which a few years ago were regarded as only fit for bait or fertilizing purposes.

There is a small decrease in the mackerel catch, in comparison with last season, which was largely due to weather conditions.

The smelt fishery has more than held its own. The market value to the end of December was good, but during January and February of 1919 it fell off 50 per cent. The fishermen during the year received extra high prices. This was a great boon to them at a season of the year when employment is not easily procured.

There was practically no fishing for bass on the northwest and southwest Miramichi river, which are the principal bass fishing districts in the winter season. The residents of these districts find it more to their advantage to engage in lumbering operations.

There was an increase in the catch and value of oysters, as compared to last year.

The following is a return of the various kinds of licenses issued in my district during the fiscal year:—

Salmon fishery licenses.....	429
Oyster fishery licenses.....	300
Oyster permits.....	41
Herring weir licenses.....	14
Smelt bag-net licenses.....	2,931
"          "          free.....	25
"    gillnet licenses.....	118
Bass gillnet licenses.....	58
"    fishery licenses.....	23
Lobster packing licenses.....	174
"    additional licenses.....	7
Quahaug fishery licenses.....	37
Fish cannery licenses.....	1
Lobster pound.....	1

## REPORT OF INSPECTOR H. E. HARRISON, FREDERICTON, N.B., ON THE FISHERIES OF DISTRICT No. 3, NEW BRUNSWICK, FOR 1918.

Without consuming a large part of my time and incurring a very large expense in the operation, by personal inquiry amongst the fishermen and special guardians, as opportunity offered, by correspondence with the fishermen and through the local

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officers, I have collected as nearly correct information of the catch as it seems possible to get. The following comparative statement shows a greatly reduced catch, but without a correspondingly reduced financial return to the fishermen, apart from the fact that the fishermen were required to pay a very greatly increased price for materials needed in their work, such as nets, boats and salt.

	Fish. (cwt.)	Value (boatside).	Value (marketed).	Value Materials.
1917.....	8,020	Not stated	\$45,622	\$50,074
1918.....	4,288 (approximate)	\$37,088	45,997	57,505

The total reduced catch amounts to well up to 50 per cent, confined very largely to two classes of fish: viz., shad and alewives.

Because of the closed period against taking shad—of which there were 1,148 cwts. taken in 1917—a considerable portion of the reduction is accounted for. The greater part of the balance of the reduced catch was caused by alewives failing to swarm in these waters, as they have for many years.

The very satisfactory and, in many instances, greatly increased prices received by the fishermen for those sold, and the increased value of those consumed by the fishermen themselves, thereby permitting them to dispose of very high-priced meats, gave the fisher folk very satisfactory financial returns. The order forbidding the taking of shad for four years struck our fishermen like a thunderbolt and was only little less of a shock to the consumers. Unaware of what was contemplated some of the fishermen had purchased new nets, beside all the old nets that were on hand—many of which will be of little value at the end of the closed period—and they felt somewhat aggrieved. We can only hope that shad will so multiply during the closed period that the public will see the wisdom of the step taken. If shad are given as good protection in the Atlantic Coast waters, on the United States side, as we are trying to give them in the harbours and St. John River waters, we should see a vast increase when the ban is again lifted. Otherwise, if we are protecting them and our friends to the south are getting the benefit of that protection, there will be another story. There was great disappointment among the alewives fishermen last spring. For some unaccountable cause the usual great quantities of this fish did not strike the inland waters of the St. John River system. While the run was on they appeared to be as plentiful as in other years, but it lasted only a week or ten days, about half the usual time, and about half the usual quantity was taken. The very satisfactory price received by the fishermen partly made up for the diminished catches. We usually have a run of alewives about the first of June, in some districts locally called the "June" run, in other districts the designation "Blue Back" is given them because of the colouring of that part of the fish. They were reported to have been very plentiful last spring, but they are not much fished for, being very difficult to cure for shipping purposes, because of their very oily nature. Quantities are taken for local use and smoked or pickled, and are very good, being preferred by some to the others.

I was agreeably surprised regarding the catch of salmon when returns were received from the different sections of my district. Reports reaching me, during the fishing, were somewhat discouraging. While there was a considerable shrinkage, about 12 per cent, it was not nearly so large as I feared. Conditions did not appear to be at all favourable for the fishermen, but were very much so for the fish. Because of two or three summer freshets necessitating the removal of nets for periods of a week or more each time, the fish had good opportunities for reaching the spawning areas. This condition did not apply so much to the district of Kings county, because

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of the greater expanse of water there. Salmon were ten days to two weeks later than usual in reaching the inland waters. A somewhat curious fact was the very limited number of grilse, the proportion being very small, and the large proportion of large fish, 15 to 25 pounds each. Because of the run being later than usual several licensed fishermen did not put their nets out, finding, with the shortage of farm help, they had no time to rig up their stands and give fishing any attention. Others fished for periods of two to three weeks only; poor stands, scarcity and expense of nets, and rush of farm work being the causes. A new salmon net is good for only one year in the St. John River water, and some renew the bag or detachable end twice each year. Otherwise, salmon—and St. John River salmon are exceedingly active—break through and pass on, perhaps to become entangled in the next net. The run of salmon in the Southwest Miramichi river was fair, a very much greater proportion of grilse being taken than in the St. John River waters. Compared with previous late years, fly-surface fishing on the Tobique river was very satisfactory, 100 per cent better than in 1917 and but for certain conditions, high water and lumber running through the pools, it probably would have been better.

