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OYSTER INVESTIGATIONS AT BRAS D'OR LAKES, CAPE BRETON

Author

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1936

## OYSTER INVESTIGATIONS

AT

BRAS D'OR LAKES, CAPE BRETON

G. F. H. Smith

Report for 1937.

G. F. M. Smith.

1937

Oyster investigations begun in the Bras d'Or lakes in 1936 were continued and expanded somewhat during the summer of 1937. The work consisted of hydrographic observations, spat collection, rearing of 1936 spat in trays and on the bottom and transferring of oysters from the Bras d'Or lakes to a more saline area in St. Ann bay.

Up to July 15 observations were made by the writer but after that date all data included in this report were collected by Mr. C. J. Kerwill

#### HYDROGRAPHY

Crowdis bridge and Gillis cove, the two regular hydrographic stations in 1936, were occupied again during the summer of 1937.

As in 1936, the steep halocline was found at Crowdis bridge but it almost disappeared by the last part of July and was not again evident until almost the middle of September. This was doubtless owing to the very warm and dry weather.

At Gillis cove the water was very fresh until after the middle of June. The salinity did not reach 20 per mille until about the middle of July. This low salinity in the early part of the season apparently prevented a large proportion of the oysters exposed to it from spawning.

Other hydrographic observations at various irregular stations around the lakes were similar to corresponding

observations in 1936 and indicated that the salinities in the Bras d'Or lakes are usually between 20 per mille and 24 per mille during the summer.

The few observations made outside the lakes at St. Ann Bay confirmed the previous opinion that its salinity was about 30 per mille. Full data of the hydrography are appended to this report.

#### OYSTER SPAWNING AND SPAT COLLECTION.

The spawning of oysters was followed at Crowdis bridge and Gillis cove and bundles of spat collectors set out at both places.

At Crowdis bridge most of the spawning was completed by July 15 and half of the lot of 158 bundles were set out shortly after. The rest of the bundles of collectors were placed out ten days later than the first lot. All collectors were set out at Crowdis bridge at a depth of about two feet from the surface. This was the position that obtained the maximum set in 1936 as it was the average level of the halocline. In 1937, however, the halocline was absent for most of the season when the spat were settling. In spite of the collectors being below the surface a very good set of spat was obtained at Crowdis bridge.

The freshness of the water in Gillis cove during the spring apparently prevented a great many of the oysters in the cove from preparing to spawn. These oysters were very thin, watery and almost clear. By the middle of July the gonads

had not developed the sexual products. Some of the oysters, however, were able to spawn. Whether the spat in Gillis cove were from the oysters in the cove entirely or supplemented to a greater or lesser extent by oysters outside the cove is not known. However, in any case a satisfactory set was obtained in Gillis cove although not so heavy as the set at Crowdis bridge. (See pages 3a and 3b for tables).

REARING OF 1936 SPAT.

The spat rearing trials were carried out at Gillis cove. All the spat on collectors (100 bundles) and the spat on about 50 bushel bags of shells were separated and placed in copper painted floating trays with wooden covers and wire cloth bottoms. The remaining 50 bags of shells bearing spat were spread on hard bottom along the shore without being separated. In both cases the growth was not as much as would be desired. Figures of the growth are as follows: Samples are of about 100 spat. Measurements are mean diameter in millimeters.

	Average size	Range	Av. increase since 1936	% increase	
1936	13.1	4-23			on bed
July 28/37	18.3	7-31	5.2	40	" "
1936					
Aug. 31/37	15.7	9-28			
	28.5	15-57	12.8	83	" "
1936	16.4	10-32			
July 28/37	29.0	16-45	12.6	77	on trays
1936	17.8	10-28			" "
Aug. 31/37	34.5	23-60	16.7	94	" "

The following are summaries of oyster spawning at  
Gillis cove and Crowdis bridge as indicated by the oyster gonads:

GILLIS COVE, 1937

Date	Place	Full	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{4}$	Spent	Clear & watery oysters
June 28	Upper part of cove	8					22
July 5	"						37
July 12	"			1			16
July 12	Lower part of cove	4		6			6
July 15	Upper "						17
July 20	" "						12
July 28							14
Aug. 2							18
Aug. 4							6
Aug. 13							12 filling out

CROWDIS BRIDGE, 1937.

