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GENERAL REPORT

UPON

LOBSTER INVESTIGATION

AT

RICHMOND BAY, P.E.I.

FOR 1919

BY

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OTTAWA

CONTENTS

I N T R O D U C T I O N

During the summer of 1919 the writer of this report, acting under instructions from the Biological Board, carried on work in connection with the lobster investigation.

For several years the lobster fishing industry has been on the decline, and efforts have been made from time to time to protect lobsters in such a way as to make the industry more profitable.

One of the most effective ways of securing this desirable condition is to protect lobsters during the breeding season. Some places are more favorable for breeding purposes than are others. The character of the ocean bottom, the depth and also the temperature of the water are some of the conditions that would help to determine a natural breeding ground.

The object of the work therefore was to discover places where berried lobsters can hatch their eggs to the best advantage, and where the young fry have the best chances to escape their enemies. These enemies are numerous when lobsters are in the larval condition, as the latter have no means of protection except to conceal themselves in mud or grass or under stones.

It was necessary therefore to find places where small lobsters from one to two years old, abound in large numbers.

The place selected for this purpose was Richmond Bay, P.E.I., and during the season's work many small lobsters were captured. All were carefully measured, and, with the exception of a few which were kept for scientific purposes, were returned to the sea.

The results of the work would seem to indicate that Richmond Bay, including Darnley Basin, is a natural breeding place for lobsters, and if protected, would in a few years become well stocked with large and small lobsters, many of which would make their way out into the Ocean where fishermen could fish for them.

METHODS USED FOR CAPTURING SMALL LOBSTERS

For this work several methods were employed because young lobsters are very timid and therefore difficult to capture.

(a) TRAPS. As the ordinary traps used for catching large lobsters were not suitable because the laths were too far apart, special traps had to be constructed to hold lobsters measuring four inches or less. Four of these traps were built each having only one compartment and one entrance. Each trap measured 8" long and 6" wide, and 6" high. The ballast was tied firmly to the bottom on the outside. The slats were about one quarter of an inch apart and the heads were knitted as closely as possible.

To each trap a piece of rope about 25 feet long was attached and a buoy tied to the other end of the rope. Hence the traps could be placed as desired and fished separately.

After fishing with these traps for a few weeks it was found that they were not giving the best results, although several small lobsters were captured in them. One trap was lost in a storm during July. Two new traps were then constructed. These were 18 inches long, 9 inches wide and 9 inches high. They were "parlor" traps, that is, they had two compartments and one open head for an entrance. The ends were closely knitted, and ballast was placed inside. The

traps were simply small models of the regulation traps used by fishermen for capturing large lobsters.

Splendid results were obtained from these two traps, but by this time the season was well advanced.

In addition, we took one of the traps used by fishermen and closed in the spaces between the laths, covered the knitted heads with closer netting, and left the 4 inch opening as it was. The purpose of this was to find out if both small and large lobsters would enter and remain in the trap together. The first time this trap was fished it contained four lobsters, seven crabs and two fish. The lobsters measured 7 1/2, 6 1/2, 6 1/4, and 3 1/8 inches respectively. Hence we had the good fortune to capture one lobster under four inches, and also to learn something about other animals associated with small lobsters.

By way of a further test along this line we set out one large trap such as fishermen use. This was placed quite near to our small traps and in it we got some of the largest lobsters taken by us during the season.

(b) THE BEAM TRAWL.

Whenever the weather was favourable, the beam trawl was used, and some good results were obtained with it. The net was in bad condition when it came into my possession and had to be mended almost every day. We could not use it over rocky bottom as the sharp rocks would tear the net. To save the net, an apron of canvas was attached to the under side, and in this way we kept on using the old net to the end of

the season. By testing the bottom with a pole we kept off rocky ground with the beam-trawl, and results with it were over muddy, sandy or grassy bottom. The best results were obtained where the bottom consisted of sand and mud with spots of short eel-grass.

(c) THE HOOP NET

Several attempts were made with the hoop net, but nothing was caught with it and its use was discontinued.

(d) HANDS AND DIP NETS

Some of our best results were obtained by picking up lobsters with the hands or in small dip nets. The nets were simply made and resembled those used by school children for catching insects. The rim, however, should be made of good brass wire strong enough to stand being forced into the water.

Before using this method of capture it was necessary to discover placed frequented by small lobsters. Two such places were fortunately discovered. Lobsters were found in burrows on the soft bottom. Then it was necessary to have calm weather, clear water and low tide for this work, and these conditions were not of frequent occurrence.