The catch of pickerel, from reports received, equalled that of the previous year. This is the only fish taken altogether in nets, that is, taken to some extent the year round and this fishery is not prosecuted very vigorously.

Eel fishing appears to be on the decline, fortunately, it appears to me, because of the fact that they destroy the spawn of many of our more valuable fishes and cause considerable loss and trouble to the salmon fishermen, likewise for the shad fishermen—when this fishery is allowed—where the nets are set stationary. There was a fair proportionate increase in the catch of sturgeon, over last year. A curious feature noted in the returns was, of three licensed fishermen one took nearly the whole catch. These are all experienced fishermen and have used about the same stands year after year. It is not a case of one shutting out another, because the river is very broad where this fish is taken and such would be impossible with their short nets. A strange thing was that practically no spawn was taken in these fish: two of the men saying that they did not get any and the third that he got only 20 pounds in all his fish.

The very small number of applicants for whitefish (Baker lake) licenses caused me to wonder after these people had requested the Government to grant them this privilege, so I asked the local fishery guardian the cause. He stated that most of the nets owned by the fishermen were of an illegal size mesh, and that they knew they would be liable to seizure and confiscation, even if fished under license. Therefore, they did not take out licenses but took chances, with unhappy results in many cases. Judging by the number of nets seized and the size of the meshes of same, there appears to be good ground for the reasoning of the guardian. When I returned to the town of Edmundston I called upon the dealer who supplies the fishermen with most of the nets they use in Baker lake and asked him to purchase only three-inch mesh nets to supply these men with, in future, explaining to him the trouble we were having over the smaller mesh nets, and he promised to do so. I did not feel that I was interfering with his trade, as I felt that if they could not get the smaller nets they would just as readily buy the three-inch size, which is legal size.

From some sections of my district trout fishing was reported as not so good as in the previous year. This was noticeable in the northern districts and probably was due to an excessive amount of rain, which kept the brooks very full of water. The southern districts reported this fishery good as usual. Trout is an important article of diet to the people living by or near trout streams, in the open season. Frozen trout is retailing here (Fredericton, January, 1919) at 28 cents per pound.

Many sport fishermen, native and foreign, visit the subdistricts during the fishing seasons; several have expensive cottages, particularly about the shores of the lakes of the south subdistrict, and spend their holidays and week-ends there.

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I have not any local officers (overseers) in the districts of Kings, Carleton, and Madawaska counties nor in the subdistricts of Victoria county. My general report about covers conditions in these districts, excepting that I wish to note the fact of the very materially decreased catch of salmon in the St. John river in Carleton county, and the satisfactory increase in the Tobique subdistrict of Victoria county, where it was 100 per cent better than in 1917. In Carleton the net fishermen were badly put about because of sudden and heavy raises of water. They were compelled to remove their nets for longer or shorter periods to avoid having them carried away. From the same cause the fly surface fishermen in the Tobique subdistrict were, to some extent, adversely affected, but they had the advantage of the summer freshets bringing the fish along faster than when the water is low. I beg to quote the report of the Superintendent of the Tobique Salmon Club, Thomas F. Allen (with his permission), dated October 12, 1918: "We took for our season's catch 244 salmon and 8 grilse. I would put the catch of other parties on this river at 150 salmon. There was a very small run of grilse this year, the smallest ever, to my knowledge. We have the largest number of spawning fish at the head waters that we have had for many years. They went up during the high water. Very few members visited the headwaters this season. The fish will be carefully guarded until they spawn and leave for the sea." The protection given by the above club must be of considerable benefit to the salmon fishermen (net) of the St. John river and harbour. Considerable fishing material was seized and confiscated during the season. Twenty-four shad nets, 12 salmon nets, and 40 whitefish nets were among the lot, besides wire netting (set to bar the ascent of fish in smaller rivers), 7 anchors, several salmon spears, also a small quantity of whitefish.

Nineteen cases covering various offences against the Fisheries Act, and one for assault upon the officers, were prosecuted before civil magistrates. Five of these escaped the punishment that was due them, for want of direct evidence. One escaped to the United States, after his guilt was proven. Fines were paid with costs in more offensive cases. Fines and costs to be collected in two cases not yet arranged, and four less offensive cases, after being proven and the costs paid, the sentences were permitted to stand, pending future good behaviour.

A word regarding the method of appointing special guardians. From protective and economical standpoints, there can be no question as to the superiority of the present method over that formerly in practice. It places more responsibility on the inspector and, in some instances, it is difficult to fulfil the responsibility as one would like doing. The proper sort of men cannot be had for efficient patrol, in some sections, and unless the wage is made an inducement—and it takes a large wage now—it is difficult to secure good patrolmen and move them from one section to another, unless promised a fairly long job, as it is at this season that men can get plenty of work near their own homes, at good wages. It is only from the country districts that men qualified for this work can be had, and there does not appear to be a surplus of men, of any quality, in the country districts at present. My staff of local officers, formerly eight in number, now consists of six, and are not well arranged. Formerly I had 74 special guardians, such as they were. Last season I had 34, which is 50 per cent less, and notwithstanding a substantial increase in wages a very substantial sum was saved over the previous years, and the service was not less efficient, I think, and the poachers concluded that we were, at least, as active as usual.

The following licenses were issued by me, for distribution throughout my district, during 1918:—

Salmon fishery licenses . . . . .	93
Salmon net fishing . . . . .	101
Sturgeon fishery . . . . .	3
Bass fishery . . . . .	9
Whitefish net fishing . . . . .	4

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REPORT OF INSPECTOR J. E. BERNIER, M.D., QUEBEC, ON THE SEA FISHERIES OF QUEBEC, FOR THE YEAR 1918.