Date	Full	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{4}$	Spent
July 5	22				
July 12	9	12		3	
July 15		5	4	2	14
July 20				2	12
July 29					12
Aug. 15					15

## A summary of the few plankton tows taken with a

No. 18 net is as follows:

Date	Place	Depth	Oyster larvae	
			Straight hinge	Umbo
July 12	Crowdis bridge	1 ft.	many	none
12	Gillis cove	Surf.	Very few	"
24	" "	"	few	many
26	Crowdis bridge	"	few	many
28	Gillis cove	"	few	few
Aug. 2	Crowdis bridge	"	few	few
4	Gillis cove	"	numerous	many
5	South gut	"	none	None
6	Christmas island	"	"	"
7	Gillis cove	"	"	"
11	Crowdis bridge	"	few	"
13	Gillis cove	"	none	"
17	" "	"	"	"
19	" "	"	"	"
21	Murphy cove	"	"	"
24	South gut	"	"	"
25	Christmas island	"	"	"
28	Crowdis bridge	"	"	"
Sept. 18	" "	"	"	"

TRANSFER OF OYSTERS TO ST. ANN BAY (SOUTH GUT)

On June 24 39 barrels of oysters were transferred from the Bras d'Or lakes to the more saline water of St. Ann bay. These oysters were obtained from lessees in River Denys basin, Estmere and Whyccomagh bay. The salinity of the water from which they were fished was 20 or 21 per mille and that of the water over the areas on which they were planted was about 30 per mille. Most of the oysters were about  $3\frac{1}{2}$  or 4 inches but 5 barrels were less than market size being  $2\frac{1}{2}$  to 3 inches. Thirty barrels were planted in a sheltered location on hard bottom along the north shore of South gut across from the South gut wharf, St. Ann bay. The remaining nine barrels were planted in a more exposed area on the south shore of South Gut off Mr. McLeod's property.

This area was visited by Dr. Fould, Major Sutherland, and Dr. Needler in September. Dr. Needler reports that the oysters had improved greatly in flavour during the month and a half in the more saline water and that some growth was observable.

## Air Temperature, Orangedale, Cape Breton Island, N. S.

1937

Date	(Morning)			(Evening)			Weather
	Max.	Min.	Fres.	Max.	Min.	Fres.	
May 23				60	48	55	
24	56	48	55	67	55	55	Fair
25	54	40	41	44	41	42	Dull, rain
26	43	40	43	51	43	47	Dull, west wind
27	58	42	49	59	47	48	Dull, SW wind
28	49	43	45	50	45	50	Rain, dull
29		44		69	47	51	Fair, NE breeze
30	79	32	79	82	68	68	Fair, warm, shr. at night.
31	73	62	73	84	74	81	" " , SW wind
June 1	68	62	68	90	71	82	" " , varying winds thunder shr. evening.
2	82	56	64	68	58	58	Fair, W wind
3	68	34	68	68	55	55	" "
4	55	48	51	54	50	53	NE wind, rain
5	63	51	60				Fr, warm, shr.pt.day, AM
6				69	50	59	Fair, pt. cloudy
7	59	49	54	66	54	57	Dull, cloudy, showers.
8	73	45	69	80	68	75	Fair, warm, light SW breeze
9	75	52	68	67	62	62	Fair, showers in afternoon
10	79	46	79	82	75	75	Fair, pt.cldy. SE breeze
11	75	55	59	65	68	65	Dull, rain
12	73	50	72	75	64	64	Fr. pt. cldy, mod. SW
13	75	44	69	75	63	65	Fr. thunder shr. aft. SE
14	65	44	61	79	60	68	Fr. pt. cldy. mod. SW breeze
15	68	55	60	70	60	62	Dull, rain, AM; Fair, clear PM
16	72	51	70	73	65	65	Fair, pt. cloudy
17	76	37	76	77	68	68	Fair, pt. cldy. SW
18	74	46	73	73	56	56	Fair, rain at night
19	56	44	51	55	50	51	Dull all day, rain in morning
20				71	47	59	Fair
21	69	42	68	68	57	57	Dull, showers
22	57	55	55	64	55	62	Dull, misty, showers
23	67	58	67	75	59	59	Fair, pt. cldy.
24	73	49	49	76	65	65	Fair, pt. cldy. Sw.
25				67	56	59	Dull, SE wind, stormy
26	72	57	57				Fair, warm
27							Fr., pt. cldy. shrs. afternoon rain at night.
28	78	51	67	74	66	66	Fair, pt. cldy
29							Dull, N wind
30				70	60	61	Dull, rain allday
July 1	70	58	70	75	65	65	Fair, pt. cldy.
2	79	60	78	80	72	72	Fair, pt. cldy. W wind.

