

## Determining the Effectiveness of Blackback Stocking

### A. The Problem

Blackback stocking from New England fish cultural stations must be considered solely for augmenting the existing population. The blackback range extends throughout New England, New York, and New Jersey and presumably it occupies all waters in this area which provide suitable natural conditions. The effect of introducing blackbacks in waters, which they do not now inhabit, need not be considered. Hatchery techniques have not advanced sufficiently to permit the artificial propagation beyond the fry stage. Accordingly, the problem may be stated: "What changes in an existing blackback population can be made by the stocking of blackback fry."

### B. Outline of an experiment to solve a problem.

An experiment which would provide answers to the problem can be conducted as follows:

1. Stock an existing blackback population in alternate years.
2. Measure the relative survival from each of the years of alternating natural propagation and natural propagation supplemented by stocking.
3. Analyze the data to determine the significance of difference in survival.

### C. Requirements for the experiment.

1. Since the North Atlantic blackback population is very extensive and has been shown by tagging experiments to be composed of numerous small more or less separate units, it will be possible to select a segment of the population which may be considered to be a homogeneous unit. The extensive tagging experiments, which have been conducted in southern New England waters, indicate populations which approximate these requirements in each of the bays on the southern shore of Long Island, in Western Long Island Sound, in Narraganset Bay, and Waquoit Bay. Most of these populations mix with others to some extent, but they are more homogeneous than the populations of Peconic Bay, eastern Long Island Sound, Block Island waters, and Nantucket Shoals.

2. Because considerable natural variation in survival can be expected to be encountered, and because it is statistically much easier to measure a relatively large difference, it will be desirable to select a location for the experiment which, in addition to having a suitable blackback population, can be stocked very heavily during the years of the experiment. In addition to stocking heavily it will be desirable to stock in proportion to the numbers of spawning blackbacks in the area. Even though this proportion may be determined only roughly, it will serve as a valuable guide.

Woods Hole Laboratory  
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3. It is essential to sample the population resulting from stocking in a representative manner. Information available on the behavior of the first and second year groups of blackbacks indicates that they do not mix completely with the adults, and it would be extremely difficult to obtain proper samples of these younger age groups, especially because they are not taken by the commercial fisheries. It would appear necessary, therefore, to measure changes in the adult population. This may be done fairly easily by obtaining records from the commercial fisheries or from hatchery operations conducted for the purpose of obtaining spawning fish. It would appear highly desirable to select Waquoit Bay as a location for one experiment where data could be gathered from the hatchery fishing operations. The next most desirable locations would seem to be Great South Bay and Shinnecock Bay, Long Island, where data could be gathered from commercial fishermen, during the spawning season.

4. The behavior of stocked fry and their requirements as to temperature and salinity are largely unknown. It will be necessary to supervise the stocking adequately to insure careful and identical techniques of transportation and introduction into the waters from year to year. The location of stocking should be exactly recorded and fry placed in the same location year after year.

#### D. Data needed.

1. Complete records of the number, date, and location of the fry plants.
2. Length and age composition of the adult stock of the population selected for each year after the date of stocking. If, as expected, the stocked fish become adult in three years, the effects of stocking should be apparent in an increase of three year olds, three years after stocking. However, collection of adequate length and scale samples will insure information on each year group regardless of age of maturity.
3. Some measure of the catch per unit of effort will be desirable in order that changes in the population may be translated into changes in fishing. For the trap net fisheries, operated by the Service, careful records should be kept of the fish taken by each type net from year to year. For the commercial fisheries, adequate records should be obtained on the number of units of gear operated, the length of time operated, and the total catch.

#### E. General.

The 1946 season is an ideal time to start experiments of this kind because the 1943, 1944, and 1945 year classes in Southern New England waters will be entirely from natural spawning, and there will be no complications from haphazard stocking.

2/6/46

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U. S. Department of the Interior  
Fish and Wildlife Service

Proposed design of an experiment to test the effect of some factors influencing the hatching of blackback flounder fry in trays

Overall problem - To introduce, modify, or eliminate methods of handling blackback eggs which may improve the survival of fry.

Possible controllable factors in estimated order of importance.

1. Number of eggs placed in tray.
2. Stirring or not stirring.
3. Volume of water flowing through tray.
4. Materials used in construction of trays and tubing.
5. Interactions of above.

The most urgent problems appear to be those of determining optimum number of eggs to place in tray and effect of stirring, if any. The present equipment which must be used is not easily changed. Water supply can be reduced but not increased. Knowledge of the effect of a reduction in flow might save in the cost of pumping.