Leaving Quebec on May 9, on board the *Princess*, the steamboat employed by the Dominion Government in the protection service in this district, I passed the entire summer cruising in the Gulf, without mishap except for the epidemic of influenza which swept over the entire district, with great severity, and carried off many victims. Fifteen members of our crew were attacked by the disease, beginning October 19, with the result that the vessel had to remain at Gaspé for three weeks. I reached Quebec on November 12.

During the entire season, an unaccustomed spirit of emulation and of interest in their work has prevailed among the fishermen, as a consequence of the high prices offered for fish, which had not been realized before. Thus, the general result, compared with that of the preceding year, shows an increase in value of about \$500,000. This must not be attributed, however, to increased quantities of fish, but rather to the fact that fish products have attained a higher price. In considering the general result, from this point of view, it is found that the catches of the past season have been more regular, but have not, on the whole, been better than those of the preceding year.

The conditions observed in the different sections of the Gulf Division are as follows:—

*North coast and Labrador.*—The most important fishery of this section is the cod fishery, which is carried on by means of hand-lines and “trap-nets.” The trap-net has been in general use for a long time on the Labrador coast; while on the north coast, between Natashquan and Pointe-des-Monts, it has continued unpopular. However, the experiences of the summer have been so encouraging that many fishermen show a desire to use this new method of fishing, in future.

The fishing commenced later, but once the cod had reached the coast, they remained until the close of the season; and the greater part of the time, were close to the shore. At Moisie, they were even taken in the mouth of the river; at Natashquan and other places, several hundredweights were taken in the salmon nets; at Shelldrake and at Godbout the fish were taken by means of hand-lines, from the rocks on shore. To the east of Pointe-des-Monts, Overseer Comeau reports that the fish were met with in “phenomenal” quantities, in schools at the surface of the water, as far as the mouth of the Saguenay. It is remarkable that the cod, which used to be taken in abundance in the neighbourhood of the Saguenay, but had practically gone away for forty or fifty years, are now observed there in ever more considerable quantities.

The weather continued favourable for all fishing operations, and it was always possible to procure a sufficient quantity of bait.

The result of the cod fishery, on the north coast and the Labrador, shows an increase over last year. The result would have been even better if the fishermen had been able to obtain, in time, all the salt they required. It is estimated that the quantity of cod which, for this reason they lost or neglected to take, was about 8,000 hundredweights.

The salmon net fishery was slight and backward. It shows a decrease of about 25 per cent from that of the previous season, which was itself far from being good. However, I do not believe that this fact augurs ill for the future, for very considerable quantities of reproducing salmon were noticed on the spawning grounds, in the fall, and in all the rivers. The failure seems to be due to a natural cause. As a result of the lack of rain, the water in the rivers remained low until July. The salmon only approached the rivers in the latter part of the month, and in the month following; that is, when the net fishery had been finished. In any event, the failure could not be attributed to poaching on the spawning grounds during preceding seasons, for it is universally recognized that the inhabitants of this coast do not engage therein as formerly, since they derive much greater benefit through applying themselves exclusively to the cod fishery.

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*South coast (counties of Bonaventure, Gaspé and Rimouski).*—In this district, cod is the most important fishery; salmon, lobsters and herring are regarded as secondary in importance.

The beginning of the cod season was at nearly the same time as in the preceding year, and the fishery was followed with success until the end of the season. Bait was sometimes scarce and difficult to obtain, but the fine catches which were made in September and October amply compensated for the scarcity of bait. The general result exceeded that of last year, from the point of view of value, but did not equal it in quantity.

The lobster fishery gave practically the same results as in 1917, notwithstanding that the season was shorter, and that a storm on June 12 destroyed about one-third of the traps, which could not be replaced. It was stated everywhere that the lobsters were plentiful and of great size.

In this section, as elsewhere, the salmon fishery continues to decrease, without it being possible to determine the cause with certainty.

The herring fishery was normal, and equalled that of last year.

*Magdalen Islands.*—In this district as much importance is attached to the lobster fishery as to the cod fishery. The fisheries for herring and mackerel occupy second place.

The lobster fishery was prosecuted under unfavourable circumstances, owing to the fact that storms destroyed a large number of traps, but it nevertheless gave a result considerably higher than that of the preceding season. The observations which were made show that it continues to be good, and, contrary to conditions elsewhere, has a tendency to increase, since fishing in the lagoons has been prohibited. This fact now attracts the attention of the majority of the fishermen, who, as a result of the educational campaign recently carried on, recognize that it is in their interest to refrain from illegal fishing, and even to help in preventing it. The coast has been carefully patrolled, and the law has been observed in a satisfactory manner.

The cod fishery shows a decrease of about 25 per cent, the sole cause of which is the unfavourable weather conditions. The mackerel fishery, for the same reason, gave only 50 per cent of the previous year's catch. Herring was caught in abundance, but owing to the limited number of foreign fishing vessels which visited the islands, it was only possible to sell a small quantity for the ordinary purpose that is, for bait. On the contrary, thanks to the high prices of the markets for two years past, the fishermen are using the herring in another way, and are smoking them. Several large smoke-houses have already been built, with this end in view, and this new industry tends to assume large proportions.