## Air Temperature. Orangedale, Cape Breton Island, N. S.

1937 Continued.

Date	(Morning)			(Evening)			Weather
	Max.	Min.	Pres.	Max.	Min.	Pres.	
July 3	82	51	81				
4				87	51	78	
5	82	53	81	81	65	65	Fair, bright
6	87	55	84	85	66	66	Fair, bright, thunder shr. in afternoon
7	80	57	77	80	66	66	Fair, pt. cldy. mostly brt.
8	72	46	70	79	70	73	" " " "
9	84	56	84	85	68	68	" " " "
10	84	55	82	83	68	68	Fair, pt. cldy.
11	82	44	78	79	62	62	" " " "
12	77	44	74	86	67	70	" " " "
13	72	42	69	71	61	61	Dull, NE breeze
14	67	55	67	72	67	70	Fair, mostly bright
15				87	46	78	" " " "
16				78	58	62	Dull, rain
17-20	No one stationed at Orangedale						
21							Fair, south breeze
22				73	69	71	Fair, brt., SW wind
23	84	59	83	90	81	81	Fair, brt., calm
24	87	57	87	90	72	72	Mostly fr., pt. cldy. S wind
25	82	50	83	89	78	78	Fair, brt., SW breeze
26	83	57	83	88	79	79	Fair, brt., SW wind
27	93	60	92	94	79	79	Fr., mostly brt., strong SW
28	80	69	73	79	72	73	Cldy., W wind
29	85	53	82	83	69	69	Fair, bright
30	77	54	77	79	66	66	Fr. brt., cldy. at night
31	81	68	80	83	69	69	Fair, bright
1	71	60	71	73	67	67	Dull, SE, rain aft. & night
2	67	60	67	73	64	64	Fr., becoming brt.
3	80	59	79	81	71	71	Fr., pt. cldy., rain at night
4	73	56	65	75	65	68	Rain morning.
5	69	51	69	86	67	76	Fair, pt. cldy.
6	86	63	86	88	63	74	Fair, bright
7	90	55	90	94	82	82	Fair, bright
8	90	67	90	90	76	76	Fair, bright, E wind
9	89	71	85	89	75	75	Fair, bright
10	90	63	87	90	79	79	Fair, bright
11	79	71	79	90	78	81	Fair, brt., SW
12	92	69	92	93	78	78	Fair, bright
13	85	70	79	84	73	73	Mostly fair, pt. cldy., light shower afternoon
14	80	62	80	81	69	69	Dull but no rain
15	85	49	85	86	73	73	Fair, brt., SW breeze

## Air Temperature, Orangedale, Cape Breton Island, N. S.

1937 Continued.

Date	(Morning)			(Evening)			Weather
	Max.	Min.	Pres.	Max.	Min.	Pres.	
Aug. 16	86	50	86	89	78	78	Fair, bright
17	91	67	91	96	80	80	Fair, brt. strong W wind
18	67	67	70	73	63	65	Dull, heavy rain morning, aft. bright.
19	65	43	65	74	62	62	Fair, bright
20	68	53	68	77	67	67	Dull, AM; fair PM.
21	71	54	71	77	70	71	Dull, clearing in aft.
22	71	63	65	67	55	55	Fair, bright
23	65	45	63	67	45	55	Fair, bright, AM; dull & rain aft. & night.
24	72	47	71	76	59	59	Fair, bright
25	76	45	65	81	64	64	Fair, bright
26	81	56	81	85	78	79	Fair, bright
27	79	57	68	85	64	64	Fair, bright
28	73	61	73	80	65	65	Fair, bright
29	75	44	75	80	68	68	Fair, bright
30	86	53	86	87	69	69	Fair, bright
31	82	56	82	85	65	65	Fr., mostly brt. dull afternoon
Sept. 1	69	61	61	67	61	65	Dull, rain
2	71	61	71	80	70	73	Fair, bright
3	85	63	85	88	75	75	Fair, bright
4	89	67	89	90	73	73	Fr., brt. AM, thunder shower PM.
5	73	56	60	66	56	56	Dull, clearing at night.
6	63	44	53	67	57	57	Fair, bright
7	60	35	60	71	60	63	Fair, bright
8	72	40	72	75	51	53	Fair, AM; dull, rain, PM.
9	62	47	62	63	53	53	Fair, bright
10	66	32	66	72	58	58	Fair, bright
11	66	41	66	71	65	66	Fair, dull, rain at night
12	73	63	73	77	71	71	Dull AM; fair & bright PM
13	69	56	69	76	69	72	Dull, showers
14	71	68	71	75	65	65	Dull, rain
15	63	57	63	71	63	63	Fair, bright
16	70	57	70	73	69	69	Dull, rain
17	70	65	65	73	63	63	Dull, shrs. clearing at night
18	65	54	65	65	59	59	Dull, showers clearing at night
19	63	40	63	67	57	57	Fair, bright