By wading into the water and examining any small holes found in the mud, and especially around patches of short grass, it was often possible to make a lobster "dart" out of its burrow, and in clear water it could be caught with the hands or taken in the dip net. As a rule, however, we risked

the danger of a pinch from the lobster's claw and examined the burrows with the hand and dragged the lobsters out. The lengths varied from 3 to 8 inches.

3. CHARACTER OF THE OCEAN BOTTOM

In order to locate small lobsters it was necessary to test various places. The salinity of the water and also the temperature were practically the same all over the bay, but the character of the bottom was varied.

(a) ROCKY BOTTOM

This had to be tested with the traps as the beam trawl net got badly torn when dragged over rocks. The bottom was tested with a long pole, and where it was found to be rocky the traps were placed and fished for several days and then moved to another location. Out of fifty-four small lobsters taken, eight were caught on rocky bottom. Further tests made seem to indicate that both large and small lobsters frequent rocky places, but small lobsters being very timid, were prevented from entering traps by the larger lobsters.

(b) MUDDY BOTTOM

Both the beam trawl and traps were used and where the bottom was covered with soft mud, only an occasional lobster was caught in the net and none in the traps.

(c) SAND AND GRAVEL BOTTOM

The beam trawl was used and fair results obtained so far as lobsters measuring six inches and over were concerned, but none under four inches were taken.

(d) GRASSY BOTTOM

Where the grass was long the trawl could not be used, but traps were placed in the most favorable looking places, but no lobsters were caught. Where the grass was short, the trawl was used and many lobsters captured.

(e) SAND, MUD AND GRASS BOTTOM

Small lobsters seemed to be most numerous in places where the bottom consisted of a mixture of sand and mud with small patches of short eel-grass. In such places a man's foot would sink about two inches.

The method used for examining this kind of bottom was to wade around in the shallow water at low tide on clear calm days. Small burrows were discovered, and many small lobsters were captured. The small traps were placed in water from two to three feet deep, and quite a number of small lobsters caught. The best places seemed to be around the edges of the grassy sport. These afforded better hiding places. Table No. 2 shows details regarding all lobsters captured and measuring four inches or less.

4. LOBSTERS CAPTURED

The total number of lobsters captured in all ways just described was 402. Of these 54 measured four inches or less and special records of the fifty four are shown in table two of this report.

The smallest lobster caught measured two and one half inches and according to statistics given by E. W. Barnes of the Wickford Station, would be about thirteen months old.

On the average a lobster two years old measures four and one sixteenth inches.

The total length of the 402 lobsters was 2,232 3/8 inches, and the average length therefore was 5.55 inches.

The average length of the 54 lobsters was 3.67 inches.

Table 1 shows a classification of the 402 lobsters.

Only 34 measured over seven inches. 69.6 per cent. measured six inches or less, 13.4 per cent. measured four inches or less.

Had we used more traps a much larger number of lobsters would have been caught, and more ground would have been tested.

MALES AND FEMALES

Out of a total of 402 lobsters 232 or 57.6 per cent. were males and 170 or 42.3 per cent. were females.

BERRIED FEMALES

Only one lobster out of the 402 carried eggs. It was captured on August 12th, and measured 8 3/4 inches.

5. COLONIES OF SMALL LOBSTERS DISCOVERED

Two colonies were discovered. One of these was in Darnley Basin just off Taylor's shore beginning in water about one foot deep at low tide and extending out into deeper water. The bottom was sand, mud and short grass.

The other colony was just East of Grover 1. not far from shore. Here there was more sand, less mud and more grass. Over this ground the beam trawl did its most successful work, and we were able on calm days to drag it in water from three to four feet deep and many lobsters from 5 to 6 inches long were caught and quite a number of smaller ones.