In the entire Gulf Division it is noticeable that the fishermen begin to show interest in the improvements and the development which it is sought to realize in everything concerning the sea fisheries. They show more attention and more activity in their work. At the same time, they manifest a disposition to abandon certain old methods, and to follow more modern processes, which they try to adapt to the conditions in which they find themselves. If left to themselves the slow evolution which is going on can only become apparent after years of groping, while the example of vessels, of apparatus, of superior methods of fishing, and also of a little practical instruction placed within their reach, would assist them to more quickly change their primitive ways of fishing, and would place them in a condition to better appreciate the advantages of the field which they exploit only imperfectly.

This need of knowledge is, perhaps, more marked in my district than in any other, on account of its extent, the difficulty of communication, the scattered population, and other causes growing out of these. It appears reasonable to believe that it is useless to expect this district to show a greatly increased production so long as this first need is not fulfilled.

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The following is a statement showing the number of licenses of the different kinds issued during the year:—

Lobster packing (lobster extensions, 14) . . . . .	54
Herring trap-net . . . . .	46
Cannery licenses (other than lobster) . . . . .	2
Salmon fishery . . . . .	158
Cod trap-net . . . . .	329
	<hr/>
	590

### REPORT OF INSPECTOR J. A. HOWELL, SELKIRK, MAN., ON THE FISHERIES OF DISTRICT No. 1, MANITOBA, FOR 1918.

The catch of fish in Lake Winnipeg during the summer was good. In fact, fishing had to be stopped before the end of the whitefish season as the fishermen had caught the quantity allotted them, which quantity was 500,000 pounds more than the season of 1917, which I think was partly due to the number of fish deposited in the lake from the hatcheries, also to the strict enforcement of the law. The total licenses issued during 1918 were 364 summer and 540 winter licenses.

I find there is a large decrease in the catch of pickerel this year, which I cannot account for, as there were as many fishermen working as last year. There is also a decrease in the tullibee catch. This can be accounted for by the open fall; the fishermen could not get their nets in the water during the time the fish were running, as there was no ice. When the lake was frozen hard enough to go on the fish were gone. This, I think, is partly the reason for the decrease in pickerel also.

Thanks are due the fish dealers and the fishermen for the assistance they gave me on the lake in protecting the different fishing grounds from being polluted by dead fish and offal, and also by adhering to the fishery regulations.

The following is a statement showing the number of licenses issued in my district during the 1918-19 season:—

Special fishery . . . . .	904
Commercial sturgeon . . . . .	49
Settlers' permits . . . . .	37
	<hr/>
	990

### REPORT OF INSPECTOR D. F. REID, WINNIPEG, MAN., ON THE FISHERIES OF DISTRICT No. 2, FOR 1918.

Fishing during the year, on the whole, was about the same as last year, except sturgeon fishing which shows a slight falling off due to the high price of twine, which caused the fishermen to resort to baited hook fishing. There was a slightly decreased aggregate of all kinds of fish, but a considerable increase in value as a result of higher prices paid for all kinds. During the year there were 406 Settlers' Permits issued in my district, as compared with 168 last year.

I am pleased to state that the limit of catch placed on most of the lakes in my district has been well adhered to, and evidently gives satisfaction as it prevents overcrowding. We had a very late freeze-up last fall, and in some parts of my district fishing was an almost complete failure, but on account of many more licenses being issued it can be averaged as a fairly good year.

I have had only twelve prosecutions in my district during the year; of these, nine were convicted and fined various amounts, three were not proven. I have had assisting me during the year two overseers and two guardians.

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before any fishing was done there could hardly have been time to give these lakes the necessary exploration by the fishermen, which is needed before operations can be successful.

The following is a statement of the number of licenses issued during the season 1918-19:—

Special fishery.....	1,369
Commercial sturgeon.....	32
Settlers' permits.....	406
	<hr/>
	1,307

#### REPORT OF CHIEF INSPECTOR G. S. DAVIDSON, INDIAN HEAD, SASK., ON THE FISHERIES OF SASKATCHEWAN AND ALBERTA, FOR 1918.

A comparison of this year's figures with those for 1917 would lead to the opinion that this year's operations had fallen off in practically every respect. This, however, is not the case, this season's figures being only for commercial operations, whereas those for 1917 included the operations carried on under Domestic Licenses and Indian and Half-breed Permits. A study of this year's figures covering only commercial operations will show that the catch for commercial purposes only, is very little less than the catch for 1917 which included the total catch for all purposes.

The good reports from all districts of Northern Saskatchewan are very gratifying and show that the fisheries are proving to be a profitable source of revenue to those who are going into the fishing business on a large scale and are instrumental in opening up these large waters for fishing purposes.

In Southern Saskatchewan the operations are on a much smaller scale, Lowes Lake, the Qu'Appelle lakes and Katepwe Lake being the waters fished commercially. The catch in these waters shows very little increase from year to year, this being due to the fact that practically the same fishermen operate each year, few newcomers taking up fishing as a means of livelihood. During the past four years the Qu'Appelle lakes have been fished with nets of four and one half inch mesh in order to as far as possible get rid of the pike and tullibee. This, from reports, so far as pike are concerned, appears to have been successful. The tullibee do not appear to have been got rid of to any very great extent. Large quantities of whitefish fry have been placed in these lakes each year during the above period, and those which were planted at the first are now maturing. The fry were furnished from the Qu'Appelle fish hatchery and the work has been a great success. Whitefish fry were also planted in the Strawberry Lakes during the past year and, from the last reports received, are thriving.