## Hydrographic data. Crowdis bridge, River Denys basin, N. S.

1937

<u>Date</u>	<u>Time</u>	<u>Depth</u>	<u>Temp.</u>	<u>Salinity</u> <u>per mille</u>	<u>Tide</u> <u>Current</u>	<u>Locality &amp;</u> <u>Remarks</u>
May 21	14:30	Surf.	12.3	0.9	0	
		6'	11.0	0.		
		9'	11.2	11.9		
		Bot. 11'	11.2	12.9		
26	10:30	Surf.	10.7	0	0	
		6'	12.2	4.6		
		Bot. 11'	11.5	13.2		
June 1	10:00	Surf.	19.2	3.5	0	
		2'	15.2	10.9		
		3'	13.5	14.7		
		9'	9.7	20.9		
9	9:00	Surf.	16.5	6.4	up	
		1'	16.3	10.0		
		2'	16.5	13.3		
		Bot. 14'	12.7			Lost waterbottle
14	11:30	Surf.	19.4			
		Bot. 14'	13.5			
16	16:00	Surf.	20.6	6.6	up	
		3'	15.0	18.0		
		Bot.	11.9	20.8		
22	14:30	Surf.	17.5	6.2	down	
		3'	16.2	16.7		
		12'	15.0	18.4		
28	15:30	Surf.	22.6	4.1	0	
		1'	21.2	15.3		
		2'	20.7	16.2		
		3'	20.2	17.8		
		12'	19.0	17.8		
July 2	12:00	Surf.	20.7	5.2		
		3'	20.5	5.8		
		4'	19.4	17.3		
		12'	18.4	19.1		
6	15:30	Surf.	26.5		0	
		1'	24.3	7.0		
		3'	20.9	18.3		
		12'	18.8	20.0		
8	12:00	Surf.	22.3			
		12'	21.0			

## Hydrographic data. Crowdis bridge, River Denys Basin, N. S.

1937 Continued.

<u>Date</u>	<u>Time</u>	<u>Depth</u>	<u>Temp.</u>	<u>Salinity</u>	<u>Tide</u> <u>Current</u>	<u>Locality &amp;</u> <u>Remarks</u>
July 12	10:30	Surf.	20.8	10.8	up	
		1'	23.3	17.6		
		3'	22.5	19.1		
		12'	20.0	20.5		
15	19:00	Surf.	23.0	8.8	0	
		1'	23.2	9.0		
		2'	23.1	18.1		
		12'	21.1	18.6		
23	14:00	Surf.	26.0	12.3	down	
		2'	24.1	17.1		
		3'	24.8	18.4		
		4'	23.5	20.3		
		9'	23.7	19.9		
		Bot. 15'	22.0	20.0		
26	15:30	Surf.	26.5	17.6	down	
		3'	24.3	19.0		
		Bot.	23.5	20.3		
29	14:00	Surf.	24.3	18.6	0	
		2'	22.3	21.4		
		4'	21.7	20.3		
		8'	21.3	21.1		
		Bot.	20.9	21.0		
Aug. 2	14:00	Surf.	23.4	18.3	down	
		3'	23.5	18.2		
		12'	22.1	20.2		
7	10:00	Surf.	24.0	16.7	up	
		2'	23.5	19.2		
		3'	23.5	19.6		
	11:00	12'	22.3	20.9		
		Bot.	22.3	21.3		
11	13:30	Surf.	26.5	17.4	up	
		1'	25.1	19.1		
		2'	24.4	20.6		
		3'	24.3	20.8		
		12'	22.9	21.5		
17	14:00	Surf.	25.6	19.3	down	
		3'	25.3	19.2		
		12'	23.2	21.3		

No halocline, likely  
owing to dry weather.

Hydrographic data. Crowdis bridge, River Denys, N. S.

1937 Continued.

<u>Date</u>	<u>Time</u>	<u>Depth</u>	<u>Temp.</u>	<u>Salinity</u>	<u>Tide Current</u>	<u>Locality &amp; Remarks</u>
Aug. 19	14:30	Surf.	24.0	16.7	Down	
		2'	23.7	16.9		
		3'	23.6	17.0		
		12'	22.4	21.4		
24	14:00	Surf.	21.2	15.0	down	
		3'	20.8	20.3		
		12'	20.5	20.4		
28	9:30	Surf.	21.5	16.0	down	
		3'	22.3	18.5		
		12'	21.1	21.7		
Sept. 2	11:00	Surf.	21.8	17.8	down	
		3'	22.0	21.5		
		12'	21.7	21.6		
6	10:30	Surf.	20.5	18.8	up	
		3'	20.5	19.7		
		12'	20.3	21.1		
		Surf.	20.2	18.5		
9	10:00	Surf.	18.1	15.8	down	Near south B. at collectors.
		3'	18.2	16.2		
		12'	19.0	22.1		
13	15:00	Surf.	23.2	7.7	down	
		1'	22.1	18.0		
		2'	21.1	19.6		
		3'	20.8	20.7		
		12'	20.0	21.4		
18	16:00	Surf.	17.5	1.9	0	
		3'	17.5	3.2		
		4'	20.0	18.3		
		12'	20.0	22.5		

## Hydrographic data. Gillis Cove, Cape Breton Island, N. S.

1936-37.