Two batteries of 12 trays each will probably be available for experimental use. It is proposed to place the eggs and stir according to the following arrangement:

<u>Battery and tray number</u>		<u>Ounces of eggs to stock</u>	<u>Notes</u>
<u>A</u>	<u>B</u>		
1	- 1	- 1	Stir Battery B.
2	- 2	- 32	
3	- 3	- 16	Do not stir Battery A.
4	- 4	- 2	
5	- 5	- 1	
6	- 6	- 2	
7	- 7	- 8	
8	- 8	- 4	
9	- 9	- 16	
10	- 10	- 8	
11	- 11	- 4	
12	- 12	- 32	

The quantities of eggs stocked have been randomized to eliminate possible positional effects. It is not practical to randomize the stirring. The quantity of eggs usually used is 16 to 20 ounces. There is good reason to believe that a considerably smaller quantity will provide as many or more viable fry.

In the event that four batteries of trays are available, it is proposed to test water flow by duplicating the above arrangement in batteries C and D but with a small flow of water.

Estimation of No. of Blackheads Fry.

Tank 59 Mar. 21, 1946

Fry Per CC	CC	No Fry	Ratio	Log.	Ratio
1.7	2.3	4	1.74	.240	
3.1	4.5	15	3.12	.494	
2.1	2.8	6	2.14	.330	
2.2	3.6	8	2.22	.346	
2.3	4.4	10	2.27	.356	
3.0	7.3	22	3.01	.479	
1.5	9.2	14	1.52	.182	
2.3	7.3	17	2.33	.367	
1.8	21.8	40	1.83	.262	
2.3	16.6	38	2.29	.360	
2.6	20.9	55	2.63	.420	
3.0	14.0	42	3.00	.477	

  

X	Y	n = 12
$\frac{SX}{x}$	27.9	
$\frac{SX^2}{x^2}$	67.87	
$\frac{(SX)^2/n}{Sx^2}$	$\frac{64.87}{3.00}$	
$\frac{SY}{y}$	115.0	
$\frac{SY^2}{y^2}$	1643.32	
$\frac{(SY)^2/n}{Sy^2}$	$\frac{1102.08}{541.24}$	
$\frac{(SXY)}{(SX)(SY)/n}$	$\frac{267.96}{267.37}$	
$\frac{Sxy}{Sxy}$	1.59	

  

$$r = \frac{1.59}{\sqrt{3.00 \cdot 541.24}}$$

$$= \frac{1.59}{40.29} = .04$$
  

$\frac{SX}{x}$	4.313
$\frac{SX^2}{x^2}$	.3594
$\frac{(SX)^2/n}{Sx^2}$	$\frac{1.550164}{.106251}$
$\sqrt{\frac{.106251}{132}}$	= .0008854
$\sigma_{Sx}$	= .02976

  

Mean  $\pm 2\sigma_x = .3594 \pm .0595$   
 = .2999 // .4189

Estimate = 23,300 cc  
 Log. Antilog  
 4.6673 46,500  
 4.7268 53,300 - means  
 4.7863 61,100

stocked with 120g of eggs on 584,706

# Sampling of Cans of Black back Fry

Can No	Sample cc.	Viable Fry	Eggs	Tot	No. per cc.	C/No per 100cc Log.			Scans	
							SX			
1.	✓			✓					9480 cw in	
15 7/16" water	17.0	21	1	22	1.29	2.111	x	11,140		
	22.5	44	19	63	2.80	2.447	SX <sup>2</sup>	2,228		
1,930 cw in	21.5	33	4	37	1.92	2.236	(SX) <sup>2</sup> /n	24,902,822	174.5 pucc	
31,600 cc	16.5	20	10	30	1.82	2.260	Sx <sup>2</sup>		12.25 per cw in.	
	24.5	27	3	30	1.22	2.086			115,000 in 5 cans.	
2	14.5	14	0	14	.97	1.987	SX	9,012		
14 3/8" water	15.0	12	0	12	.80	1.903	x	1,802		
	16.0	8	0	8	.50	1.699	SX <sup>2</sup>	16,343,684		
1,790 cw in	20.5	8	0	8	.39	1.591	(SX) <sup>2</sup> /n			
29,300 cc	19.0	13	0	13	.68	1.832	Sx <sup>2</sup>			
3	16 3/16" water	24.5	5	0	5	.20	1.301	SX	5,832	
	22.0	2	0	2	.10	.954	x	1,166		
2020 cw in	19.5	2	0	2	.10	1.000	SX <sup>2</sup>	6,925,426		
83,100 cc	22.0	4	0	4	.18	1.255	(SX) <sup>2</sup> /n			
	19.5	4	0	4	.21	1.322	Sx <sup>2</sup>			
4	15 1/8" water	24.0	24	0	24	1.00	2.000	SX	9,418	
	25.0	16	0	16	.64	1.806	x	1,884		
1890 cw in	25.0	19	0	19	.76	1.881	SX <sup>2</sup>	17,760,818		
31,000 cc	22.0	17	0	17	.77	1.886	(SX) <sup>2</sup> /n			
	20.0	14	0	14	.70	1.845	Sx <sup>2</sup>			
5	14 13/16" water	12.0	3	0	3	.25	1.398	SX	7,006	
	16.5	2	0	2	.12	1.079	x	1,401		
1850 cw in	15.0	5	0	5	.25	1.447	SX <sup>2</sup>	9,966,818		
30,300 cc	13.0	4	0	4	.31	1.491	(SX) <sup>2</sup> /n			
	23.0	9	0	9	.39	1.591	Sx <sup>2</sup>			
	493.0									
Total	9480 in <sup>3</sup>			367			N=25		Cans	
	155,349 cc,						SX	42,408		
	4969 pucc						x	1,6963		
							SX <sup>2</sup>	75,899,568	75422146	
							(SX) <sup>2</sup> /n	71,937,539	71,937,539	
							Sx <sup>2</sup>	3,962,029	3,484,607	