In Saskatchewan a large increase in the number of prosecutions for illegal fishing is observed. During 1917 only five prosecutions were made; during 1918 there were no less than thirty-two. In every case a conviction was secured and a fine inflicted. But in some instances where the cases were tried before the local Justices of the Peace the fines imposed were somewhat inadequate to the offences.

Weather conditions throughout the province have this winter been ideal for winter fishing, and this no doubt has had a great deal to do with the good showing of the Saskatchewan fisheries. The epidemic of influenza hit the fishermen, both in Saskatchewan and Alberta, very hard, and many deaths occurred. Even with this handicap it may safely be said that the fisheries have gone ahead greatly since last year and give promise of even greater extension next year.

In the province of Alberta the closing of Lesser Slave Lake and Lac la Biche to winter commercial fishing, while not popular with a certain section of the fishermen, gave these lakes a much needed rest, and caused the fishermen and fish companies to look elsewhere for their fish. This led to the opening up of a number of lakes lying to the north of Lesser Slave Lake, to reach which it was necessary in some cases to cut roads in to the proposed fishing grounds. Reports from these lakes are to the effect that the operations have not been generally successful; but as it was late in the season



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cessful. Therefore, it is somewhat too early to definitely state that these lakes cannot be fished profitably. It would take at least two season's fishing to learn what might reasonably be expected from them. I am of the opinion that the present rules in force in connection with fishing at Lesser Slave Lake are the best we have had to date and could with advantage be kept in force during the season 1919.

A new fishery was opened at Buffalo Lake, situated in the province of Saskatchewan, and it was at first thought that it could be handled to the best advantage from the Saskatchewan side. Orders were issued that applications should be made through the Inspector of Fisheries for Saskatchewan, and that only those eligible for Saskatchewan licenses should be granted licenses. It was later found that the catch would all have to be shipped out from a point of the Alberta and Great Waterways Railway, in the province of Alberta. Thereupon this lake was, for the present season, placed under the administration of the Alberta inspector for northern Alberta, with the provision that applicants from both the provinces of Alberta and Saskatchewan were to be granted licenses, and that the waters were open to all for fishing purposes. To reach this lake it was necessary to cut a road for some eighty miles from the shipping point to the lake. This work was started late and for a time was at a standstill owing to the road gangs being all laid up with influenza. Owing to the late start of operations it has not been possible to get any accurate report of the catch from this lake, as none of it had been brought out when the year ended. Acting Inspector W. H. Bell is under instructions to make a personal trip to Buffalo Lake, for the purpose of looking into the operations and seeing that the regulations are being observed and that the fishing ceases on the proper date. This district will be fully reported on in my next year's report. I am under the impression that it will show that there is a very successful new fishery in operation.

In the province of Alberta twenty-eight prosecutions were made, as compared with twenty-five the previous year. This is, however, not an indication that there was not more illegal fishing, as many seizures of excess and illegal gear were made, especially in Lesser Slave Lake, for which no owners could be found. I may mention that in one case no less than eleven hundred yards of net were seized; it was weighted so that it was concealed below the water; it was found by dragging operations. Though at the present price of nets, eleven hundred yards is worth considerable money, no person came forward to claim it.

Experiments were made at Lesser Slave Lake with a pound net, to find out if it was possible to clear out the pike without danger to the whitefish. It was found out that this could not be done, and the experiment was stopped. A similar attempt at Lac la Biche, where a drag net was used, was a success; large quantities of pike being taken.

During the past year the Canada Food Board set prices for fish and made several orders, all of which worked out well in practice. The object of sufficiently providing for the home demand for fish of all kinds before the export of fish was allowed, has certainly worked out in the case of Alberta and Saskatchewan. Such assistance as was needed by the officers of the Canada Food Board from our fishery officers and guardians was given; the work between our men and the Canada Food Board being done in a most harmonious manner.

The following is a statement showing the number of licenses of the different kinds, issued in each province during the 1918-19 season:—

<i>Saskatchewan.</i>	
Commercial and fisherman's . . . . .	913
Commercial Sturgeon . . . . .	6
Domestic sturgeon . . . . .	14
Domestic fishery . . . . .	213
Indian and Half-breed permits . . . . .	653
Special angling permits . . . . .	15
	<hr/> 1,744

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*Alberta.*

Indian and Half-breed.. . . . .	267
Commercial and fisherman's.. . . . .	986
Domestic fishery.. . . . .	204
Cannery.. . . . .	1
Special angling permits.. . . . .	4,338
	<hr/> 5,796

I am glad to be able to conclude this report by stating that the past year has been the most successful yet reported on.

# REPORT OF CHIEF INSPECTOR F. H. CUNNINGHAM, VANCOUVER, B.C., ON THE FISHERIES OF BRITISH COLUMBIA FOR 1918.

The condition of the fishing industry as a whole may be considered satisfactory, although in some sections there was a falling off in the run of sockeye, notably in Rivers Inlet. It is not possible to give any specific reasons for the decrease of this variety in this particular area, especially as so little is known of the life history of the sockeye after they go out to sea as fry or fingerlings. There has been no increased fishing in this area since 1910, seven hundred boats being the allotment, and the hatchery on Owekano Lake has turned out its usual quota of fry yearly up to 1918, in which year the collection of eggs was considerably reduced.

Some of the spawning streams are partially obstructed to the ascent of parent fish to their spawning grounds, but the removal of the obstructions is receiving attention, and the run of 1919 will have free access to the natural spawning grounds.