<u>Date</u>	<u>Time</u>	<u>Depth</u>	<u>Temp.</u>	<u>Salinity</u>	<u>Small cove</u>		<u>Locality &amp; Remarks</u>
					<u>Temp.</u>		
Oct. 2	10:40	Surf. Bot.	11.8	18.6 19.7			
15	17:00	Surf. Bot.	9.1	17.6 20.8			
Nov. 3	9:00	Surf. Bot.	10.3	4.4 17.9			
16	9:00	Surf. Bot.	6.3	9.0 17.6			
May 1	14:00	Surf. Bot.	9.8	13.6 10.6			
26	13:30	Surf. Bot. 8'	13.1 12.7	13.3 13.8			
June 1	14:00	Surf. Bot. 8'	20.2 17.5	12.0 12.8	24.6		
9	16:00	Surf. Bot.	18.6 11.4	14.8			Lost water bottle.
15	11:00	Surf. Bot.	18.8 18.0	14.5	18.8		
18	11:00	Surf. Bot.	18.7 17.6	17.5 18.7	19.8		
22	14:00	Surf. Bot.	16.2 16.2	18.5 18.5			
28	11:30	Surf. Bot.	20.2 20.0	18.9 18.9	22.0		
July 2	15:00	Surf.	22.5		25.5		
5	16:30	Surf. Bot.	24.0 22.9	19.2 19.0	29.0		
8	16:00	Surf.	22.3		27.4		
12	14:30	Surf. Bot.	21.1 21.0	19.2 20.5	24.7		
15	13:30	Surf. Bot.	22.5 21.0	19.4 19.7	25.0		
20	15:00	Surf.	22.7	20.6			Across from

## Hydrographic data. Gillis cove, Cape Breton Island, N. S.

1937 Continued.

Date	Time	Depth	Temp.	Salinity	Small cove	Locality
					Temp.	& Remarks
July 20	15:00	Bot.	22.6	20.9		wharf. No spawn in oys
		Bot.	21.1	20.1		
24	15:30	Surf.	25.0	21.1		Near collectors, Goo- set. Inner cove.
		Bot. 6'	24.7	20.5		
		3 ft.	24.8	20.7		
	16:40	Surf.	24.4	20.6		South end, outer cove
		Bot.	23.2	20.5		
26	14:00	Surf.	24.3	20.8		Upper cove at east stand
		Bot. 2	24.2	20.9		
Aug. 2	10:30	Surf.	22.1	21.4		
		Bot.	21.9	21.7		
4	14:00	Surf.	24.3	21.1		Inner cove
		Bot.	22.6	21.6		
4	15:00	Surf.	24.2	21.1		Outer cove
		Bot.	21.6	21.4		
		3'	23.5	21.0		
10	10:00	Surf.	25.5	21.3		
		Bot.	25.0	21.1		
13	15:00	Surf.	25.0	21.6	26.2	Outer cove
		Bot.	25.5	21.6		
	17:00	Surf.	26.2	21.6		Inner cove
		Bot.	25.7	22.1		
19	10:50	Surf.	22.5	17.1		Inner cove
		Bot. 7'	23.6	21.1		
	11:50	Surf.	23.2	21.2		Outer cove
		Bot. 9'	23.1	22.6	24.3	
24	10:50	Surf.	20.3	21.6		Inner cove
		Bot. 8'	19.7	22.2		
	11:00	Surf.	20.5	21.6		Outer cove
		Bot. 8'	19.8	21.4	20.8	