6. TERRITORY EXAMINED

(a) From Malpeque Wharf to Beech Point

(b) East of Curtain 1. Sandy bottom

(c) East of Bunbury 1. Rocky bottom

(d) North of Bunbury 1. " "

(e) Off Princetown Point, grassy bottom

(f) North of Grover 1. Rocky "

(g) East of Grover 1. Sand and grass bottom

(h) Off Montgomery's shore, Rocky bottom

(i) Darnley Basin, all sand, muc, grass bottom

(j) Off Bill Hook d. in the Bay, sand and grass bottom

(k) Off George 1. Sand and shallow water "

(l) Off Lennox 1. South. Mud and oyster shells "

(m) Up Bideford R. Mud and oyster shells "

TABLE NO. 1

1919	Inches	2 - 2 1/2	2 5/8 - 3	3 1/8 -3 1/2	3 5/8 - 4	4 1/8 - 4 1/2	4 5/8 - 5	5 1/8 - 5 1/2	5 5/8 - 6	6 1/8 - 6 1/2	6 5/8 - 7	7 1/8 - 7 1/2	7 5/8 - 8	8 1/8 - 8 1/2	8 5/8 - 9	9 1/8 - 9 1/2	
July 3				1						1				1			3
4							3	6	5	3	7	1	1				26
5				1	1						1						3
8				1		4	3	4	2	1	1	1					17
9		1															1
10			1	1				1		1				1			5
11					1		1										2
14									1								1
17												1			1		2
19						1			4								5
21							2	1	1	1							5
22				1			3	1	2	1							8
23				1						2		1					4
24				1		5	6	6	4	6	3	1	1				33
25					1	5	2	2	4	4	1					1	20
26				1	1	3	2	3	3	2	1						16
		1	1	8	4	15	23	23	26	15	6	2	2	2	1	1	151

TABLE NO. 1 (continued)

1919	Inches 2 - 2 1/2	2 5/8 - 3	3 1/8 - 3 1/2	3 5/8 - 4	4 1/8 - 4 1/2	4 5/8 - 5	5 1/8 - 5 1/2	5 5/8 - 6	6 1/8 - 6 1/2	6 5/8 - 7	7 1/8 - 7 1/2	7 5/8 - 8	8 1/8 - 8 1/2	8 5/8 - 9	9 1/8 - 9 1/2	10	10 1/2	11 1/2	
Forward	1	1	8	4	15	23	23	26	33	15	6	2	2	1	1				151
July 28				1	2	2	3	2	3	1									14
29				1		1													2
30		1	1	2		2													6
31			1	3	1	4	2	2	6	3	1								23
Aug. 1			1	3					1	2	1	1							9
2				1															1
4			1	6	7	2	7	2	2	3	1								31
5		1	1	5	6	8	10	5	4	3	1	1	1	1					47
6				4	6	8	2	10	4	1		1							36
7				3	6	2	6	11	4	7			1	1					41
8				2	1	1	7	6	3	1	1	2			1				25
9								1											1
11				2	3			1		1		1			1			1	10
12									1				1	1		1	1		5
	1	3	13	37	47	53	60	66	51	37	11	8	5	4	3	1	1	1	402

TABLE NO. 2

Date	Sex	Size Inches	Location	Depth of Water	Kind of Bottom	Other Animals	Plants	How Caught
July 3	M	3 1/8	Montgomery's rocks	17 ft.	rocky	small fish		trap
" 5	F	3 1/2	Grover I. P.E.I.	8 ft.	"	crabs	rock weed	"
" 5	F	3 5/8	Montgomery's rocks		"			
" 8	M	3 1/2	"	16 ft. 18 ft.	soft spots "	" "		" "
" 9	M	2 1/2	Bunbury I.N.E.	10 ft.	"			"
" 10	M	3	"	13 ft.	"		no plants	(in same ((trap
" 10	F	3 1/4	"	13 ft.	"		"	(
" 11	F	3 3/4	"	13 ft.	"			trap
" 22	M	3 1/2	Grover I. E.	3 - 6	sand & grass	small fish	eel grass	beam trawl
" 23	M	3 1/8	Grover I. E.	5	sand & short grass	7 crabs 2 fish 3 lobsters	short grass	large traps
" 24	F	3 1/4	Darnley's B. Taylor's C	1-2	sand, mud grass	crabs, etc.	"	in burrows with hands
" 25	M	4	" "	2-3	" "	" "	" "	"
" 26	M	3 1/2	Grover I. E.	3-5	sand and grass	crabs and fish	eel grass	beam trawl
" 26	M	3 3/4	" "	3-5	" "	" "	" "	" "

TABLE 2 (continued)