There was an increased run of both sockeye and spring salmon on the Skeena River; the run of the latter species being a very agreeable surprise, as it was feared that these were on the down grade. Fortunately, however, the fish appeared as abundantly as in 1912-13, notwithstanding the added tax which was put on this species by the more extensive trolling operations.

Pinks and chums were good all over the province. Climatic conditions were good; prices paid to the fishermen were increased, and so far as the actual fishing operations were concerned the salmon fishing industry as a whole may be considered as having been very successful.

The marketing of the finished article, owing to the war conditions of last fall, was not satisfactory. The greater proportion of red salmon, including pinks, was commandeered by the Government. Chums were not included and, as a consequence, there are unsold in the province, at the present time (June 1919), probably 250,000 cases. It is hoped, however, that with Peace terms signed and with the return of normal conditions an opportunity will offer for the disposition of this stock.

The fishing for chum salmon on the west coast of Vancouver Island, in the area from Cape Beale to Sombrio Point, was most successful. Practically half the catch was exported to the United States, where it was canned and ultimately marketed in the southern states. The exportation of so much raw material from the province has been the subject of serious consideration, and there is much to be said both in favour of and against exportation. Those in favour of continued exportation point to the fact that the price received by the producers is greater than that which they would receive if they only had the home market in which to dispose of their catch. Those opposed to exportation point out that they are unable to pack and successfully compete in the southern markets owing to the duty of 15 per cent. On canned goods exported to the United States. Again, traps and seines are much in vogue in the United States for all varieties of salmon, hence the better varieties are caught just as cheaply as other grades. This enables the American packer to pay a higher price for the raw product of the lower grades than the Canadian packer can afford to pay.

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This question was taken up fully by the Fisheries Commission of 1917, and it was recommended by them that exportation should be allowed to continue. It is, however, in the opinion of the undersigned, a trade worthy of further investigation, as it is certainly in the interests of this country that its raw material should be manufactured at home.

The run of salmon to the Fraser river was, for even an off season, very poor. It is hoped that the work of the International Fisheries Commission will result in regulations which will assist nature in bringing back this fine salmon river to its normal state of production. It is felt that this work would be greatly assisted if, when the parent salmon ascending the streams of the Fraser river watershed had passed the commercial fishing boundary, they were allowed to ascend to their natural spawning grounds without any molestation whatever, either by Indians or others. Arrangements should be made to supply the Indians with fish food from the commercial run before the fish pass out of the commercial area. If this were done there is no doubt that a great improvement could reasonably be expected.

Trolling for salmon as a commercial pursuit is gradually increasing. It gives the fisherman with limited capital an opportunity of entering the fishing industry on his own account, in a legitimate manner. The outlay is small and the returns are good. Some operators last season made from two to three thousand dollars. Spring salmon brought eight and nine cents per pound, and as high as 65 cents per fish was paid for coho. Of course, green hands could not expect to take up this phase of the fishing business and make such a complete success of it at the start. Like everything else, it needs experience, but it is an easy and legitimate way of fishing, and should offer good opportunities for returned soldiers whose condition calls for an outdoor life.

The favourite trolling grounds are around Langara Island, Dundas Island and Wark Canal, and on the west coast of Vancouver Island off Clayoquot and Barclay sounds, but there are other districts with more sheltered waters where trolling can be carried on remuneratively.

## HERRING.

The catch of herring shows an increase. Unfortunately, however, market conditions, following the signing of the armistice, were greatly changed. During the war the Canadian trade with the United States and Australia improved greatly owing to the lack of European supplies. This drew a number of inexperienced packers into the trade during the winter season of 1917-18, with the result that a large proportion of the output was badly cured. With the ending of hostilities and the expected immediate resumption of trading in herring with Europe, the demand for Canadian herring fell off in the United States and much of the poorly packed fish remained unsold.

## WHALES.

The whaling industry of 1918 was most successful. For the first time in the history of this industry in Canada whale meat was canned, nearly 30,000 cases being put up, and the commodity has found a ready market.

## HALIBUT.

The catch of halibut during 1918 was up to the normal average, and ranged in price from 15 cents to 20 cents per pound. Seven hundred and seventy-five cars of this species left Prince Rupert over the Grand Trunk Pacific Railway during the year.

There were the same complaints during the season of scarcity of bait, but two or three attempts were made by individuals to establish retaining ponds for herring which could be sold fresh as bait to the halibut fishermen. Reports indicate that this has proved successful and it will no doubt tend in a certain measure to relieve the situation.

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## REMOVAL OF OBSTRUCTIONS.

Whilst some work was done during 1918 in this direction, it was limited owing to the scarcity of labour and the desire to minimize expenditure as much as possible during the war period. Now that this necessity has been removed, the season of 1919 will end, it is hoped, with access to important and valuable spawning areas being freed to the spawning fish.

## FISH BREEDING.

The usual fish hatcheries were in operation during the season, and were successfully conducted. The number of eggs obtainable depends entirely upon whether the run of parent fish is large or small. To a small run, therefore, must be attributed the small number of eggs collected in the Rivers Inlet district this year. Operations at the other hatcheries were normal, and the reports from the officers in charge are to the effect that the spawning beds were well seeded.

## GENERAL REMARKS.

The war has affected the fishing industry in common with the commercial life of the country generally, and its close has brought many changes in pre-war conditions. Previous to 1914 there was little or no demand for canned pink or chum salmon. But with a world-wide food scarcity these varieties jumped into prominence, and they were easily disposed of. This increased demand induced those who were in the canning business to extend their operations in the canning of fall fish. It also induced others to participate in the industry. Consequently, the whole coast line of British Columbia is covered by licenses, and those now desiring to take up the fishing business as a means of earning a livelihood find that a location for a fishing area is very difficult to obtain.