## Hydrographic data. Gillis cove, Cape Breton Island, N. S.

1937 Continued.

<u>Date</u>	<u>Time</u>	<u>Depth</u>	<u>Temp.</u>	<u>Small cove</u>		<u>Locality &amp; Remarks</u>
				<u>Salinity</u>	<u>Temp.</u>	
Aug. 28	14:30	Surf.	22.7	22.4		Inner cove
		Bot. 7'	21.6	22.5		
		Surf.	23.0	22.1		Outer cove
		Bot.	20.7	22.7	23.3	
31	15:00	Surf.	23.2	22.6		Outer cove
		Bot.	21.6	22.9	22.9	
Sept. 3	17:30	Surf.	23.5	22.1	24.6	Outer cove
		Surf.	24.0	22.2		Inner cove
		Bot.	23.7	22.6		
7	11:00	Surf.	20.1	22.1		E end at tms
		Surf.	20.0	22.1		
		Bot. 8'	19.6	22.6	20.7	Outer cove
		Surf.	20.2	22.6		
Bot. 7'	19.8	22.5				
9	13:30	Surf.	18.5	22.3		Inner cove
		Bot.	18.4	22.4		
15	10:30	Surf.	20.2	21.5		Outer cove
		Bot.	20.0	23.4		

Hydrographic data. Christmas Island, Cape Breton Island, N. S.  
1937.

<u>Date</u>	<u>Time</u>	<u>Depth</u>	<u>Temp.</u>	<u>Salinity</u>	<u>Locality &amp; Remarks</u>
June 5	12:00	Surf.	14.5		Open shore
	12:30	Surf.	17.5	20.9	Goose pond
		Surf.	16.0		Goose Bank
		Surf.	17.0		" " NW end
	14:00	Surf.	18.0		Christmas Island
	13:30	Surf.	13.3		Pond, 10 fths.
		5 fths.	10.3	22.2	
	10 fths.	4.6	24.1		
23	13:10	Surf.	16.5	21.5	Christmas Island Pond
	14:00	Surf.	22.0	3.8	McDonald Pond, 10 fths
	14:30	Surf.	14.0	22.3	10 fths.
		5 fths.	10.8	22.4	
		10 "	5.8	23.9	
July 20	20:00	Surf.	20.5	22.6	
		Bot.	19.3	23.3	
Aug. 6	13:30	Surf.	24.3	22.8	Goose Pond, Christmas
		Bot. 3'	24.2	23.1	Island
	13:45	Surf.	23.8	22.7	Shoal off shore, depth
					1'
	15:00	Surf.	22.8	22.8	Christmas island pond,
		Bot. 14'	20.0	23.0	" "Middle.
	15:15	Surf.	23.7	23.2	" " , near W
		Bot.	22.7	22.9	shore.
15:30	Surf.	23.8	23.0	" " , east	
	Bot. 7'	23.5	23.1	shore.	
Aug. 25	13:15	Surf.	22.1	22.8	Goose pond, depth 2ft.
	13:30	Surf.	21.0	23.0	Open channel
	14:00	Surf.	21.0	22.6	Christmas I Pond, off
		Bot. 6'	19.6	23.0	west shore,
	14:30	Surf.	20.6	23.3	" " , south
		Bot. 6'	20.3	22.8	end near outlet.
	15:00	Surf.	20.7	22.9	" " , middle.
	Bot. 12'	19.1	22.9		

## Hydrographic data. Murphy cove, Cape Breton Island, N. S.

1937

<u>Date</u>	<u>Time</u>	<u>Depth</u>	<u>Temp.</u>	<u>Salinity</u>	<u>Locality &amp; Remarks</u>
June 8	15:00	Surf.	20.0	17.6	Inner cove Oyst. full
		Surf.	18.0		Outer cove
	16:00	Surf.	15.8	21.6	Washabuck
		Bot. 10'	11.8		
23	10:30	Surf.	10.6	17.9	Inner C. Oyst. showing, branching
July 6	15:00	Surf.	23.0	19.6	Inner cove
		Surf.	21.0	20.0	Outer cove
Aug. 21	12:00	Surf.	22.8	20.8	Inner cove
		Bot. 14'	23.3	22.2	" " , south end
		Surf.	22.5	20.5	" " , northward
		Surf.	22.5	22.4	Outer cove
		Bot. 10'	21.8	22.5	" "

ST. ANN BAY, CAPE BRETON ISLAND, N. S.

July 21	10:30	Surf.	19.0	29.2	Oyst. good flavour; spawned.
		Bot.	18.2	29.1	
Aug. 5	13:00	Surf.	19.6	29.0	Low tide.
		Bot. 4'	19.2	29.1	
		Bot. 6'	19.2	29.1	
23	13:30	Surf.	19.3	30.1	East and near wharf. Oyst. very salty. Growing well.
		Bot. 6'	19.1	30.0	
	14:00	Surf.	18.6	29.1	
			19.2	29.2	

MISCELLANEOUS HYDROGRAPHY, CAPE BRETON ISLAND, N. S.