## Analysis of Variance

Source	DF	S.S.	M.S.	Variance
Total	24	3.962029	.165085	
Cans	4	3.484607	.871152	.2118
Within Cans (Samples)	20	.477422	.023871	.0239

Calendar Year

Calendar Year.

1942

1941

Species planted solely as eggs or fry 1942	Total # output dry eggs	Egg collections	%	Output	Egg collections			
Whitefish	1,602	1,944		.551	2,434			
Lake Herring	9,860	20,694		.720	21,119			
Chum Salmon	11,474	13,594						
White Perch	.047	1,447						
Cod	3068.	3108.	98.7%	2,146.	2,175	98.6%		
Haddock	452.	481.	94.0%	<del>285</del> 285	285	100%		
Flounder	1,971.	2,182.	90.3%	1,486	1,658	89.0%		
Pollock	2,013.	1,969	102.2%	1,194	1,255	95%		

4 millions



Total Number of Blackback Females Caught By  
Fyke Nets; United States Fish and Wildlife Service  
Hatchery, Woods Hole, Mass. 1919-1941  
(20 fykes fished yearly)

3/19/46

Year	Total No. of Females
1919	3, 138
1920	1, 641
1921	2, 180
1922	1, 152
1923	1, 186
1924	2, 653
1925	2, 360
1926	1, 516
1927	2, 159
1928	2, 352
1929	3, 846
1930	2, 383
1931	2, 861
1932	2, 116
1933	922
1934	302
1935	762
1936	1, 481
1937	2, 812
1938	1, 193
1939	2, 568
1940	435
1941	997

Dear Bill,

Just came across a finished table in my  
blackback manuscript containing this information. Sorry  
I couldn't locate it sooner. See you next week

Al Perlmutter

DEPARTMENT OF COMMERCE  
BUREAU OF FISHERIES

Species BlackbackLocality Wagouit BayDate 2/15/46

Serial No. \_\_\_\_\_

Gear Fyke Net

REMARKS

Haphazard sample of about 1/2 the  
catch of one net

Mens. Only	Male		Female		Imm.	Scale Samples	Male		Female		Totals	
	Ripe	Spent	Ripe	Spent			Ripe	Spent	Ripe	Spent	♂	♀
4 1						4 1						
2 1						2						1
3 1						3						2
4 1						4 1			1			2 1
5 1						5	1					4
6 1			1			6			1			2 2
7 1						7 1						6
8 1					1	8 1						11 1
9 1						9 1			1			7 2
5 0						5 0						10
1 1	1		1			1						5 1
2 1			1			2 1	1				1	12 3
3 1			1			3 1			1			6 2
4 1						4 1						6
5 1						5 1						7
6 1	1					6 1						7
7 1						7 1			1			5 1
8 1						8 1			1			2 1
9 1	1					9 1			1			7 2
6 0						6 0			1	1		6 2
1 1			1			1			1	1		3
2 1						2 1			1			3 2
3 1	1		1			3 1						2 1
4 1	1					4 1			1			2 2
5 1	1		1			5 1	1					4 2
6 1						6 1			1			1
7 1						7 1			1			1 4
8 1			1			8 1			1	1		3
9 1						9 1			1			2
7 0	1		1	1		7 0	1		1	1		2 4
1 1						1 1			1	1		4
2 1						2 1			1			1
3 1						3 1			1			2 1
4 1						4 1						2
5 1						5 1			1			1
6 1			1			6 1			1	1		3
7 1						7 1						1
8 1						8 1			1	1		1 1
9 1						9 1			1			2
8 0						8 0						
1 1						1 1						
2 1						2 1			1			1
3 1						3 1						
4 1	1					4 1						1
5 1						5 1						
6 1						6 1						
7 1						7 1						
8 1						8 1						
9 1						9 1						
9 0						9 0						
Totals	66	5	10	3	1		54	4	33	8	1	129 56/185

DEPARTMENT OF COMMERCE  
BUREAU OF FISHERIESSpecies BLACK BACK  
Locality WABQUOIT BAY  
Date 3/1/46  
Serial No. \_\_\_\_\_  
Gear FYKE NET

REMARKS

Haphazard sample. Lengths only.