To the returned soldier the fishing business appears to be very fascinating, for even before the fishing season of 1918 was closed applications for seining licenses for the season of 1919 were received from returned men. At the close of the year the applications had increased to an unexpected number and as under the existing licensing system only a limited number of seining licenses could be granted, the question of dealing with the increase was a serious matter. It must be remembered that the arrangements for the fishing season of 1919 would be made as early as the previous fall. This condition made it a most difficult matter to deal with the applications from returned soldiers without disturbing the whole producing life of the industry.

I am desirous of leading up to the question as to whether the time has not arrived when consideration should be given to a new policy covering the issuing of fishing licenses. At present a salmon purse-seine license covers a certain area, and the amount of fishing in that particular area will depend on the run of fish. If the run is large a number of fish can be caught without injuring the spawning grounds, but if the run is small intensive fishing takes place to the great detriment of the spawning grounds, as the operator feels the result of his operations must be equal to a fair return for the money invested. Are these restricted areas, therefore, in the interests of conservation? I have reached the conclusion, after mature deliberation, that they are not and that it would be in the interests of conservation and in accord with public opinion if these areas were largely increased and a number of licenses issued for the greater area over which all the licenses for that particular area would have the privilege of operating.

This is a suggestion, and consideration of the question might even tend in the direction of larger areas than is being considered at the moment. It appears to me that extended areas would be in the interests of conservation, as certain streams in the areas which show depletion would be benefited by the location of a proper fishing boundary without in any way interfering or limiting any one licensee's opera-

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tions as he would have all other portions of the area in which to operate, and the weekly close season would be based on the extent of the fishing operations carried on in the locality affected.

The number of licenses issued during the season of 1918 was as follows:—

Salmon cannery.....	92
" drag-seine.....	127
" purse-seine.....	122
" trap-net.....	24
" trolling.....	1,786
" gillnet.....	5 074
Herring purse-seine.....	62
" drag-seine.....	5
" gillnet.....	256
" trap-net.....	1
Abalone.....	1
Sardine and smelt.....	62
Miscellaneous cannery.....	18
" licenses.....	340
Sturgeon.....	5
Crab.....	32
Angling permits.....	33
Reduction works.....	11

I am pleased to say that the district inspectors and fishery officers have carried out their duties in a faithful and painstaking manner, and the fishery regulations have been satisfactorily enforced. The headquarters staff have had a very busy year, and have all performed their duties in an efficient manner.

## YUKON TERRITORY.

Special fishery licenses.....	30
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## APPENDIX 2.

The following is a statement showing the number of prosecutions, confiscations and sales, which took place in each province, during the 1918-19 season:—

	Prosecutions.	Revenue from Sales.
Quebec.....	7   \$ 67 50	—
Prince Edward Island.....	30   254 10	\$ 193 00
Nova Scotia—		
District No. 1.....	5   75 00	1 50
" No. 2.....	31   437 76	19 80
" No. 3.....	23   90 50	38 05
New Brunswick—		
District No. 1.....	7   460 00	90 48
" No. 2.....	29   425 00	1,859 39
" No. 3.....	18   177 70	46 85
Manitoba—		
District No. 1.....	—	—
" No. 2.....	11   125 00	41 20
Saskatchewan.....	32   183 00	337 83
Alberta.....	30   198 85	467 90
British Columbia—		
District No. 1.....	41   311 50	2,136 35
" No. 2.....	35   1,102 00	131 79
" No. 3.....	19   1,275 00	1586 39
Yukon Territory.....	—	—
Total.....	318   \$5,182 91	\$6,950 53

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## APPENDIX 3.

REPORT ON DRIFT NET FISHING OPERATIONS OF STEAMER  
*THIRTY-THREE*, 1918.

By J. J. COWIE.

Having been directed to fit out the steamer *Thirty-three* with drift nets, and send her to sea for the purpose of carrying on fishing operations for mackerel and herring during the summer of 1918, I now beg to report the results thereof.

In view of the quantities of mackerel taken in the few mackerel nets carried by the steamer during the month of June, 1916, it was decided to begin the season of 1918 by operating a full fleet of mackerel nets. The difficulty experienced by manufacturers in securing net-making material, however, owing to war conditions, made it impossible to get as many of these as were necessary. Between Boston and Gloucester, Mass., and Halifax, N.S., not more than half of a full fleet for a steam drifter could be secured.

The carrying out of some repairs in the engine-room kept the steamer in port till June 1, on which date she first sailed for the fishing grounds.

As in 1916, the vessel carried a crew of eight, including the captain, each of whom was called upon to help in operating the fishing gear.

The fish were sold in the port nearest to the fishing ground on which the vessel happened to be operating, and where buyers were found prepared to handle them. A receipt for the quantity bought by each buyer on each occasion, was duly signed and forwarded by the captain of the vessel to the chief accountant of the department, who in turn collected from the buyers the amount due.

My other official duties prevented me from being at the landing places of the steamer, and superintending the actual fishing operations therefrom. As far as it was possible to do so, general direction was given to the work by telegram or letter from Ottawa. It is somewhat difficult, however, to maintain close or regular communication with a fishing vessel mostly at sea in the night time, and at this port to-day and that to-morrow in the daytime. Consequently, the matter of deciding where and when to set the nets had, of necessity, to be left mainly to the man on the spot—the captain of the vessel—who, in any case, was in the best position to judge as to the movements of the fish.