June 6	16:00	Surf.	10.8	21.7	Ottawa brook wharf
		Bot. 11'	12.5		
10	10:00	Surf.	18.7	14.7	Orangedale E-shore
		Surf.	20.2	8.4	" " -pond
14	15:30	Surf.	16.0		Orangedale wharf
		Bot. 9'	14.0		
10	12:00	Surf.	16.6	15.4	Whycocomagh wharf
		Bot. 10'	10.8		
2 29	15:00	Surf.	17.2	2.6	North river-1½ miles from entrance. Few oysters.
		Bot. 7'	14.1	27.0	

Hydrographic data. Miscellaneous, Cape Breton island, N. S.  
1937 Continued.

<u>Date</u>	<u>Time</u>	<u>Depth</u>	<u>Temp.</u>	<u>Salinity</u>	<u>Locality &amp; Remarks</u>
June 29	16:30	Surf.	22.5	5.2	Burusois Pond
July 5	17:30	Surf.	18.5	21.8	
	9 14:30	Bot. 13'	18.6	23.8	
Aug. 3	19:30	Surf.	22.4	21.8	Orangedale wharf
		Bot. 9'	21.8	21.8	
	5 15:30	Surf.	20.5	24.3	Ross ferry
		Bot. 11'	20.5	24.3	
	17:00	Surf.	23.2	20.9	Little Narrows, W wharf.
		Bot. 12'	20.8	21.6	
	11:00	Surf.	21.6	23.1	Baddeck wharf
		Bot. 20'	19.8	23.8	
	6 16:45	Surf.	20.6	22.7	Iona wharf
		Bot. 10'	20.2	22.8	
	10 16:00	Surf.	27.0	18.5	Whycocomagh wharf
		2'	27.0	19.3	
		3'	25.8	20.5	
	16:15	6'	20.7	22.0	
		Bot. 10'	19.9	22.0	
	10 17:00	Surf.	18.0	22.3	MacIntyre wharf
		Bot. 17'	23.7	21.7	(Iron Mines)
	14 17:00	Surf.	23.8	21.3	Orangedale wharf
		Bot. 9'	23.3	21.7	
	21 10:00	Surf.	21.4	22.3	Little Narrows
		Bot. 14'	21.2	23.0	
	13:00	Surf.	22.3	21.1	Washabuc wharf
		Bot. 12'	22.0	23.6	
	14:00	Surf.	16.5	0	Washabuc bridge, Depth 1½'
	23 12:30	Surf.	20.3	24.0	Baddeck wharf
		Bot. 18'	20.3	24.0	
	15:30	Surf.	20.2	24.8	Ross Ferry
		Bot. 12'	20.0	24.4	
	16:00	Surf.	18.2	3.5	Baddeck river B.
		Bot. 12'	20.3	21.8	
		Surf.	20.6	22.7	Grand Narrows wharf
	25 16:00	Bot. 5'	20.1	22.7	
	16:30	Surf.	21.3	21.7	Ottawa Brook wharf
		Bot. 12'	20.2	22.4	
	17:30	Surf.	22.7	20.6	Cariboo C.

## Hydrographic data. Miscellaneous, Cape Breton Island, N. S.

1937 Continued.

<u>Date</u>	<u>Time</u>	<u>Depth</u>	<u>Temp.</u>	<u>Salinity</u>	<u>Locality &amp; Remarks</u>	
Aug. 29	15:00	Surf.	23.1	21.9	Morrison cove	
		Bot. 6'	22.2	22.1		
Sept. 3	10:00	Surf.	22.6	22.7	Orangedale wharf	
		Bot.	21.6	22.6		
	10:15	Surf.	22.3	22.2	Orangedale-small W. near bridge	
		Surf.	24.5	22.3		
	14:30	Surf.	27.0	22.0	Morrison cove-small cove 2'	
		Surf.	26.2	19.6		
15:00	Surf.	23.5	22.9	" -north C " -mouth o creek, " open water N si		
	Surf.	25.0	22.6			
4	11:30	Surf.	23.7	22.3	Stoney P. Orangedale shore	
	12:45	Surf.	23.2	22.9		
	12:00	Surf.	23.2	22.9		
6	3:30	Surf.	20.5	22.2	Whycoomagh wharf	
		Bot.	20.3	22.6		
7	2:00	Surf.	22.8	22.6	S. side Whycoomagh Cariboo creek	
	2:30	Surf.	21.3	23.0		
9	2:30	Surf.	17.4	22.1	Head bay cove	
		Bot. 12'	17.3	22.9		
	3:00	Surf.	17.3	20.5	Mouth of Black R. Malcolm cove (shore) Marble Mt. wharf (Clarke cove) Big harbour Gillis pond (shore) McKenzie G. Bridge	
	3:30	Surf.	18.7	22.6		
	4:00	Surf.	18.2	22.4		
	4:30	Bot.	18.3	23.4		
	4:30	Surf.	17.2	23.1		
	5:00	Surf.	18.3	23.5		
10	10:30	Surf.	19.1	21.4	McKenzie G. Bridge	
		Bot.	19.1	21.8		
	11:00	Surf.	20.0	22.1	Paster cove (shore) Ottawa brook wharf.	
	14:30	Surf.	18.9	22.3		
	15:30	Surf.	18.9	22.3	Little Narrows wharf	
		Bot. 14'	19.0	22.6		
	16:00	Surf.	19.0	22.9		Portage creek (shore) Alba - south of bridge
		Surf.	18.0	21.9		
	16:30	Surf.	20.0	22.7		
		Bot. 5'	19.9	22.7		
11	11:00	Surf.	17.8	22.2	Orangedale wharf	
		Bot.	17.7	22.7		
15	11:30	Surf.	21.9	17.8	Munroe Bridge	
		Bot. 6'	21.4	20.7		
	15:00	Surf.	20.2	22.2		Off Boom I-west end