cup #	MALE		FEMALE									
	RIPE	SPENT	RIPE	SPENT								
4			39-1									
1										1		
2										2		
3										3		
4										4		
5										5		
6										6		
7			1							7		
8										8		
9										9		
5										0		
1			2							1		
2										2		
3										3		
4										4		
5										5		
6		1	1							6		
7	1									7		
8	1									8		
9	1		1							9		
6	1		2							0		
1										1		
2	4									2		
3	1		3							3		
4			1							4		
5			1							5		
6			2							6		
7	1		1							7		
8	1		1							8		
9										9		
7										0		
1			2							1		
2										2		
3										3		
4										4		
5			1							5		
6										6		
7			1							7		
8										8		
9										9		
8										0		
1			1							1		
2										2		
3										3		
4										4		
5										5		
6										6		
7										7		
8										8		
9										9		
9										0		
	11	1	22									

DEPARTMENT OF COMMERCE  
BUREAU OF FISHERIES

Species BLACKBACK  
Locality WAQUOIT BAY  
Date 3/4/46  
Serial No. \_\_\_\_\_  
Gear FYKE NET

REMARKS Hephaezard sample

Sample

Cry/2	MALE		FEMALE		IMM.		Cry/2	MALE		FEMALE		IMM.	MRT. ?
	RIPE	SPENT	RIPE	SPENT				RIPE	SPENT	RIPE	SPENT		
4 1	1						4 1						
2					1		2						
3					2		3						
4		1					4 1			1			
5	1				2		5 1						
6	3	1			1		6 1						
7	3	1			1		7 1	1					
8	6						8 //						
9	4						9 1	//					
5 0	2	1	1		1		5 0					1	
1	7						1 //						
2	5						2			1			
3	6	3	1				3 1	1					
4	4						4 //						
5	4	1		1			5 //						
6	3			1			6 //				1		
7	2	2		1			7 //	//		1			
8	3		1	2			8 //	1		//			
9	3			1			9 1	1		1			
6 0	4	1					6 0	//			1		
1	1			1			1			//			
2	1		1				2 //	1					
3	4	1					3 //			//	1		1 1
4	1						4 //						
5	1			1			5 //			1			
6	1						6 1	1		1			
7			1	2			7			1	//		
8							8						
9	1			1			9			//	1		
7 0	2						7 0	1	1	1			
1							1			//			
2							2			1			
3			1				3			1			
4							4			1			
5							5			//			
6							6						
7							7			//	1		
8							8						
9				1			9	1		1			
8 0							8 0			1			
1							1				1		
2							2						
3							3			1			
4							4			1			
5							5			//			
6							6						
7							7						
8							8						
9							9						
9 0							9 0						
	73	12	6	12	8		9 2	1					
								44	13	1	31	8	1 1 1

DEPARTMENT OF COMMERCE  
BUREAU OF FISHERIESSpecies BLACK BACK  
Locality WAQUOIT BAY  
Date 3/6/46  
Serial No. \_\_\_\_\_  
Gear FYKE NET

REMARKS

Lengths + scales from all fish brought in

CUP	MALE		FEMALE						
	RIPE	SPENT	IMM	RIPE					
4	1								1
	2								2
	3								3
	4							I	4
	5	I						I	5
	6							I	6
	7		I	I					7
	8	I							8
	9	I		I				III	9
5	0	II						I	0
	1	III						I	1
	2	I							2
	3	I	III					II	3
	4	I	I						4
	5	III						I	5
	6	III						III	6
	7	III	I					II	7
	8	III						I	8
	9	I						III	9
6	0	I						I	0
	1	I						II	1
	2	III						I	2
	3	I						II	3
	4	II						I	4
	5	I						I	5
	6	II						II	6
	7							I	7
	8	I						I	8
	9	I						II	9
7	0	II							0
	1	I						III	1
	2							I	2
	3								3
	4							III	4
	5	I							5
	6	I						I	6
	7	II							7
	8	I							8
	9							I	9
8	0							I	0
	1								1
	2								2
	3								3
	4								4
	5								5
	6								6
	7							I	7
	8								8
	9								9
9	0								0
	99							I	
	101							I	
	40	11	1	26	28	9			

DEPARTMENT OF COMMERCE  
 BUREAU OF FISHERIES

 Species BLACKBACK  
 Locality WAQUOIT BAY  
 Date 3/11/46  
 Serial No. \_\_\_\_\_  
 Gear FYKE NET

REMARKS

Lengths of all fish brought in.