The evidence afforded in 1916 that a successful drift net-fishery could be carried on when mackerel are moving eastward, along the coast of Nova Scotia, in spring or early summer, has been made clearer and more definite by the operations of 1918.

Ranging from about 25 miles southwest of Canso to 15 miles east of that place, thirty thousand pounds were taken at three hauls. That quantity should have been quadrupled with ease while the mass of fish was in the vicinity of Canso, but for apparent difficulty on the part of the crew in handling the fishing gear. On the first night at sea, the nets were set amongst what appeared to be a large body of fish. In setting, however, the twine was allowed to become twisted around the hawser, which put the nets entirely out of fishing condition that night, and caused the loss of valuable time unravelling them. The considerable catch secured on the third night at sea again caused loss of time clearing fouled gear and repairing torn nets. Later on, the gear was handled in a more efficient manner, but the chances of securing large quantities had become less with the breaking up and scattering of the main body of fish.

On June 18 the steamer passed through the Bras d'Or lakes to a position ten miles northeast of Sydney, in an effort to keep in touch with the moving fish. The nets were set there on the 18th, and at a point six miles of Ingonish on the 19th, and again, at a point 35 miles west of cape North on the 20th. The small quantities taken on each occasion would indicate that the big school had passed around cape North and into the gulf ahead of the steamer.

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Early in July, the mackerel nets were put ashore, and herring nets taken on board at Halifax to replace them. It was then decided by the captain to return direct to the gulf waters, without waiting to make a set off the coast of Halifax county, where he caught considerable quantities of herring in 1916. On the 16th of July a set was made midway between Cape George and Port Hood, but no herring were taken. On the night of the 17th what appeared to be a large body of fish was struck 11 miles northwest of Port Hood, where a catch of 40 barrels was secured. On the night of the 18th, at the same place, a haul of 60 barrels was made. These fish were of fine quality and in excellent condition for curing, kippering, or freezing for food purposes. On the following night, the nets were set at the same place, but not more than two barrels of herring, of inferior quality, were caught; thus indicating that the herring had moved away from that spot. Attempts were made later to get in touch with the school in that locality, but without success. Had there been half a dozen drifters at work nightly, instead of one, at as many different points between Prince Edward Island and Cape Breton, I am confident that contact with the main body of the fish would have been maintained all through July and August.

Keeping in mind the fact that this drifter caught 264 barrels of fat herring midway between the Magdalen Islands and Cheticamp, Cape Breton, from the 6th to the 20th of July, 1907, also that three fairly good catches were made between Cape George and Port Hood in July, 1915, when the vessel was under Dr. Hjort's direction, and further that the best catch of the season of 1916 was made in this same locality, it seems clear that a large body of herring of fine quality is to be found annually in that part of the Gulf waters, extending from Antigonish county northwards to the Magdalen Islands; and there can be no doubt that a small fleet of drifters, which need not be steamers, operating there could establish a regular summer herring fishery. It is exceptionally well suited for the prosecution of such a fishery. It is sheltered on three sides, and there are several good and conveniently situated harbours—such as Murray Harbour, Georgetown and Souris on the one hand, and Port Hood, Grand Etang and Cheticamp on the other. Moreover, it is practically free from the fogs that are prevalent on the open Atlantic coast.

At the end of the first week in August, the captain was ordered to operate in the Bay Chaleur, from Shippegan, N.B., but after two or three unsuccessful sets he returned to the waters between Prince Edward Island and Inverness county, Nova Scotia. Several hundred pounds of mackerel only were taken during August.

It is rather remarkable that herring of good quality and still full of milt or roe, were taken near Cape George, Antigonish county, as late as September 24.

In judging the results of the operations, it should be remembered that both herring and mackerel are seasonal fish, and can only be taken in quantities at certain places and at certain times of the year. Moreover, a single steam drifter, no matter how energetic and competent the master and crew may be, cannot be expected to sail out to a certain fishing ground and return with fish, in either large or small quantities, on each occasion, like a steam trawler. The drifter goes out after fish that are on the move always, near the surface of the water; whereas, the trawler operates for fish that are, comparatively speaking, stationary near the bottom, and which can be taken in more or less considerable quantities the whole year round.

A share of the gross earnings was allowed for distribution amongst the crew, as an inducement to prosecute the work with vigour and secure fish in quantities. Notwithstanding this, and after making due allowance for the erratic movements of the fish, the crew's incomplete knowledge of this method of fishing, and the discouraging effect of frequently hauling empty gear, it would seem that the operations were not pushed as vigorously as they should have been, after the month of July, especially. This may have been due, in some measure, to the presence of German submarines off the south coast of Nova Scotia.

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It would not be advisable, in my opinion, to continue the use of this vessel as a drifter. Her continuance, alone, at this work will add little to the knowledge we now have of the whereabouts of the herring schools, and the catching and landing of herring regularly and in paying quantities is no more likely to be accomplished on this side of the Atlantic than on the other by a single boat, even with the most efficient kind of crew on board. Success may be assured only by a fleet of several drifters, not necessarily expensive steam vessels, working together—the one acting as a guide to the other in locating and keeping in touch with the moving fish.

When the time is ripe and trade conditions warrant it, private enterprise will, no doubt, be found ready to create such fleets by converting some of the smaller gasoline codfishing vessels into herring drifters, for use as such during the summer herring fishing seasons.