Date	Sex	Size Inches	Location	Depth	Bottom	Animals	Plants	How Caught
July 28	F	3 3/4	Grover I. E.	3-5	sand & eel grass	crabs & fish	eel grass	trap
" 29	M	4	Darnley Basin Taylor's C	2-4	sand, mud, grass	crabs fish gastro-pods	eel grass	trap
" 30	M	3 3/4	"	3 ft.	" "	"	"	"
" 30	M	3 5/8	"	3 ft.	" "	"	"	"
" 30	M	3 1/2	"	3 ft.	" "	"	"	"
" 30	M	3	"	3 ft.	" "	"	"	"
" 31	F	3 3/4	"	3 ft.	" "	"	"	(in
" 31	F	3 7/8	"	3 ft.	" "	"	"	(same (trap
" 31	F	3 7/8	"	3 ft.	" "	"	"	trap
" 31	M	3 1/2	"	2 ft.	" "	"	"	with hands
Aug. 1	M	4	"	3 ft.	" "	"	"	(in (same
" 1	M	3 3/4	"	3 ft.	" "	"	"	((trap
" 1	M	3 3/4	"	3 ft.	" "	"	"	(in (same
" 1	M	3 1/2	"	3 ft.	" "	"	"	((trap
" 2	M	4	"	3 ft.	" "	crabs, fish, etc.	short eel grass	trap
" 4	M	3 3/4	"	3 ft.	" "	"	"	trap
" 4	F	4	"	3 ft.	" "	"	"	trap
" 4	F	4	"	3 ft.	" "	"	"	with hands
" 4	M	3 3/4	"	3 ft.	" "	"	"	" "

TABLE No. 2 (continued)

Date	Sex	Size Inches	Location	Depth	Bottom	Animals	Plants	How Caught
Aug. 4	M	4	Darnley Basin Taylor's C	2 ft.	sand, mud, grass	crabs, fish, etc.	short eel grass	(in burrows ((((caught with ((hands
" 4	M	4	"	2 ft.	" "	"	"	
" 4	F	3 1/2	"	2 ft.	" "	"	"	
" 5	F	4	"	2 ft.	" "	"	"	with hands
" 5	M	4	"	2-3	" "	"	"	trap
" 5	M	3 3/4	"	1-2	" "	"	"	with hands
" 5	M	4	"	1-2	" "	"	"	with hands
" 5	M	2 5/8	"	1-2	" "	"	"	with hands
" 5	F	3 7/8	"	1-2	" "	"	"	with hands
" 5	F	3 1/2	"	1-2	" "	"	"	with hands
" 6	F	3 5/8	Darnley B. Taylor's C.	1-2	" "	"	"	trap
" 6	M	4	Grover I.E.	3-4	" "	"	"	beam trawl
6	M	3 3/4	" "	3-4	" "	"	"	" "
" 6	F	4	" "	3-4	" "	"	"	" "
" 7	F	4	" "	2-3	" "	"	"	" "
" 7	M	3 1/2	" "	3-4	" "	"	"	" "
" 7	F	4	" "	3-4	" "	"	"	" "
" 8	F	4	" "	3-4	" "	"	"	" "
" 8	F	3 7/8	" "	3-4	" "	"	"	" "
" 11	M	4	" "	3-4	" "	"	"	" "
" 11	F	3 3/8	" "	3-4	" "	"	"	" "