cup	MALE			FEMALE							
	RIPE	SPENT	IMM.	RIPE	SPENT	IMM.					
4	1		39-2			39-1					1
	2	1		1							2
	3			1							3
	4					3					4
	5	2	1			1					5
	6	1	1		3						6
	7	1	2			1					7
	8	1			2						8
	9		1								9
5	0	3	2								0
	1	1	1								1
	2	1	1								2
	3	1	2		1						3
	4	6	3		1						4
	5	5	4		1						5
	6	4			4						6
	7	3									7
	8	1			1	2					8
	9				1	1					9
6	0	1	2		4						0
	1	2			3	1					1
	2	1			2						2
	3		1		1	5					3
	4	2	1			2					4
	5	3				1					5
	6	3	2			1					6
	7	1			1	3					7
	8	7									8
	9	2	1			1					9
7	0	3	1			1					0
	1	2			1						1
	2	4				1					2
	3	2	1			1					3
	4	1			1	1					4
	5	1	1			3					5
	6	1									6
	7										7
	8					2					8
	9					2					9
8	0					1					0
	1	1				1					1
	2					1					2
	3					1					3
	4										4
	5										5
	6										6
	7				1	1					7
	8				1						8
	9					1					9
9	0										0
		67	29	2	24	41	7				

DEPARTMENT OF COMMERCE  
 BUREAU OF FISHERIES

 Species BLACKBACK  
 Locality WAQUOIT BAY  
 Date 3/13/46  
 Serial No. \_\_\_\_\_  
 Gear FYKE NET

REMARKS

*Lengths of all fish brought in.*

CWT	MALE		FEMALE		INCH.					
	RIPE	SPENT	RIPE	SPENT						
4	1	1			39-1					
	2									
	3									
	4	1		1						
	5									
5	6			1						
	7									
	8	1	1							
	9	1								
	0	1								
6	1		1							
	2	1		1						
	3		1							
	4									
	5		1							
7	6									
	7									
	8	1								
	9	1								
	0	2								
8	1									
	2									
	3			2						
	4	1								
	5			4						
9	6			3						
	7			2						
	8			1						
	9			1						
	0	1								
9	1									
	2									
	3									
	4			1						
	5									
9	6			1						
	7									
	8									
	9									
	0									
9	0	11	5	18	1					

SALINITY EQUIVALENTS

Salinity	Specific Gravity 60°F	Chloride Content P.P.M.	Sea Water %
0	1.000	0	0
1	1.001	720	4
2	1.002	1440	8
3	1.003	2160	12
4	1.004	2880	16
5	1.005	3600	21
6	1.006	4320	25
7	1.007	5040	29
8	1.008	5760	33
9	1.009	6480	37
10	1.010	7200	41
11	1.011	7920	45
12	1.012	8640	49
13	1.013	9360	53
14	1.014	10080	57
15	1.015	10800	62
16	1.016	11520	66
17	1.017	12240	70
18	1.018	12960	74
19	1.019	13680	78
20	1.020	14400	82
21	1.021	15120	86
22	1.022	15840	90
23	1.023	16560	95
24	1.024	17280	99
24.3	1.0243	17500	100

FROM A biological survey of the fresh waters of Long Island,  
supplement 28th Ann. Rept. New York Cons. Dept., 1938.  
p. 67.

Custom House  
New Bedford, Mass.

February 8, 1946

Mr. M. H. Bidwell  
Bureau of Marine Fisheries  
New York State Conservation Department  
Sunrise Highway  
Freeport, New York

Dear Mr. Bidwell:

This service has had complaints regarding the stocking of flounder fry in polluted waters in Long Island. We are in need of information on the location of polluted areas.

I recall from my work with the New York State Biological Survey in 1938, that you had excellent information of this kind. Could you please forward to us a copy of a chart showing polluted waters or a copy of the Shellfish Regulations defining the areas closed to shellfishing?

Very truly yours,

William F. Royce,  
Aquatic Biologist.

WFR:IW  
cc- Mr. Herrington  
Mr. Marcus

STATE OF NEW YORK

PERRY B. DURYEA  
COMMISSIONER  
J. VICTOR SKIFF  
DEPUTY COMMISSIONER  
JAMES J. MAHONEY  
SECRETARY  
CLAYTON B. SEAGEARS  
SUPT. CONSERVATION EDUCATION



DIVISION OF FISH AND GAME  
WILLIAM C. ADAMS  
Director  
ALFRED TUCKER  
Superintendent of Marine Fisheries  
MILTON H. BIDWELL  
BACTERIOLOGIST

CONSERVATION DEPARTMENT  
BUREAU OF MARINE FISHERIES — SANITATION UNIT  
65 WEST SUNRISE HIGHWAY  
FREEPORT, L. I., N. Y.

February 13, 1946

Mr. William F. Royce,  
Aquatic Biologist,  
U. S. Dept of Interior,  
Custom House,  
New Bedford, Mass.

Dear Sir:

As requested by you I am sending herewith a complete set of our so-called key sheets, describing the areas from which shellfish may be taken for use as food.

It is quite likely that the areas so described may not have any bearing on the question of stocking flounder fry, inasmuch as the oxygen content of most of these areas may be entirely satisfactory. Offhand, about the only area I can think of which would be so polluted as to preclude its use for the planting of flounder fry would be the area of Jamaica Bay and possibly Little Neck Bay on the north shore.

Very truly yours,

*Milton H. Bidwell*  
Bacteriologist

MHB:VAB  
Encs.