## Hydrographic data. Miscellaneous, Cape Breton Island, N. S.

1937 Continued.

<u>Date</u>	<u>Time</u>	<u>Depth</u>	<u>Temp.</u>	<u>Salinity</u>	<u>Locality &amp; Remarks</u>
Sept. 15	15:30	Surf.	21.0	22.3	Off Boon Island-K end
		Bot. 6'	20.1	22.4	
	16:00	Surf.	20.7	22.7	Off Stoney point
17	15:00	Surf.	20.9	19.3	Munroe's cove
		Bot. 6'	20.3	19.4	
	15:30	Surf.	20.2	22.2	West end Lewis I.
		Surf.	20.4	21.0	South " " "
		Bot. 2'	20.2	22.2	

## OYSTER INVESTIGATIONS IN CAPE BRETON.

Summary for 1937.

The work begun in Cape Breton in 1936 was continued and extended in 1937. The general features of the hydrography remain unchanged, the salinity being from 20 per mille to 24 per mille. Owing to the wet spring, however, up until the middle of June the salinity was less than 20 per mille at Gillis cove. This apparently prevented many oysters developing sexual products. During the summer the steep halocline recorded at Crowdis bridge, over River Denys, disappeared, the surface water becoming salty owing to the greatly reduced inflow of fresh water.

Spat collected in 1936 was separated and reared on floating trays and some planted on small shore beds without being separated from the shells on which they were collected. All rearing was done in Gillis cove. The growth of the spat was hardly enough to be called satisfactory.

As in 1936 spat was collected at Crowdis bridge and Gillis cove. A heavy set and rapid growth were observed at Crowdis bridge. At Gillis cove the set was lighter and growth not so great.

Thirty-nine barrels of oysters were taken from the Bras d'Or lakes and planted in the more saline water of St. Ann Bay (30 per mille). It is reported that the flavour was much improved in a month and a half and that the oysters were growing in their new location.

Observations were made by the writer until the middle of July, after which Mr. C. J. Kerswill carried on the work until the end of September.

OYSTER INVESTIGATIONS AT BRAS D'OR LAKES, CAPE BRETON

G. F. M. Smith

1936.

Headquarters for work in the Bras d'Or lakes were made at Orangedale, N. S. Work was done during June, July, August, and the first part of September. The work consisted of hydrographic observations, spat collection trials and the collection of other data relative to oysters and oyster culture whenever the opportunity presented itself.

HYDROGRAPHY

Two stations were selected for regular observations that offered contrasting hydrographic data. At Crowdis bridge over River Denys there is a continuous flow of fresh water into the lake. The accompanying table of hydrographic data for Crowdis bridge and a comparison with the meteorological data shows that the fresh water forms a distinct surface layer with a sharp halocline and the depth of the halocline varies greatly with the amount of rainfall. Normally the halocline is a foot or more below the surface but a freshet makes the river entirely fresh on occasions. The tidal range is about 6 inches. The series of observations for August 25 shows that there is little tidal effect at Crowdis bridge at neaps. Spring tides as on September 3 have a more marked effect, however.

The other regular station was Gillis cove on the north shore of North Basin River Denys (Orangedale bay). There was almost no fresh water flowing into the cove and the salinity was almost uniform from surface to bottom, except for a short time after a heavy rainfall. The stands referred to in the hydrographic data for Gillis cove are stakes set out from which the spat collectors were hung. The stands were not placed until July