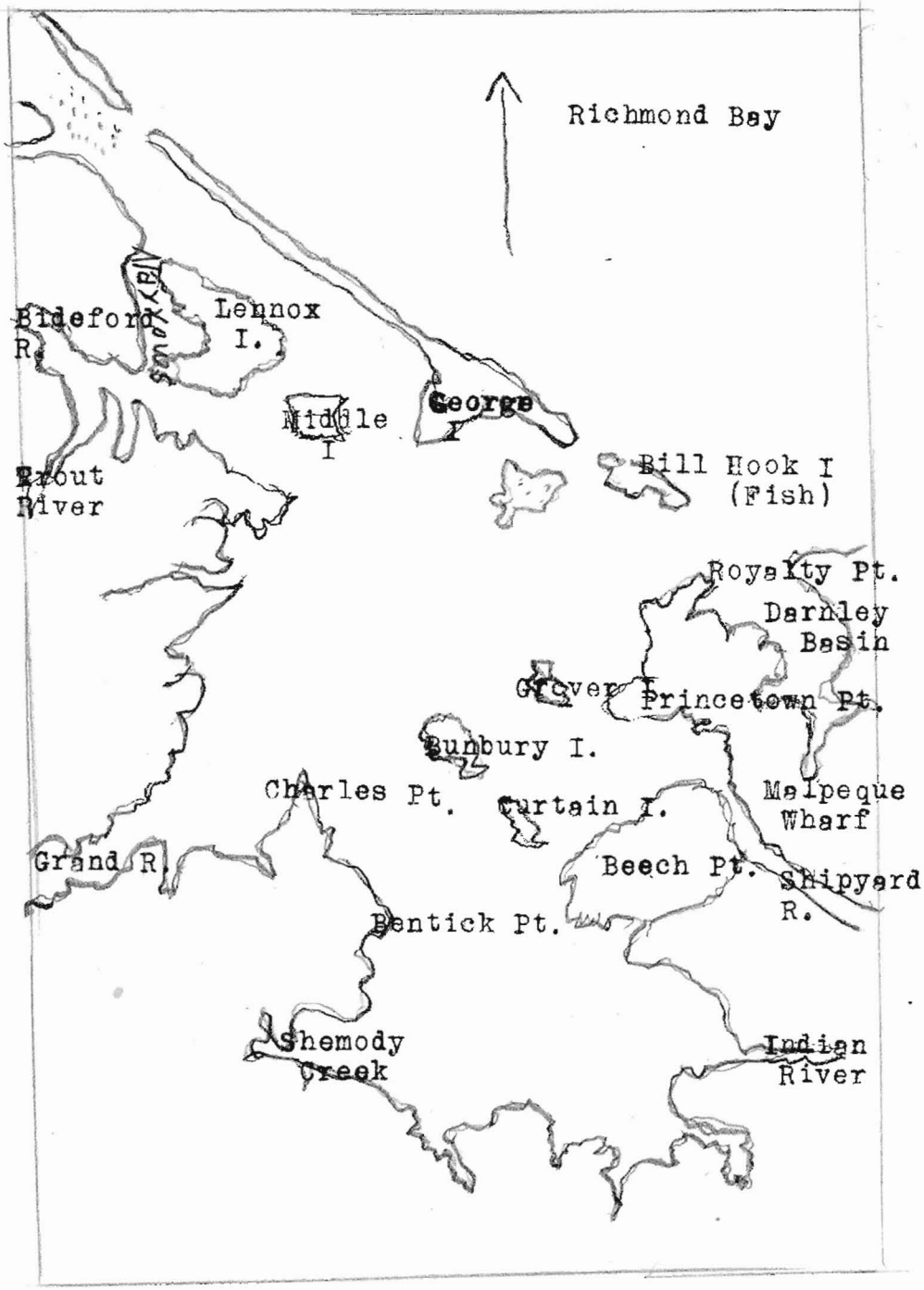
Richmond Bay
Bideford R.
Lennox I.
Middle I
George
Bill Hook I (Fish)
Trout River
Royalty Pt.
Darnley Basin
Princetown Pt.
Sunbury I.
Charles Pt.
Curtain I.
Malpeque Wharf
Grand R.
Beech Pt.
Shipyard R.
Bentick Pt.
Shemody Creek
Indian River

Table I. 1919. Richmond Bay, Report

1919		2	2½	3	3½	4	4½	5	5½	6	6½	7	7½	8	8½	9	9½	10	10½	11	11½	
July	3			1							1				1							3
	4						3	6	5	3	7	1	1									26
	5			1	1							1										3
	8			1		4	3	4	2	1	1	1										17
	9	1																				1
	10		1	1					1		1				1							5
	11				1		1															2
	14								1													1
	17											1			1							2
	19					1			4													5
	21						2	1	1													5
	22			1			3	1	2	1												8
	23			1						2		1										4
	24			1		5	6	6	4	6	3	1	1									33
	25				1	5	2	2	4	4	1				1							20
	26			1	1	8	2	2	3	2	X	1										16
	28				1	2	2	3	2	3	1											14
	29				1		1															2
	30		1	1	2		2															6
	31			1	3	1	4	2	2	6	3	1										23
Aug	1			1	3					1	2	1	1									9
	2				1																	1
	4			1	6	7	2	7	2	2	3	1										31
	5		1	1	5	6	8	10	5	4	3	1	1	1								47
	6				4	6	8	2	10	4	1		1									36
	7				3	6	2	6	11	4	7			1	1							41
	8				2	1	1	7	6	3	1	1	2			1						25
	9									1												1
	11				2	3				1		1		1		1			1			10
	12										1				1	1		1	1			5 1
		1	3	1	3	3	1	4	1	5	3	6	0	6	6	5	1	3	7	1	1	1	402

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50 52 61 50 36 10

Richmond Bay. Report

1919