Kay #1

NOTICE OF CONDITION OF PUBLIC SHELLFISH GROUNDS LOCATED  
WITHIN OR ADJACENT TO THE SOUTH SHORE OF NASSAU COUNTY,  
STATE OF NEW YORK

Pursuant to provisions of the Conservation Law, the following is a statement of the certified and uncertified shellfish lands within the Towns of Hempstead and Oyster Bay along the south shore of Nassau County:

All of the waters and areas located within these towns are certified for the taking of shellfish, with the following exceptions:

I. Within the Town of Hempstead.

Jamaica Bay - All of the headwaters and tributaries of Jamaica Bay within Nassau County.

Atlantic Ocean

1. West of a line due south from the end of the breakwater at East Rockaway Inlet.
2. Within a 1/2 mile radius of the Long Beach sewer outlet.

Hempstead Bay

1. Bannister Creek, East Rockaway Inlet and Reynolds Channel west of the Atlantic Beach toll bridge.
2. East Rockaway Channel as far south as the southwest point of West Meadow; Bay Park Canals and the area within 1/4 mile of the mouth of said canals; Island Park Canal.
3. Reynolds Channel, between Long Beach Bridge and Point Lookout Causeway and also including the area within 1/2 mile radius of the Lido Naval Sewage Treatment Plant.
4. Parsonage Creek; Middle Bay, from the westerly side of the mouth of Parsonage Creek to Scow Creek, north of a line 100 yards south of the town buoyed channel to Parsonage Creek; Scow Creek to a point 1/4 mile east of the westerly tip of Smiths Meadow; all of Baldwin Bay; Milburn Creek.
5. All creeks and canals in and around Freeport west of Meadowbrook Causeway, including Long Creek and the Narrows to a point 1/4 mile south of East Point House.
6. Merrick Creeks; Bellmore Creeks and Canals; Wantagh and Seaford Creeks and Canals and the area within 1/4 mile of the mouth of said creeks, including all of Island Creek.

Zachs Bay - All of Zachs Bay during the period May 1st to October 1st, both inclusive.

II. Within the Town of Oyster Bay (Southern Shore)

South Oyster Bay - Within 1/4 mile radius of the mouth and including the following creeks, canals and coves; Seaford Creeks and Canals; Massapequa Creeks and Canals (Biltmore Shores); Jones Creek; Carman Creek; Amityville Creek; Canals and Creeks between Carman Creek and Amityville Creek.

NOTE: Notice of any change in the above waters will be sent to baymen by mail as and when they may occur.

NEW YORK STATE CONSERVATION DEPARTMENT  
BUREAU OF MARINE FISHERIES - SANITATION UNIT  
65 WEST SUNRISE HIGHWAY  
FREEPORT, L.I., N.Y.

Dated: 4/2/45

NOTICE OF CONDITION OF PUBLIC SHELLFISH GROUNDS LOCATED  
WITHIN OR ADJACENT TO THE TOWNS OF BABYLON, ISLIP AND  
BROOKHAVEN ALONG THE SOUTH SHORE OF SUFFOLK COUNTY,  
STATE OF NEW YORK

Pursuant to provisions of the Conservation Law, the following is a statement of the certified and uncertified shellfish lands within the Towns of Babylon, Islip and Brookhaven along the south shore of Suffolk County:

All of the waters and areas located within these towns are certified for the taking of shellfish, with the following exceptions:

I. Within the Town of Babylon

Great South Bay

1. Within 1/4 mile radius of the mouth of and including all Rivers, Creeks and Canals of the mainland shore.
2. Also within the area in the vicinity of Lindenhurst north of a line from the southeast tip of Strongs Point to a point 1/4 mile off shore due south of Fleet Point.

II. Within the Town of Islip

Great South Bay

1. Within 1/4 mile radius of the mouth of and including all Rivers, Creeks and Canals of the mainland shore, including Connetquot River.
2. Also Great Cove (Bayshore) north of a line from the mouth of Lawrence Creek to the southwest tip of Bayberry Point.

III. Within the Town of Brookhaven (Southern Shore)

Great South Bay

1. Within 1/4 mile radius of the mouth of and including all Rivers, Creeks and Canals of the mainland shore including Patchogue Creek, Carnans River and Fireplace Creek.
2. Patchogue Bay north of a line from the southerly tip of Bluepoint to the mouth of Swan Creek.
3. Bellport Bay east of a line from the mouth of Fireplace Creek to Smiths Point during the months of May through October, both inclusive.

Moriches Bay

Throughout the year the following areas are uncertified:

1. Within 1/4 mile radius of the mouth of and including all Rivers, Creeks and Canals of the mainland shore and including Tuthill Cove.
2. North of a line from Forge Point to Masury Point.
3. Harts Cove within 1/4 mile radius of the bridge at the head of the Cove.
4. Seatuck Cove north of a line due east from Havens Point.

During the period May 1st to November 15th, both inclusive, the following areas are uncertified:

1. North of a line from Forge Point to Tuthill Point.
2. North of a line from Tuthill Point to Speonk Point.
3. North of a line from Speonk Point to the southerly tip of Tanner Neck.

NOTE: Notice of any change in the above waters will be sent to baymen by mail as and when they may occur.

NEW YORK STATE CONSERVATION DEPARTMENT  
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Dated 4/2/45

mouth of Peconic River to the westerly side of the first creek easterly of Meetinghouse Creek.

2. Also that area of Flanders and Reeves Bays and tributaries west of a line from Miamogue Point to Red Cedar Point from May 1st to November 15th, both inclusive.

II. Within the Town of Easthampton

Sag Harbor

1. That area of Sag Harbor and its tributaries lying within or west of the breakwater and within or south of a line due west from the northerly end of the breakwater to the mainland.

Fort Pond Bay

1. All of those areas of Fort Pond Bay, west of a line from Rocky Point to Culloden Point.

III. Within the Town of Shelter Island

Shelter Island Sound

1. Within 1/4 mile radius of Shelter Island Heights sewer outlet.

IV. Within the Town of Southold

Long Island Sound

1. Within 1/2 mile radius of the Greenport Sewer outlet.

Greenport Harbor

1. North of a line from the southerly end of the breakwater to the ferry dock at the foot of Main Street, Greenport, including Sterling Creek and Sterling Basin.

School House Creek

1. School House Creek at New Suffolk.

Mattituck Inlet

1. That area of Mattituck Inlet above or north of the bridge commonly known as the "Iron Bridge" and the area above or south of the concrete bridge.

V. Within the Town of Riverhead

Peconic River

1. All of the Peconic River and its tributaries within the Town of Riverhead.

Flanders Bay

1. Those areas of Flanders Bay and its tributaries lying west of a line running from Broad Meadow Point or the southeasterly extremity of the mouth of the Peconic River to the westerly side of the first creek easterly of Meetinghouse Creek.

2. Also those areas of Flanders Bay and tributaries thereto west of a line from Miamogue Point to Red Cedar Point from May 1st to November 15th, both inclusive.

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NEW YORK STATE CONSERVATION DEPARTMENT  
BUREAU OF MARINE FISHERIES - SANITATION UNIT  
65 WEST SUNRISE HIGHWAY  
FREEPORT, L.I., N.Y.

Dated 4/2/45

NOTICE OF CONDITION OF PUBLIC SHELLFISH GROUNDS LOCATED WITHIN OR ADJACENT TO THE TOWNS OF SOUTHAMPTON, EASTHAMPTON, SHELTER ISLAND, SOUTHOLD AND RIVERHEAD, COMPRISING THE EASTERLY PORTION OF SUFFOLK COUNTY, STATE OF NEW YORK.

Pursuant to provisions of the Conservation Law, the following is a statement of the certified and uncertified shellfish lands within the Towns of Southampton, Easthampton, Shelter Island, Southold and Riverhead, comprising the easterly portion of Suffolk County, State of New York.

All of the waters and areas located within these towns are certified for the taking of shellfish, with the following exceptions:

I. Within the Town of Southampton

Moriches Bay

Throughout the year the following areas are uncertified:

1. Within 1/4 mile radius of the mouth of and including all Rivers, Creeks and Canals of the mainland shore including those at Westhampton Beach.
2. Seatuck Cove north of a line due east from Havens Point.

During the period May 1st to November 15th, both inclusive, the following areas are uncertified:

1. North of a line from Forge Point to Tuthill Point.
2. North of a line from Tuthill Point to Speonk Point.
3. North of a line from Speonk Point to the southerly tip of Tanner Neck.

Quantuck Bay

1. The mainland creeks at Quiogue.
2. Quantuck Creek north of the Montauk Highway.

Shinnecock Bay

1. Penniman Creek and Cove; Stone and Phillips Creeks and Cove.
2. The Creeks at East Quogue including Weesuck Creek and Cove.
3. Shinnecock Canal.

Mecox Bay

1. Hay Ground Cove north of a line due west from the northerly shore of Calf Creek.
2. Also Hay Ground Cove, Calf Creek and the area within 1/4 mile radius of the mouth of Hay Ground Cove during May through October, both inclusive.

Sag Harbor

1. That area of Sag Harbor and its tributaries lying within or west of the breakwater and within or south of a line due west from the northerly end of the breakwater to the main land.

Peconic River

1. All of the Peconic River and its tributaries within the Town of Southampton.

Flanders & Reeves Bay

1. That area of Flanders Bay lying west of a line running from Broad Meadow Point or the southeasterly extremity of the

NOTICE OF CONDITION OF PUBLIC SHELLFISH GROUNDS LOCATED  
WITHIN OR ADJACENT TO THE TOWNS OF HUNTINGTON, SMITHTOWN  
AND BROOKHAVEN ALONG THE NORTH SHORE OF SUFFOLK COUNTY,  
STATE OF NEW YORK

Pursuant to provisions of the Conservation Law, the following is a statement of the certified and uncertified shellfish lands within the Towns of Huntington, Smithtown and Brookhaven along the north shore of Suffolk County, State of New York.

All of the waters and areas located within these towns are certified for the taking of shellfish, with the following exceptions:

I. Within the Town of Brookhaven (Northern Shore)

Port Jefferson Harbor

1. That area of Port Jefferson Harbor within 1/2 mile of Port Jefferson Sewage Treatment Plant.

II. Within the Town of Smithtown

Smithtown Bay

1. That area of Smithtown Bay within 1/4 mile radius of the mouth of the Nissequogue River and including all of the Nissequogue River.

III. Within the Town of Huntington

Northport Harbor

1. That area south of a line from Seynours Dock to the southerly tip of Northport Beach and south and west of Northport Beach.

Huntington Harbor

1. That area south of a line from Elbertson's Dock to the Harbor Heights Yacht Club Dock on the opposite shore.

NOTE: Notice of any change in the above waters will be sent to baymen by mail as and when they may occur.

NEW YORK STATE CONSERVATION DEPARTMENT  
BUREAU OF MARINE FISHERIES - SANITATION UNIT  
65 WEST SUNRISE HIGHWAY,  
FREEPORT, L.I., N.Y.

Dated: 4/2/45

NOTICE OF CONDITION OF PUBLIC SHELLFISH GROUNDS LOCATED  
WITHIN OR ADJACENT TO THE NORTH SHORE OF NASSAU COUNTY  
AND WITHIN THE COUNTY OF WESTCHESTER, STATE OF NEW YORK

Pursuant to provisions of the Conservation Law, the following is a statement of the certified and uncertified shellfish lands within the Towns of North Hempstead and Oyster Bay (northern shore) and the County of Westchester:

All of the waters and areas located within the Towns of North Hempstead and Oyster Bay (northern shore) are certified for the taking of shellfish, with the following exceptions:

I. Within the Town of North Hempstead

Long Island Sound

1. West of a line from Prospect Point in a northeasterly direction to the southern extremity of the Westchester County—Connecticut State Line.

Hempstead Harbor

1. That area south and east of a line from Weeks Point west 1/4 mile and hence due south to a point about 1/4 mile north of Bar Beach on the Manhasset Neck Shore.

Little Neck Bay

1. All of the areas of Little Neck Bay and its tributaries within Nassau County.

Manhasset Bay

1. All of Manhasset Bay and its tributaries.

II. Within the Town of Oyster Bay (Northern Shore)

Oyster Bay Harbor

1. Within 1/4 mile radius of the sewer outlet of Oyster Bay.
2. Within 1/4 mile radius of the ferry dock at Oyster Bay.

III. Within the County of Westchester

The shellfish lands within the County of Westchester are in such sanitary condition that shellfish thereon may not be taken for use as food, and all such shellfish lands are therefore designated uncertified areas.

- NOTE:
1. There are no approved shellfish areas within the limits of the City of New York; within or adjacent to Westchester County, Bronx County, Kings County or Queens County.
  2. Notice of any change in the above waters will be sent to baymen by mail as and when they may occur.

NEW YORK STATE CONSERVATION DEPARTMENT  
BUREAU OF MARINE FISHERIES - SANITATION UNIT  
65 WEST SUNRISE HIGHWAY  
FREEPORT, L.I., N.Y.

Dated 4/2/45

NOTICE OF CONDITION OF PUBLIC SHELLFISH GROUNDS  
LOCATED WITHIN OR ADJACENT TO THE BOROUGH OF  
RICHMOND, STATEN ISLAND, STATE OF NEW YORK.

Pursuant to provisions of the Conservation Law, the following is a statement of the approved or certified public shellfish grounds within the Borough of Richmond, (Staten Island), New York City:

1. None of the waters within or adjacent to the Borough of Richmond (Staten Island) are approved except those areas of Raritan Bay and Princes Bay within the following circumscribed lines:

1. East of a line from the "Cupola" at Redbank (Staten Island) running through Conaskonk Point to the "Tank" at Union Beach (New Jersey).
2. South of a straight line from Great Beds Light to Great Kills Light.
3. West of a line from the "Standpipe" at Huguenot Beach (Staten Island) to "Conover Beacon" (New Jersey).
4. North of the New York—New Jersey State boundar line.

- NOTE: 1. All reference points indicated above appear on the U. S. Coast & Geodetic Survey Chart No. 369 dated April, 1941.
2. Notice of any change in the above waters will be sent to baymen by mail as and when they may occur.

NEW YORK STATE CONSERVATION DEPARTMENT  
BUREAU OF MARINE FISHERIES - SANITATION UNIT  
65 WEST SUNRISE HIGHWAY  
FREEPORT, L.I., N.Y.

Dated: 4/2/45